

RECEIVED

RCVD AUG 4 '11
OIL CONS. DIV.Form 3160-3
(August 2007)

JUL 08 2011

FORM APPROVED 3
OMB NO. 1004-0137
Expires: July 31, 2010UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Farmington Field Office
Bureau of Land Management

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

3a. Address
P.O. Box 249/3200 N 1st St
Bloomfield, NM 874013b. Phone No. (include area code)
(505) 634-1111 ext. 284. Location of well (Report location clearly and in accordance with any State requirements. *)
At surface 2,373' FNL 386' FEL (SE/NE)

At proposed prod. zone 1,634' FSL 8' FEL (NE/SE) Sec.20 T30N R3W

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

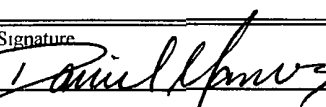
14 air miles southwest of Dulce

15. Distance from proposed*
location to nearest
property or lease line, ft Approx. 1,580'
(Also to nearest drlg. unit line, if any)16. No. of acres in lease
Approx. 2,258 Acres18. Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft. 75' (Twin Location)19. Proposed Depth
7,660' bgs17. Spacing Unit dedicated to this well
360 acres S/2 sec. 20
400 E/2 SE/4 sec 1920. BLM/ BIA Bond No. on file
BLM- NMB000230 / BIA 190-010-57721. Elevations (Show whether DF RT, GR, etc)
7,204' GR22. Approximate date work will start*
August 1, 201223. Estimated duration
45-60 Days drlg & compl.

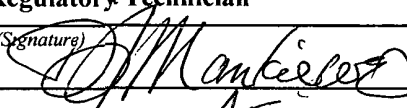
24. Attachments

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

- Well plat certified by a registered surveyor  H₂S POTENTIAL EXIST to cover the operations unless covered by existing bond on file (see item 20 above).
- A Drilling Plan
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office)
- Operator certification
- Such other site specific information and/ or plans as may be required by the authorized officer.

25. Signature  Name (Printed/ Typed) Daniel Manus Date July 7, 2011

Title Regulatory Technician

Approved By  Name (Printed/ Typed) AFM Date 8/1/11

Title FFO

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

NOTIFY AZTEC OCD 24 HRS.

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

* (Instructions on page 2)

BLM'S APPROVAL OR ACCEPTANCE OF THIS
ACTION DOES NOT RELIEVE THE LESSEE AND
OPERATOR FROM OBTAINING ANY OTHER
AUTHORIZATION REQUIRED FOR OPERATIONS
ON FEDERAL AND INDIAN LANDSHold C104
for Directional Survey
and "As Drilled" plat

SEP 20 2011 NMOCD

This action is subject to technical and
procedural review pursuant to 43 CFR 3165.9
and appeal pursuant to 43 CFR 3165.4DRILLING OPERATIONS AUTHORIZED ARE
SUBJECT TO COMPLIANCE WITH ATTACHED
"GENERAL REQUIREMENTS".Hold C104
for Directional Survey
and "As Drilled" platA COMPLETE C-144 MUST BE SUBMITTED TO AND
APPROVED BY THE NMOCD FOR: A PIT, CLOSED
LOOP SYSTEM, BELOW GRADE TANK, OR
PROPOSED ALTERNATIVE METHOD, PURSUANT
TO NMOCD PART 19.15.17, PRIOR TO THE USE OR
CONSTRUCTION OF THE ABOVE APPLICATIONS.

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 July, 16, 2010
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31078	² Pool Code 71599-97232	³ Pool Name BASIN MANCOS
⁴ Property Code 22210	⁵ Property Name JICARILLA 459-19	⁶ Well Number 724A
⁷ OGRID No. 013925	⁸ Operator Name BLACK HILL GAS RESOURCES	⁹ Elevation 7204'

¹⁰ Surface Location

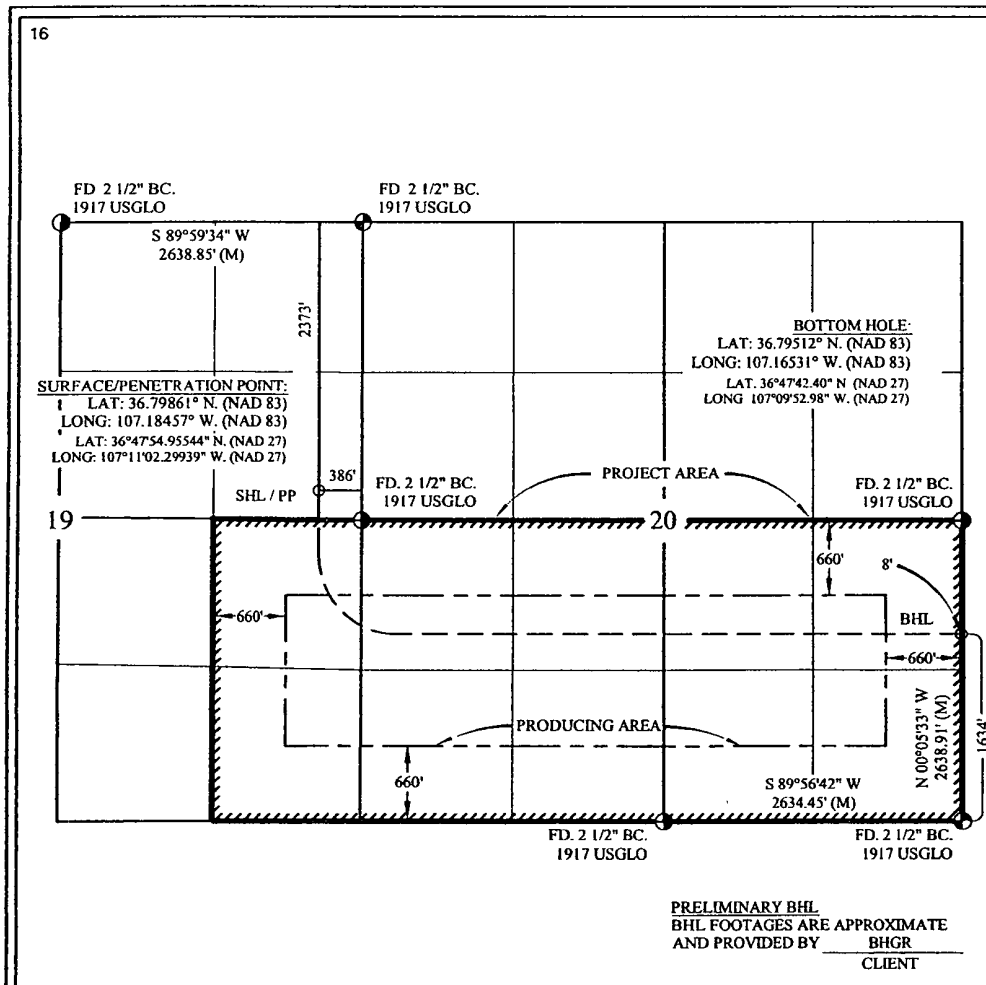
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	19	30-N	3-W		2373	NORTH	386	EAST	RIO ARRIBA

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
I	20	30-N	3-W		1634	SOUTH	8	EAST	RIO ARRIBA

¹² Dedicated Acres S/2 SEC. 20 & E/2 SE/4 SEC. 19 (400 ACRES)	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R-13449
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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



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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.

Daniel Manus 7/8/11
Signature Date

Daniel Manus
Printed Name

daniel.manus@blackhillcorp.com
E-mail Address

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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.

APR 14, 2011
Date of Survey

[Signature]
Signature and Seal of Professional Surveyor

[Seal]
Professional Surveyor

Certificate Number



Black Hills Gas Resources

Jicarilla 459-19 #724A

Surface Location: 2,373' FNL 386' FEL (SE/NE) Sec.19 T30N R3W

Bottom Hole Location: 1634' FSL 8' FEL (NE/SE) Sec.20 T30N R3W

Rio Arriba County, New Mexico

Lease: Contract 459

DRILLING PROGRAM

(Per Rule 320)

RECEIVED

JUL 21 2011

Farmington Field Office
Bureau of Land Management

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 includes an onsite meeting which was held on November 18, 2010 as determined by Bureau of Indian Affairs (BIA) and Jicarilla Oil & Gas Administration (JOGA) and at which time the specific concerns of Black Hills Gas Resources (BHGR), BIA, and JOGA were discussed.

SURFACE FORMATION – San Jose

GROUND ELEVATION – 7,204'

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

San Jose	Surface	Sandstone, shales & siltstones
Nacimientto	2021'	Sandstone, shales & siltstones
Ojo Alamo	3257'	Sandstone, shales & siltstones
Fruitland Coal	3736'	Sandstone, shales, siltstones & coal
Pictured Cliffs	3788'	Sandstone, shales & siltstones
Lewis	3869'	Sandstone, shales & siltstones
Mesaverde	5749'	Sandstone, shales & siltstones
Mancos	6623'	Sandstone, shales & siltstones

TOTAL DEPTH **7,662' TVD**
 13,796' MD

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

Nacimientto	2021'	Gas, water, sand
Ojo Alamo	3357'	Gas, water, sand
Fruitland Coal	3736'	Gas, water, sand
Pictured Cliffs	3788'	Gas, water, sand
Lewis	3869'	Gas, water, sand
Mesaverde	5749'	Gas, water, sand
Mancos	6623'	Gas, water, sand

HORIZONTAL DRILLING PROGRAMKick-Off Point is estimated to be $\pm 6,748'$ TVD**CASING PROGRAM**

Depth	Hole Diameter	Casing Diameter	Casing Weight and Grade	Cement
0' - 40'	22"	16"	63# & 30-Std	45 sks Class G cement (yield 1.15 ft ³ /sk ; wt. 15.8 lbm/gal)
0' MD – 3,200' MD	12 ¼"	9 ⅝"	40# & J-55	Lead: ± 700 sxs Lite Premium cement w/ 0.5 lbm/sxs Gilsonite & 0.125 lbm/sxs Poly-E-Flake (yield 1.82 ft ³ /sxs : wt 12.50 lbm/gal)* Tail: ± 100 sxs Premium cement w/ 0.125 lbm/sxs Poly-E-Fake & 2% Halad@-9 (yield 1.15 ft ³ /sxs : wt 15.80 lbm/gal)*
3,000' MD – 6,748' MD	8 ¾"	7"	23# & N-80	Lead: ± 515 sxs 50/50 Poz Premium cement w/ 0.4% Halad@-413, 0.5% Halad@-344, 0.1% CFR-3, 0.2% Versaset & 0.2% HR-5 (yield 1.44 ft ³ /sxs : wt 13 lbm/gal)* Tail: ± 125 sxs 50/50 Poz Premium cement w/ 0.4% Halad@-413, 0.5% Halad@, 0.015% CRF-3, 0.2% Versaset & 0.4% HR-5 (yield 1.1 ft ³ /sxs : Wt. 15.80/gal)*
0' MD – 13796' MD	6 ⅞"	4 ½"	11.6# & HCP-110	850 sxs Poz Premium w/ 0.4% Halad@-413, 0.5% Halad@-344, .01% Versaset, 0.4% HR-5 & 0.3% Supe CBL (yield 1.44 ft ³ /sxs : Wt 13.0/gal)*

* Actual cement volume to be determined by caliper log.

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 1,500 psi. Annular type preventor will be pressure tested to 50% of the rated working pressure, not to exceed 2,500 psi. All casing strings will be pressure tested to 0.22 psi/ft. or 1,500 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 5M 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

	Interval to	Type	M.W.	Vis	W.L.	Sld's
Conductor	0' MD -40' MD	Spud Mud	$\pm 8.8 - 9.0$ ppg	50 - 60 sec	n/a	n/a
Surface	0' MD - 3,200' MD	Low solids non-dispersed	$\pm 9.0 - 9.2$ ppg	40 - 50 sec	$\geq 6 - 8$ cc	$\geq 6\%$
Intermediate to KOP	3,200' MD - 6,748' MD	Low solids non-dispersed	$\pm 9.2 - 9.4$ ppg	40 - 50 sec	$\geq 4 - 6$ cc	$\geq 6\%$
BIC to TD of Lateral	6,748' MD - 13,796 MD	Invert OBM	$\pm 10.0 - 10.3$ ppg	28 - 32 sec	n/c	1 - 2%

Sufficient mud materials to maintain mud properties, control lost circulation and to contain "kick" will be available at well site.

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: | Mud log | 2-Man Unit | 3,500' to 13,455' |
| | | OpenHole | Tripel Combo w/Spectral GR | |
| | | | DIL/FDC/CNL-SONIC | 1,000' to 7,733' |
| | | Lateral | MWD/GR | 8,845' to 13,455' |
| | | | Measurement while drilling-GR | |
| B) | Coring: | None | | |
| C) | Testing: | DST – None anticipated. Drill stem tests may be run on shows of interest | | |
| | | Manned mudlogging unit from 3,500' to 13,313' | | |
| | | Samples | 100 ft samples from 400' to 4,200' | |
| | | | 30 ft samples from 4,200' to 6,000' | |
| | | | 10 ft samples from 6,300' to 6,530' | |
| | | | 10 ft samples from 9,526' to 9,719' | |

ABNORMAL CONDITIONS

- | | | |
|----|--------------------------------|--|
| A) | Pressures: | No abnormal conditions are anticipated |
| | | Bottom hole pressure gradient – 0.49 psi/ft |
| B) | Temperatures: | No abnormal conditions are anticipated |
| C) | H ₂ S: | See attached H ₂ S plan in event H ₂ S is encountered. |
| D) | Estimated bottomhole pressure: | 3,852 psi |

ANTICIPATED START DATE

August 1, 2011

COMPLETION

The location pad will be of sufficient size to accommodate all completion activities and equipment. BHGR plans to complete the well as follows: Perforate and perform multi-stage slickwater frac in lateral section using plug & perf method for each stage. Perforation intervals and frac volumes will be determined once well logs are run. A sundry notice will be submitted with a revised completion program if warranted.

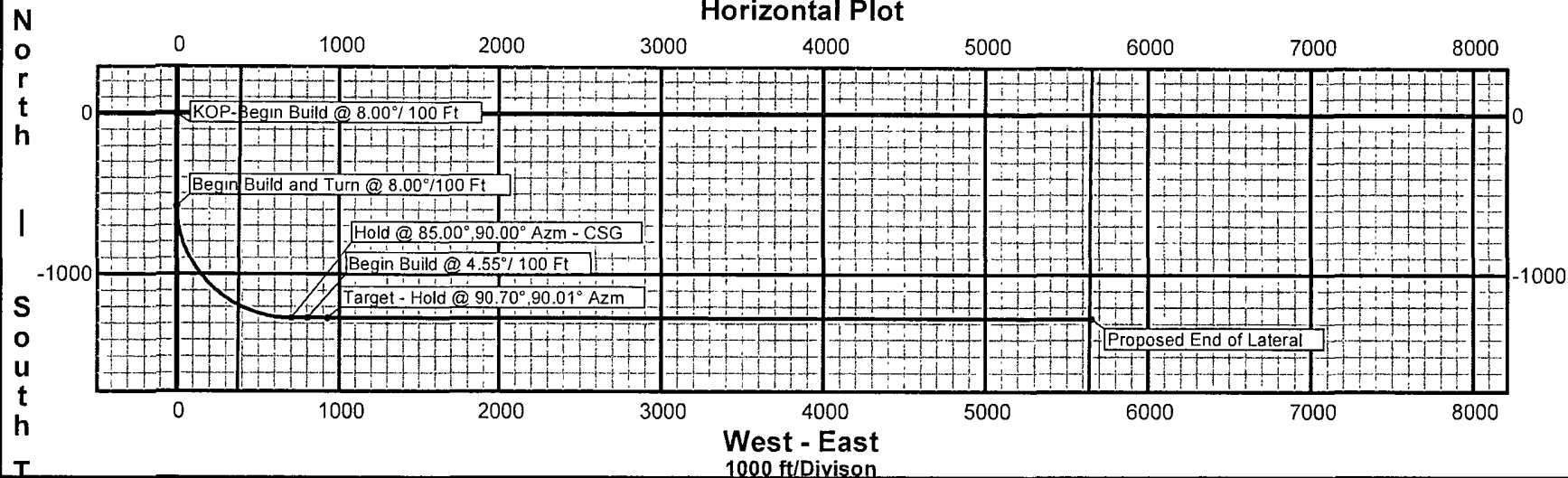


Job ID : 11xxx
 Company : Black Hills Gas Resources
 Lease/Well : Jicarilla 459-19 #724A
 Location : Rio Arriba County, NM
 Rig Name :

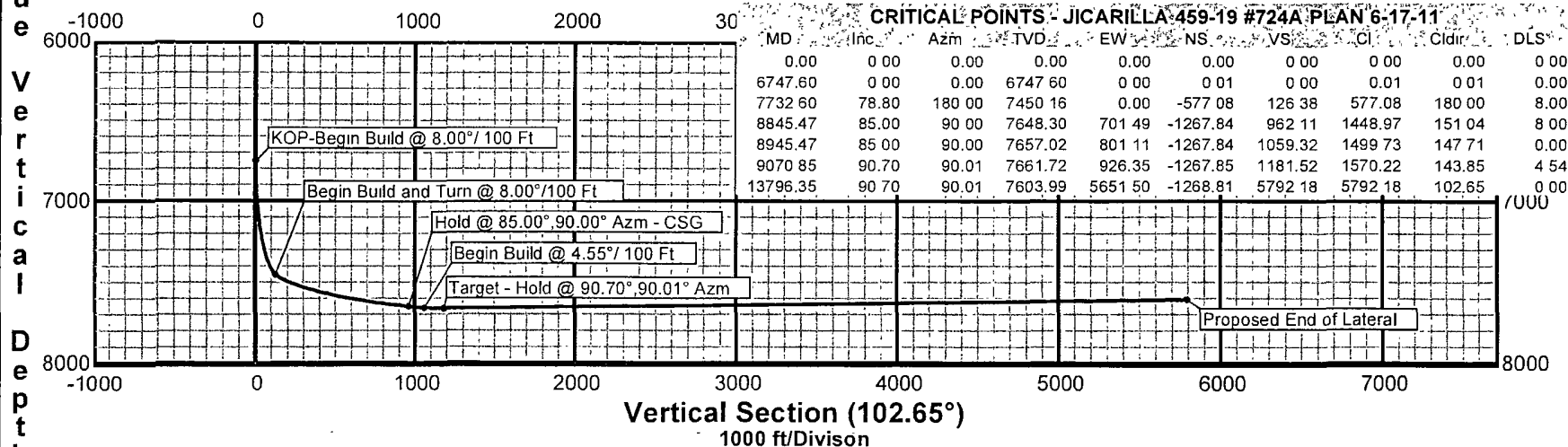
Elevation (To MSL) : 7204 ft
 RKB : 13 ft
 North Reference : True North
 Latitude : 36°47'55.0233" N
 Longitude : -107°11'4.6827" W



Horizontal Plot



Vertical Section Plot





Job Number: 11xxx
Company: Black Hills Gas Resources
Lease/Well: Jicarilla 459-19 #724A
Location: Rio Arriba County, NM
Rig Name:
State/County: NM/ Rio Arriba
Country: USA
API Number:

Elevation (To MSL): 7204.00 ft
RKB: 13.00 ft
Projection System: US State Plane 1983
Projection Group: New Mexico Central Zone
Projection Datum: GRS80
Magnetic Declination: 9.67
Grid Convergence: -0.55988 W
Date: Friday, June 17, 2011

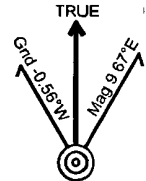
NOVA Directional, Inc.
Directional Survey Report

Calculated by HawkEye Software
 Minimum Curvature Method
 Vertical Section Plane 102.65°

Northing: 2111318.85 **Easting:** 1366778.96

Latitude: 36°47'55.0233" N **Longitude:** -107°11'4.6827" W

Well Location: 2372.99 FNL, 386.01 FEL, Section 19, T30N, R3W, Meridian 23, Rio Arriba County, NM
Direction Reference: True North



Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	EW (Ft)	NS (Ft)	VS (Ft)	Closure (Ft)	Closure Dir Deg	DLS %/100Ft
Surface									
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	0.00
1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.05	0.00
1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	0.05	0.00
1600.00	0.00	0.00	1600.00	0.00	0.00	0.00	0.00	0.04	0.00
1800.00	0.00	0.00	1800.00	0.00	0.00	0.00	0.00	0.04	0.00
2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.03	0.00
2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.03	0.00
2400.00	0.00	0.00	2400.00	0.00	0.00	0.00	0.00	0.03	0.00
2600.00	0.00	0.00	2600.00	0.00	0.00	0.00	0.00	0.03	0.00
2800.00	0.00	0.00	2800.00	0.00	0.00	0.00	0.00	0.02	0.00
3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.02	0.00
3200.00	0.00	0.00	3200.00	0.00	0.00	0.00	0.00	0.02	0.00
3400.00	0.00	0.00	3400.00	0.00	0.00	0.00	0.00	0.02	0.00
3600.00	0.00	0.00	3600.00	0.00	0.00	0.00	0.00	0.02	0.00
3800.00	0.00	0.00	3800.00	0.00	0.00	0.00	0.00	0.02	0.00
4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	0.02	0.00
4200.00	0.00	0.00	4200.00	0.00	0.00	0.00	0.00	0.02	0.00
4400.00	0.00	0.00	4400.00	0.00	0.00	0.00	0.00	0.01	0.00
4600.00	0.00	0.00	4600.00	0.00	0.00	0.00	0.00	0.01	0.00
4800.00	0.00	0.00	4800.00	0.00	0.00	0.00	0.00	0.01	0.00
5000.00	0.00	0.00	5000.00	0.00	0.00	0.00	0.00	0.01	0.00
5200.00	0.00	0.00	5200.00	0.00	0.00	0.00	0.00	0.01	0.00
5400.00	0.00	0.00	5400.00	0.00	0.00	0.00	0.00	0.01	0.00
5600.00	0.00	0.00	5600.00	0.00	0.00	0.00	0.00	0.01	0.00
5800.00	0.00	0.00	5800.00	0.00	0.01	0.00	0.01	0.01	0.00
6000.00	0.00	0.00	6000.00	0.00	0.01	0.00	0.01	0.01	0.00
6200.00	0.00	0.00	6200.00	0.00	0.01	0.00	0.01	0.01	0.00
6400.00	0.00	0.00	6400.00	0.00	0.01	0.00	0.01	0.01	0.00
6600.00	0.00	0.00	6600.00	0.00	0.01	0.00	0.01	0.01	0.00
KOP-Begin Build @ 8.00°/ 100 Ft									
6747.60	0.00	0.00	6747.60	0.00	0.01	0.00	0.01	0.01	0.00
6777.60	2.40	180.00	6777.59	0.00	-0.62	0.14	0.62	180.00	8.00
6807.60	4.80	180.00	6807.53	0.00	-2.51	0.55	2.51	180.00	8.00
6837.60	7.20	180.00	6837.36	0.00	-5.64	1.24	5.64	180.00	8.00

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	EW (Ft)	NS (Ft)	VS (Ft)	Closure (Ft)	Closure Dir Deg	DLS %/100Ft
6867.60	9.60	180.00	6867.04	0.00	-10.02	2.20	10.02	180.00	8.00
6897.60	12.00	180.00	6896.51	0.00	-15.64	3.43	15.64	180.00	8.00
6927.60	14.40	180.00	6925.71	0.00	-22.49	4.93	22.49	180.00	8.00
6957.60	16.80	180.00	6954.60	0.00	-30.56	6.69	30.56	180.00	8.00
6987.60	19.20	180.00	6983.13	0.00	-39.83	8.72	39.83	180.00	8.00
7017.60	21.60	180.00	7011.25	0.00	-50.29	11.01	50.29	180.00	8.00
7047.60	24.00	180.00	7038.90	0.00	-61.91	13.56	61.91	180.00	8.00
7077.60	26.40	180.00	7066.05	0.00	-74.68	16.36	74.68	180.00	8.00
7107.60	28.80	180.00	7092.63	0.00	-88.58	19.40	88.58	180.00	8.00
7137.60	31.20	180.00	7118.61	0.00	-103.58	22.68	103.58	180.00	8.00
7167.60	33.60	180.00	7143.94	0.00	-119.66	26.20	119.66	180.00	8.00
7197.60	36.00	180.00	7168.57	0.00	-136.77	29.95	136.77	180.00	8.00
7227.60	38.40	180.00	7192.46	0.00	-154.91	33.92	154.91	180.00	8.00
7257.60	40.80	180.00	7215.58	0.00	-174.03	38.11	174.03	180.00	8.00
7287.60	43.20	180.00	7237.87	0.00	-194.11	42.51	194.11	180.00	8.00
7317.60	45.60	180.00	7259.31	0.00	-215.10	47.10	215.10	180.00	8.00
7347.60	48.00	180.00	7279.84	0.00	-236.96	51.89	236.96	180.00	8.00
7377.60	50.40	180.00	7299.44	0.00	-259.67	56.87	259.67	180.00	8.00
7407.60	52.80	180.00	7318.07	0.00	-283.18	62.01	283.18	180.00	8.00
7437.60	55.20	180.00	7335.70	0.00	-307.45	67.33	307.45	180.00	8.00
7467.60	57.60	180.00	7352.31	0.00	-332.43	72.80	332.43	180.00	8.00
7497.60	60.00	180.00	7367.84	0.00	-358.10	78.42	358.10	180.00	8.00
7527.60	62.40	180.00	7382.30	0.00	-384.38	84.18	384.38	180.00	8.00
7557.60	64.80	180.00	7395.63	0.00	-411.25	90.06	411.25	180.00	8.00
7587.60	67.20	180.00	7407.84	0.00	-438.65	96.06	438.65	180.00	8.00
7617.60	69.60	180.00	7418.88	0.00	-466.55	102.17	466.55	180.00	8.00
7647.60	72.00	180.00	7428.74	0.00	-494.87	108.37	494.87	180.00	8.00
7677.60	74.40	180.00	7437.42	0.00	-523.59	114.66	523.59	180.00	8.00
7707.60	76.80	180.00	7444.87	0.00	-552.65	121.03	552.65	180.00	8.00
Begin Build and Turn @ 8.00%/100 Ft									
7732.60	78.80	180.00	7450.16	0.00	-577.08	126.38	577.08	180.00	8.00
7762.60	78.60	177.56	7456.03	0.63	-606.49	133.43	606.49	179.94	8.00
7792.60	78.43	175.12	7462.01	2.50	-635.83	141.68	635.83	179.77	8.00
7822.60	78.27	172.67	7468.07	5.63	-665.04	151.13	665.06	179.51	8.00
7852.60	78.14	170.22	7474.20	9.99	-694.08	161.75	694.15	179.18	8.00
7882.60	78.03	167.77	7480.39	15.59	-722.90	173.53	723.06	178.76	8.00
7912.60	77.94	165.32	7486.64	22.42	-751.43	186.43	751.76	178.29	8.00
7942.60	77.87	162.87	7492.93	30.45	-779.63	200.45	780.23	177.76	8.00
7972.60	77.82	160.41	7499.25	39.69	-807.47	215.56	808.44	177.19	8.00
8002.60	77.79	157.96	7505.58	50.11	-834.88	231.73	836.38	176.56	8.00
8032.60	77.79	155.50	7511.93	61.69	-861.81	248.93	864.01	175.91	8.00
8062.60	77.80	153.05	7518.27	74.42	-888.22	267.13	891.34	175.21	8.00
8092.60	77.84	150.59	7524.60	88.26	-914.07	286.30	918.32	174.48	8.00
8122.60	77.90	148.14	7530.91	103.21	-939.30	306.41	944.95	173.73	8.00
8152.60	77.98	145.69	7537.18	119.22	-963.88	327.41	971.23	172.95	8.00
8182.60	78.09	143.24	7543.40	136.28	-987.76	349.29	997.12	172.14	8.00
8212.60	78.21	140.79	7549.56	154.35	-1010.90	371.99	1022.62	171.32	8.00
8242.60	78.36	138.34	7555.65	173.41	-1033.25	395.48	1047.70	170.47	8.00
8272.60	78.52	135.90	7561.67	193.40	-1054.79	419.70	1072.37	169.61	8.00
8302.60	78.71	133.46	7567.59	214.31	-1075.46	444.63	1096.61	168.73	8.00
8332.60	78.91	131.02	7573.41	236.10	-1095.25	470.22	1120.41	167.83	8.00
8362.60	79.14	128.58	7579.12	258.72	-1114.10	496.42	1143.74	166.93	8.00
8392.60	79.38	126.15	7584.72	282.15	-1131.99	523.20	1166.62	166.00	8.00
8422.60	79.65	123.73	7590.18	306.33	-1148.88	550.49	1189.02	165.07	8.00
8452.60	79.93	121.31	7595.50	331.22	-1164.75	578.26	1210.93	164.13	8.00
8482.60	80.23	118.89	7600.67	356.79	-1179.56	606.45	1232.34	163.17	8.00

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	EW (Ft)	NS (Ft)	VS (Ft)	Closure (Ft)	Closure Dir Deg	DLS %/100Ft
8512.60	80.54	116.48	7605.68	382.98	-1193.30	635.01	1253.26	162.21	8.00
8542.60	80.87	114.07	7610.53	409.76	-1205.94	663.90	1273.65	161.23	8.00
8572.60	81.22	111.66	7615.19	437.05	-1217.46	693.06	1293.53	160.25	8.00
8602.60	81.59	109.26	7619.67	464.84	-1227.83	722.45	1312.88	159.26	8.00
8632.60	81.96	106.87	7623.97	493.07	-1237.03	752.00	1331.68	158.27	8.00
8662.60	82.36	104.48	7628.06	521.68	-1245.06	781.68	1349.94	157.27	8.00
8692.60	82.76	102.09	7631.95	550.63	-1251.90	811.42	1367.64	156.26	8.00
8722.60	83.18	99.71	7635.62	579.86	-1257.52	841.18	1384.78	155.24	8.00
8752.60	83.61	97.33	7639.07	609.34	-1261.94	870.90	1401.35	154.23	8.00
8782.60	84.05	94.96	7642.30	638.99	-1265.14	900.54	1417.35	153.20	8.00
8812.60	84.50	92.59	7645.29	668.77	-1267.10	930.03	1432.76	152.18	8.00
8842.60	84.96	90.23	7648.05	698.63	-1267.84	959.32	1447.58	151.14	8.00
Hold @ 85.00°,90.00° Azm - CSG									
8845.47	85.00	90.00	7648.30	701.49	-1267.84	962.11	1448.97	151.04	8.00
Begin Build @ 4.55°/ 100 Ft									
8945.47	85.00	90.00	7657.02	801.11	-1267.84	1059.32	1499.73	147.71	0.00
8975.47	86.36	90.00	7659.28	831.02	-1267.84	1088.50	1515.92	146.76	4.55
9005.47	87.73	90.01	7660.82	860.98	-1267.84	1117.74	1532.55	145.82	4.55
9035.47	89.09	90.01	7661.66	890.97	-1267.85	1147.00	1549.60	144.90	4.55
9065.47	90.46	90.01	7661.78	920.97	-1267.85	1176.27	1567.05	144.01	4.55
Target - Hold @ 90.70°,90.01° Azm									
9070.85	90.70	90.01	7661.72	926.35	-1267.85	1181.52	1570.22	143.85	4.54
9270.85	90.70	90.01	7659.28	1126.34	-1267.89	1376.66	1695.93	138.38	0.00
9470.85	90.70	90.01	7656.83	1326.32	-1267.93	1571.80	1834.88	133.71	0.00
9670.85	90.70	90.01	7654.39	1526.31	-1267.97	1766.93	1984.28	129.72	0.00
9870.85	90.70	90.01	7651.95	1726.29	-1268.01	1962.07	2141.95	126.30	0.00
10070.85	90.70	90.01	7649.50	1926.28	-1268.05	2157.21	2306.19	123.36	0.00
10270.85	90.70	90.01	7647.06	2126.26	-1268.09	2352.35	2475.69	120.81	0.00
10470.85	90.70	90.01	7644.62	2326.25	-1268.13	2547.49	2649.45	118.60	0.00
10670.85	90.70	90.01	7642.17	2526.23	-1268.17	2742.63	2826.68	116.66	0.00
10870.85	90.70	90.01	7639.73	2726.22	-1268.21	2937.77	3006.76	114.95	0.00
11070.85	90.70	90.01	7637.29	2926.20	-1268.26	3132.91	3189.22	113.43	0.00
11270.85	90.70	90.01	7634.84	3126.19	-1268.30	3328.05	3373.66	112.08	0.00
11470.85	90.70	90.01	7632.40	3326.17	-1268.34	3523.19	3559.79	110.87	0.00
11670.85	90.70	90.01	7629.96	3526.16	-1268.38	3718.33	3747.34	109.78	0.00
11870.85	90.70	90.01	7627.51	3726.14	-1268.42	3913.47	3936.12	108.80	0.00
12070.85	90.70	90.01	7625.07	3926.13	-1268.46	4108.61	4125.95	107.90	0.00
12270.85	90.70	90.01	7622.63	4126.11	-1268.50	4303.75	4316.70	107.09	0.00
12470.85	90.70	90.01	7620.18	4326.10	-1268.54	4498.89	4508.25	106.34	0.00
12670.85	90.70	90.01	7617.74	4526.08	-1268.58	4694.03	4700.50	105.66	0.00
12870.85	90.70	90.01	7615.30	4726.07	-1268.62	4889.17	4893.37	105.03	0.00
13070.85	90.70	90.01	7612.85	4926.05	-1268.66	5084.31	5086.79	104.44	0.00
13270.85	90.70	90.01	7610.41	5126.04	-1268.70	5279.45	5280.71	103.90	0.00
13470.85	90.70	90.01	7607.96	5326.02	-1268.74	5474.59	5475.05	103.40	0.00
13670.85	90.70	90.01	7605.52	5526.01	-1268.78	5669.73	5669.79	102.93	0.00
Proposed End of Lateral									
13796.35	90.70	90.01	7603.99	5651.50	-1268.81	5792.18	5792.18	102.65	0.00
GEODETIC INFORMATION									
Latitude: 36°47'55.0233" N Dec. Latitude: 36.79861759 Longitude: -107°11'4.6827" W Dec. Longitude: -107.18463407 Geodetic Group: US State Plane 1983					Geodetic Zone: New Mexico Central Zone Geodetic Datum: NAD83 Easting: 1366778.96 Northing: 2111318.85 Convergence: -0.56				

MAGNETICS INFORMATION

Magnetic Model: C:\HawkEye\IGRF2010.MIF
 Date for Magnetics: 04/21/2011
 Latitude: 36°47'55.0233" N
 Longitude: -107°11'4.6827" W
 Magnetic Declination: 9.67
 Total Correction(Mag to Grid): 10.23

Field Strength (nt): 50918
 B-X Component (nt): 22304
 B-Y Component (nt): 3801
 B-Z Component (nt): 45615
 B-Horz Component (nt): 22626
 Dip Angle: 63.62

TARGET DATA

Name	Shape	Latitude	Longitude	Subsea TVD (Ft)	NS (Ft)	EW (Ft)	Side A (Ft)	Side B (Ft)	Diameter (Ft)
459-19 724 Target	CYLINDER	36°47'42.4718" N	-107°09'55.1993" W	387.00	-1268.81	5651.50	100.00	100.00	100.00



Black Hills Gas Resources

Hydrogen Sulfide Drilling Operations Plan

I. Hydrogen Sulfide Training

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H_2S).
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H_2S on metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H_2S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H_2S zone (within 3 days or 500 feet) and weekly H_2S and well control drills for all personnel in each crew. The initial training sessions shall include a review of the site specific H_2S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

II. H_2S safety equipment and Systems

Note: All H_2S safety equipment and systems (if necessary) will be installed, tested, and operational when drilling reaches a depth of 500 feet above the three days prior to penetrating the first zone containing or reasonably expected to contain H_2S .

A. Well control equipment:

1. Choke manifold with a minimum of one remote choke.
2. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.

B. Protective equipment for essential personnel

1. Mark II Surniveair 30-minute units located in the doghouse and at briefing areas, as indicated on will site diagram.
- C. H₂S detection and monitoring equipment:
1. Two portable H₂S monitors positioned on location for best coverage and response. These units have warning lights and aquilbesirens when H₂S levels of 10ppm.
- D. Visual warning systems:
1. Wind direction indicators as shown on well site diagram.
 2. Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used when appropriate. See example attached.
- E. Mud program:
1. The mud programs has been designed to minimize the volume of H₂S circulated to the surface. Proper mud weight, safe drilling practices and the use of H₂S scavengers will minimize hazards when penetrating H₂S bearing zones.
- F. Metallurgy:
1. All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H₂S service.
 2. All elastomers used for packing and seals shall be H₂S trim.
- G. Communication:
1. Cellular telephone communications in company vehicles.
- H. Well testing:
1. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill stem testing operations conducted in an H₂S environment will use the closed chamber method of testing.



TABLE 1

Jicarilla 459-19 #724A
SE/NE Sec.19 T30N R3W
Wells in a 1-Mile Radius
Black Hills Gas Resources

ST	STAT	ACTUAL WELL NAME	FIELD	FORMATION	TD	API#	Q1/Q4	SEC	TWN	RNG	T#	COUNTY	BASIN	PROD	OPERATOR
NM	ACT	Jicarilla 459-18 #13	E Blanco, Cabresto Canyon	PC, San Jose	4,040	30-039-26058	NESW	18	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459 #1	E. Blanco, Cabresto Canyon	PC, Ojo Alamo	4,060	30-039-24087	NESE	18	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459 #1 SJ	Cabresto Canyon	San Jose	1,800	30-039-26241	NESE	18	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459-17 #741	E Blanco	PC	3,860	30-039-30172	SWSW	17	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459-17 #10	E. Blanco, Cabresto Canyon	PC, Ojo Alamo	4,010	30-039-25854	SWSW	17	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459 #2	E. Blanco, Cabresto Canyon	PC, Ojo Alamo	4,150	30-039-24157	SWNW	20	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459 #2 SJ	Cabresto Canyon	San Jose	2,100	30-039-26232	SWNW	20	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459-20 #7	E. Blanco, Cabresto Canyon	PC, San Jose, Ojo Alamo	4,070	30-039-25786	SWNE	20	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459-20 #8	E. Blanco	PC	4,090	30-039-25787	NESW	20	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459-20 #34	E Blanco, Cabresto Canyon, Basin	PC, San Jose, Fruitland Coal	3,977	30-039-29303	NESE	20	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459-20 #12	E Blanco, Cabresto Canyon	PC, Ojo Alamo	4,090	30-039-25855	SWSE	20	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459-20 #12 SJ	Cabresto Canyon	San Jose	1,950	30-039-25941	SWSE	20	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459-20 #17	E. Blanco	PC	4,012	30-039-27778	SWSW	20	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459-19 #9	E. Blanco, Cabresto Canyon	PC, Ojo Alamo	3,970	30-039-25764	SENE	19	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459-19 #18	E. Blanco, Basin	PC, Fruitland Coal	3,960	30-039-29323	SENE	19	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	Proposed	Jicarilla 459-19 #141	E. Blanco	PC		30-039-29879	SESW	19	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	Proposed	Jicarilla 459-19 #713	Basin	Dakota		30-339-00173	NWNE	19	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 459 #5	E. Blanco, Cabresto Canyon	PC, San Jose	4,250	30-039-24344	SESE	19	30N	3W	459	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	Monitor Well	Jicarilla 464-29 #716	Basin	Mancos	8,136	30-039-29888	NENW	29	30N	3W	464	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 464-29 #16	E Blanco	PC	4,023	30-039-27776	NENW	29	30N	3W	464	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 464 #7	E Blanco, Cabresto Canyon	PC, Ojo Alamo	4,215	30-039-24301	NWNW	29	30N	3W	464	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 464 #3	E. Blanco	PC	4,220	30-039-24308	SENE	30	30N	3W	464	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 464 #3 SJ	Cabresto Canyon	San Jose	2,100	30-039-27236	SENE	30	30N	3W	464	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	Drilling	Jicarilla 464-30 #724	Basin	Mancos		30-039-30278	SENE	30	30N	3W	464	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	ACT	Jicarilla 464-30 #10	E. Blanco, Cabresto Canyon	PC, Nacimiento	4,130	30-039-25788	SENE	30	30N	3W	464	Rio Arriba	San Juan	Gas	Black Hills Gas Resources
NM	Abandon	Many Canyons 30-04-24 #34	E Blanco	PC	3,851	30-039-30016	NESE	24	30N	4W	Fee	Rio Arriba	San Juan	Gas	Black Hills Gas Resources

5000 psi System

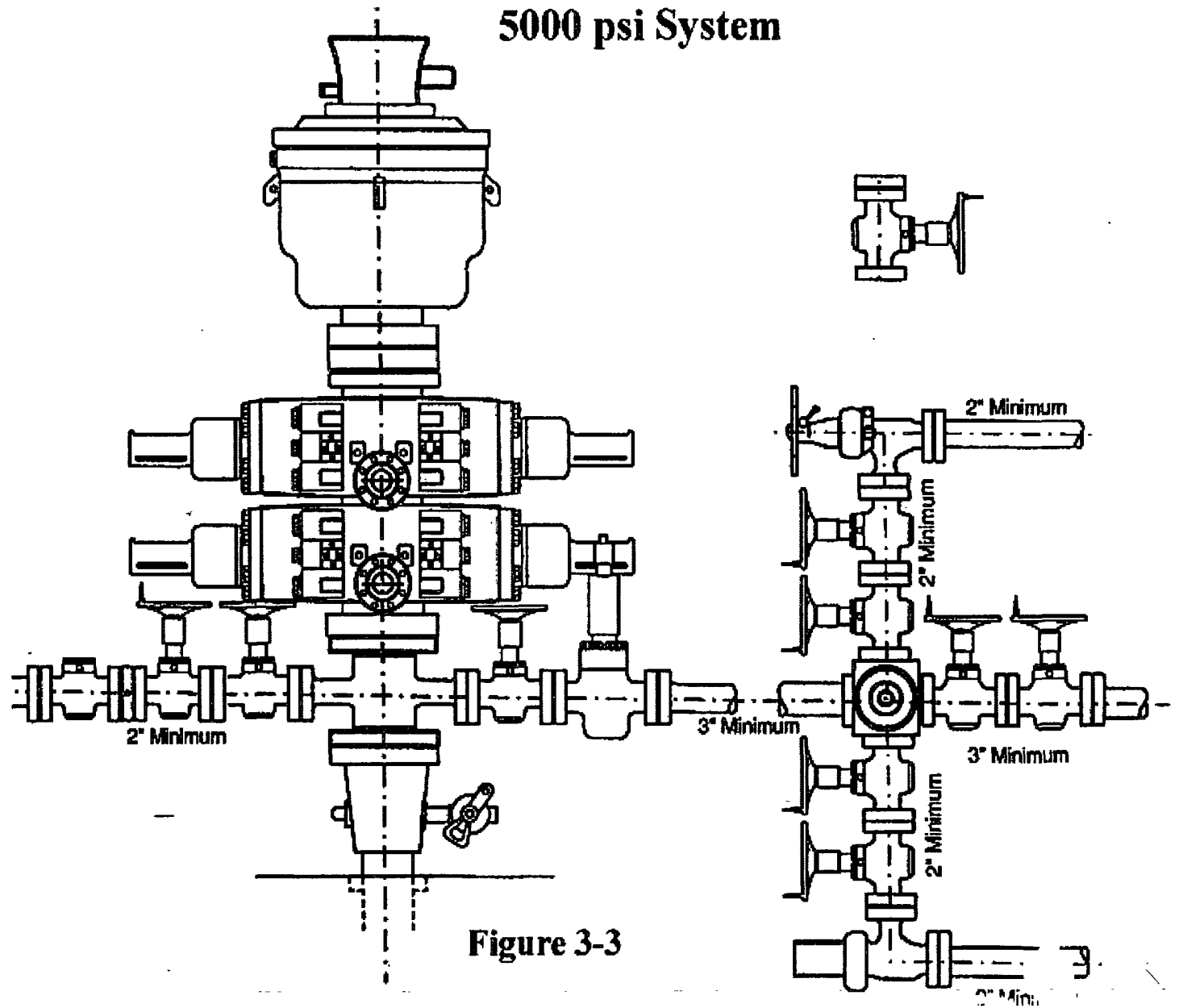


Figure 3-3