

RCVD JUN 15 '12
OIL CONS. DIV.
DIST. 3

RECEIVED

Form 3160-3
(August 2007)

APR 23 2012

FORM APPROVED
OMB NO. 1004-0137
Expires: July 31, 2010

UNITED 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		5. Lease Serial No. 7 Contract 458	
1b. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name Jicarilla Apache	
2. Name of Operator Black Hills Gas Resources		7. If Unit or CA Agreement, Name and No. Jicarilla 458-06 #733C	
3a. Address P.O. Box 249/3200 N 1st St Bloomfield, NM 87413		8. Lease Name and Well No. 30-039-31118	
3b. Phone No. (include area code) (505) 634-5104		9. API Well No. 30-039-31118	
4. Location of well (Report location clearly and in accordance with any State requirements. *) At surface 1,320' FSL & 1,784' FEL SW/SE (UL O) L0411 At proposed prod zone 2,182' FNL & 1,155' FEL SE/NE Sec. 4 T30N R3W		10. Field and Pool, or Exploratory Basin Mancos	
14. Distance in miles and direction from the nearest town or post office* 20 miles southwest of Dulce, New Mexico		11. Sec., T, R, M., or Blk. And Survey or Area 64 Section 6, T30N & R3W, N.M.P.M. BH Sec 4, T30N, R3W	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) Approx. 2702'		12. County or Parish Rio Arriba	
16. No of acres in lease Approx. 2,560 Acres		13. State New Mexico	
17. Spacing Unit dedicated to this well 620, 61 160 acres		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 75' (Twin Location)	
19. Proposed Depth 7,635' bgs		20. BLM/ BIA Bond No on file BLM- NMB000230 / BIA 190-010-577	
21. Elevations (Show whether DF, RT, GR, etc.) 7,056' GR		22. Aproximate date work will start* August 1, 2012	
23. 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.
- 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)
- Bond to cover the operations unless covered by existing bond on file(see item 20 above)
- Operator certification.
- Such other site specific information and/ or plans as may be required by the a authorized officer.

25. Signature <i>[Signature]</i>	Name (Printed/ Typed) Daniel Manus	Date April 23, 2012
Title Regulatory Technician		
Approved By (Signature) <i>[Signature]</i>	Name (Printed/ Typed) AFM	Date 6/11/12
Title AFM	Office 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		

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 LANDS

Hold C104
for Directional Survey
and "As Drilled" plat

NMOC
AV

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

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

JUL 11 2012 ea

NOTIFY AZTEC OCD 24 HRS.
PRIOR TO CASING & CEMENT

A COMPLETE C-144 MUST BE SUBMITTED TO AND APPROVED BY THE NMOC FOR: A PIT, CLOSED LOOP SYSTEM, BELOW GRADE TANK, OR PROPOSED ALTERNATE METHOD, PURSUANT TO NMOC 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

Albuquerque Field Office
Bureau of Land Management

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 30-039-31118	² Pool Code 71599-97232	³ Pool Name BASIN MANCOS
⁴ Property Code 22859	⁵ Property Name JICARILLA 458-6	⁶ Well Number 733C
⁷ GRID No. 013925	⁸ Operator Name BLACK HILLS GAS RESOURCES	⁹ Elevation 7056'

¹⁰ Surface Location

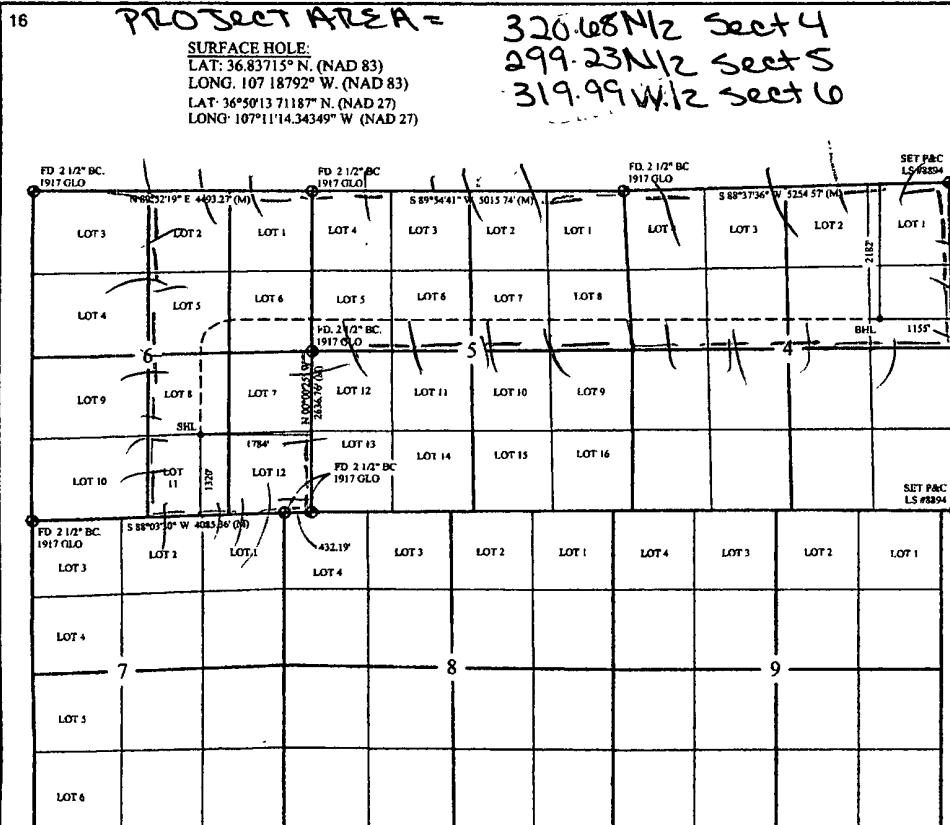
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	6	30-N	3-W	11	1320	SOUTH	1784	EAST	RIO ARriba

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
H	4	30-N	3-W		2182	NORTH	1155	EAST	RIO ARriba

¹² Dedicated Acres 939.90 620 btm	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R-13449
--	-------------------------------	----------------------------------	------------------------------------

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.

Daniel Mancos 4/23/12
Signature Date
DANIEL MANCOS
Printed Name
Daniel.Mancos@blackhillsgas.com
E-mail Address

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.

JULY 23 2012
Date of Survey
Signature and Seal of Professional Surveyor
8894
03-12
CERTIFIED PROFESSIONAL LAND SURVEYOR
Certificate Number

"BOTTOM HOLE":
BHL FOOTAGES ARE APPROXIMATE AND
PROVIDED BY BLACK HILLS GAS RESOURCES.
CLIENT

BOTTOM HOLE:
LAT: 36.82776° N. (NAD 83)
LONG: 107.15115° W. (NAD 83)
LAT: 36°49'39.91740" N. (NAD 27)
LONG: 107°09'01.99853" W. (NAD 27)



Black Hills Gas Resources

Jicarilla 458-06 #733C

Surface Location: 1,320' FSL 1,784' FEL (SW/SE)

Sec.6 T30N R3W

Bottom Hole Location: 2,182' FNL 1,155' FEL (SE/NE)

Sec.4 T30N R3W

Rio Arriba County, New Mexico

Lease: Contract 458

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 NOS process includes an onsite meeting which was held on October 25, 2011 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 – 7,056'

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

San Jose	Surface	Sandstone, shales & siltstones
Nacimiento	1,974'	Sandstone, shales & siltstones
Ojo Alamo	3,142'	Sandstone, shales & siltstones
Fruitland Coal	3,669'	Sandstone, shales, siltstones & coal
Pictured Cliffs	3,712'	Sandstone, shales & siltstones
Lewis	3,795'	Sandstone, shales & siltstones
Mesaverde	5,689'	Sandstone, shales & siltstones
Mancos	6,625'	Sandstone, shales & siltstones
Lower Niobrara	8,056'	Sandstone, shales & siltstones

TOTAL DEPTH

7,632' TVD

18,889' MD

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

Nacimiento	1,974'	Gas, water, sand
Ojo Alamo	3,142'	Gas, water, sand
Fruitland Coal	3,669'	Gas, water, sand
Pictured Cliffs	3,712'	Gas, water, sand
Lewis	3,795'	Gas, water, sand
Mesaverde	5,689'	Gas, water, sand
Mancos	6,625'	Gas, water, sand

HORIZONTAL DRILLING PROGRAMKick-Off Point is estimated to be $\pm 5,060'$ TVD**CASING PROGRAM**

Depth	Hole Diameter	Casing Diameter	Casing Weight and Grade	Cement
0'-600' MD	17 1/2"	13 3/8"	54.5# J-55	Surface 20bbl H ₂ O flush followed by ± 618 skts Premium cmt (126bbbls) w/ 0.125 lbm/sks Poly-E-Fake & 1% CaCl. Displace w/ ± 70 bbbls H ₂ O Yield 1.16 ft ³ /sks : wt 15.80 lbm/gal
0'-5061' MD	12 1/4"	9 5/8"	40# L-80 HC	Intermediate Lead: 20bbl H ₂ O flush, 20bbl SUPER FLUSH 101, 20bbl H ₂ O Spacer, followed w/ 1404skts of Light Premium w/ 5 lbm/sks Gilsonite, 0.125 lbm/sks Poly-E- Fake. Yield 1.82ft ³ /sks : wt. 12.50 lbm/gal. Tail: 180skts Premium w/ 0.125 lbm/sks Poly-E-Flake, 0.2% Halad@-9. Slurry yield 1.15ft ³ /sks : wt 15.80 lbm/gal, Displace w/ 375 bbbls H ₂ O.
3370'-8631' MD	8 3/4"	7"	23# L-80 HC	Liner 40bbl Tuned SPACER (12 lbm/gal) w/ 0.1gal/bbl Musol, 0.1gal/bbl SEM-7, 175.4 lbm/bbl Barite 690skts HALCEM Premium w/ 0.4% Halad@-334, 2.5 lbm/sks Kol-seal, 0.3% D-Air 3000, 0.05% HR-5, Yield 1.31ft ³ /sks : wt 13.5 lbm/gal. Displace cmt w/ OBM (9 lbm/gal) 217bbl
0'-18,889' MD	6 1/4"	4 1/2"	11.6# P-110	Long String Cement 40bbl Turned Spacer III, .05gal/bbl Musol A, 0.5 gal/bbl SEM-7, 291 lbm/bbl Barite, 375bbl WBM (13.5 lbm/gal) (displace out OBM), 10bbl Tuned Spacer III (14lbm/gal), 0.5gal/bbl SEM-7, 0.5gal/bbl Musol A, 291 lbm/bbl Darite Unfoamed Lead: 75skts Type V cmt, 0.2% Halad@-766, 0.3% Halad@-344. Slurry yield 1.18ft ³ /sks : wt 15.6 lbm/gal Foamed Lead: 655skts Type V cmt, 0.2% Halad@-766, 0.3% Halad@-344, 2% Chem-foamer 760. Yield 1.18ft ³ /sks : wt 15.6 lbm/gal Foamed Tail: 447skts 50/50 Poz cmt, 0.2% Versaset, 0.15% Halad@-766, 25 Chem-foamed 760. Yield 1.43ft ³ /sks : wt 13 lbm/gal Unfoamed Tail: 58skts 50/50 Poz cmt, 0.2 % Versaset, 0.15% Halad@-766. Yield 1.43ft ³ : wt 13 lbm/gal, Displace cmt w/ 293bbl H ₂ O

* 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 preventers and related pressure control equipment will be pressure tested to 3,000 psi. Annular type preventer 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 preventer as per Onshore Order No. 2 for 5M systems.

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.	Std's
Surface	0' -600'	Fresh Water / Spud Mud	±8.4 - 9.0 ppg	28 - 32 sec	n/c	1 - 5%
Intermediate	600' MD -5061' MD	Low solids non-dispersed	±9.0 - 10.2 ppg	40 - 50 sec	≤ 6 - 8 cc	≥ 6%
Liner	3370' MD - 8632' MD	Low solids non-dispersed	±10.0 - 11.9 ppg	40 - 50 sec	≥ 4 - 6 cc	≥ 6%
KOP to Csg Pt		Raise as deviation rises				
BIC to	8632' MD 18,889' MD	Invert OBM	±11.9 - 13.0 ppg	28 - 32 sec	n/c	1 - 2%
TD of Lateral		Recommend 12.5 ppg				

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 4500' to 18,889'
- Lateral MWD/GR 8632' to 18,889'
- 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 4000' to 16000'
- Samples 100 ft samples from 700' to 4200'
- 30 ft samples from 4200' to 7100'
- 10 ft samples from 7100' to 8632'
- 10 ft samples from 8632' to 18,889'

ABNORMAL CONDITIONS

- A) Pressures: No abnormal conditions are anticipated
- Bottom hole pressure gradient - 0.62 psi/ft
- B) Temperatures: No abnormal conditions are anticipated
- C) H₂S: See attached H₂S plan in event H₂S is encountered.
- D) Estimated bottomhole pressure: 4,732 psi

ANTICIPATED START DATE

August 1, 2012

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.

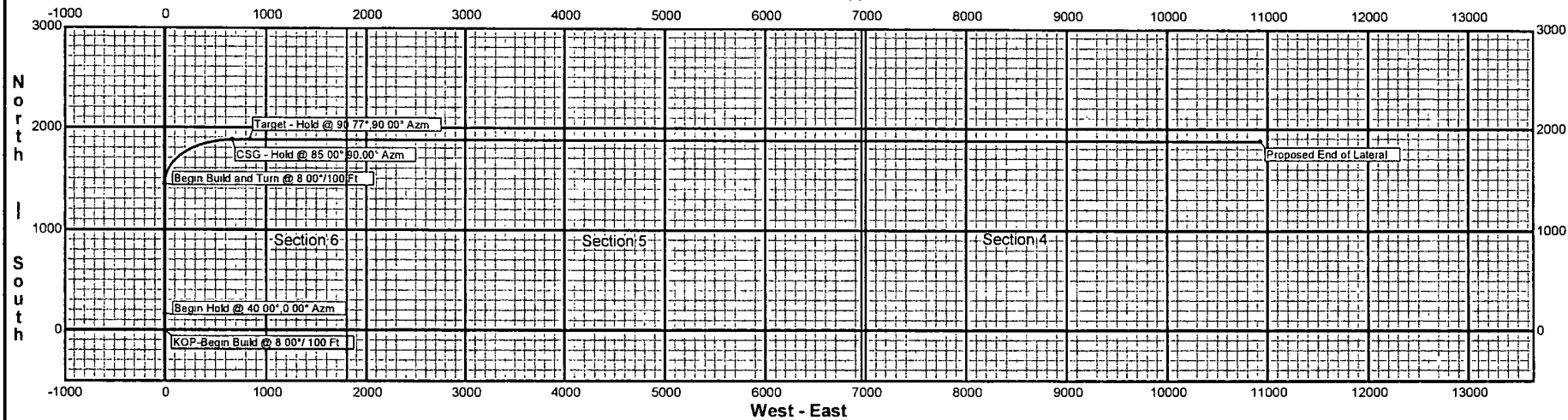


Job ID : 11xxx
Company : Black Hills Gas Resources
Lease/Well : Jicarilla 458-06 #733C
Location : Rio Arriba County, NM
Rig Name :

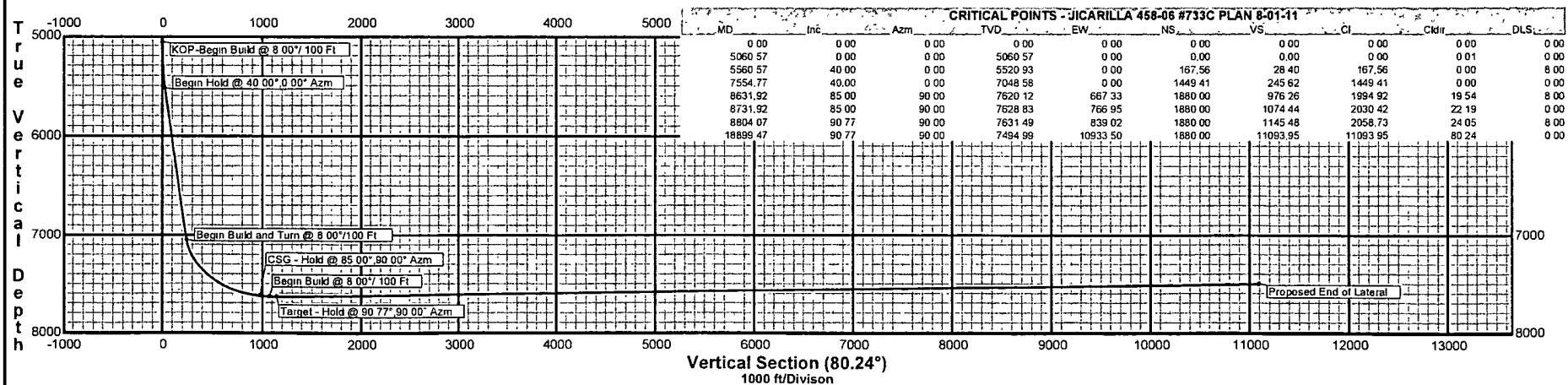
Elevation (To MSL) : 7055 ft
RKB : 20 ft
North Reference : True North
Latitude : 36°50'13.9560" N
Longitude : -107°11'16.7280" W



Horizontal Plot



Vertical Section Plot





Job Number: 11xxx
Company: Black Hills Gas Resources
Lease/Well: Jicarilla 458-06 #733C
Location: Rio Arriba County, NM
Rig Name:
State/County: NM/ Rio Arriba
Country: USA
API Number:

Elevation (To MSL): 7055.00 ft
RKB: 20.00 ft
Projection System: US State Plane 1983
Projection Group: New Mexico Central Zone
Projection Datum: GRS80
Magnetic Declination: 9.64
Grid Convergence: -0.56239 W
Date: Monday, August 01, 2011

NOVA Directional, Inc.
Directional Survey Report

Calculated by HawkEye Software

Minimum Curvature Method

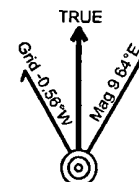
Vertical Section Plane 80.24°

Northing: 2125378.60 Easting: 1365937.18

Latitude: 36°50'13.9560" N Longitude: -107°11'16.7280" W

Well Location: 1342 FSL, 1803 FEL, Section 6, T30N, R3W, Meridian 23, Rio Arriba County, NM

Direction Reference: True North



Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (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
500.00	0.00	0.00	500.00	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
1500.00	0.00	0.00	1500.00	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
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	0.03	0.00
3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	0.02	0.00
3500.00	0.00	0.00	3500.00	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
4500.00	0.00	0.00	4500.00	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
KOP-Begin Build @ 8.00°/ 100 Ft									
5060.57	0.00	0.00	5060.57	0.00	0.00	0.00	0.00	0.01	0.00
5090.57	2.40	0.00	5090.56	0.63	0.00	0.11	0.63	0.00	8.00
5120.57	4.80	0.00	5120.50	2.52	0.00	0.43	2.52	0.00	8.00
5150.57	7.20	0.00	5150.33	5.65	0.00	0.96	5.65	0.00	8.00
5180.57	9.60	0.00	5180.01	10.03	0.00	1.70	10.03	0.00	8.00
5210.57	12.00	0.00	5209.48	15.65	0.00	2.65	15.65	0.00	8.00
5240.57	14.40	0.00	5238.68	22.51	0.00	3.82	22.51	0.00	8.00
5270.57	16.80	0.00	5267.57	30.57	0.00	5.18	30.57	0.00	8.00
5300.57	19.20	0.00	5296.10	39.84	0.00	6.75	39.84	0.00	8.00
5330.57	21.60	0.00	5324.22	50.30	0.00	8.53	50.30	0.00	8.00
5360.57	24.00	0.00	5351.87	61.92	0.00	10.50	61.92	0.00	8.00
5390.57	26.40	0.00	5379.02	74.69	0.00	12.66	74.69	0.00	8.00
5420.57	28.80	0.00	5405.60	88.59	0.00	15.02	88.59	0.00	8.00
5450.57	31.20	0.00	5431.58	103.59	0.00	17.56	103.59	0.00	8.00
5480.57	33.60	0.00	5456.91	119.67	0.00	20.29	119.67	0.00	8.00
5510.57	36.00	0.00	5481.54	136.79	0.00	23.19	136.79	0.00	8.00
5540.57	38.40	0.00	5505.43	154.92	0.00	26.26	154.92	0.00	8.00
Begin Hold @ 40.00°, 0.00° Azm									
5560.57	40.00	0.00	5520.93	167.56	0.00	28.41	167.56	0.00	8.00
6060.57	40.00	0.00	5903.95	488.95	0.00	82.89	488.95	0.00	0.00
6560.57	40.00	0.00	6286.97	810.35	0.00	137.37	810.35	0.00	0.00
7060.57	40.00	0.00	6670.00	1131.74	0.00	191.85	1131.74	0.00	0.00
Begin Build and Turn @ 8.00°/100 Ft									
7554.77	40.00	0.00	7048.58	1449.41	0.00	245.71	1449.41	0.00	0.00
7584.77	39.93	3.74	7071.58	1468.66	0.63	249.59	1468.66	0.02	8.00
7614.77	39.97	7.47	7094.58	1487.83	2.51	254.69	1487.83	0.10	8.00
7644.77	40.14	11.19	7117.55	1506.87	5.64	261.01	1506.88	0.21	8.00

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (Ft)	VS (Ft)	Closure (Ft)	Closure Dir Deg	DLS %/100Ft
7674.77	40.42	14.88	7140.44	1525.75	10.01	268.52	1525.79	0.38	8.00
7704.77	40.82	18.52	7163.21	1544.45	15.63	277.22	1544.53	0.58	8.00
7734.77	41.33	22.09	7185.83	1562.93	22.47	287.09	1563.09	0.82	8.00
7764.77	41.95	25.58	7208.25	1581.15	30.52	298.12	1581.45	1.11	8.00
7794.77	42.67	28.98	7230.44	1599.10	39.77	310.28	1599.59	1.42	8.00
7824.77	43.49	32.28	7252.36	1616.72	50.21	323.55	1617.50	1.78	8.00
7854.77	44.40	35.48	7273.96	1634.00	61.82	337.92	1635.16	2.17	8.00
7884.77	45.40	38.57	7295.21	1650.89	74.58	353.36	1652.57	2.59	8.00
7914.77	46.47	41.56	7316.08	1667.38	88.45	369.83	1669.73	3.04	8.00
7944.77	47.63	44.43	7336.52	1683.44	103.42	387.30	1686.61	3.52	8.00
7974.77	48.85	47.20	7356.51	1699.03	119.47	405.76	1703.22	4.02	8.00
8004.77	50.14	49.87	7376.00	1714.13	136.56	425.17	1719.56	4.56	8.00
8034.77	51.48	52.43	7394.95	1728.70	154.67	445.49	1735.61	5.11	8.00
8064.77	52.88	54.90	7413.35	1742.74	173.76	466.68	1751.38	5.69	8.00
8094.77	54.33	57.28	7431.15	1756.20	193.81	488.71	1766.86	6.30	8.00
8124.77	55.82	59.57	7448.32	1769.07	214.76	511.55	1782.06	6.92	8.00
8154.77	57.36	61.78	7464.85	1781.34	236.59	535.14	1796.98	7.57	8.00
8184.77	58.93	63.92	7480.68	1792.96	259.27	559.46	1811.61	8.23	8.00
8214.77	60.53	65.98	7495.81	1803.92	282.74	584.45	1825.95	8.91	8.00
8244.77	62.17	67.98	7510.19	1814.21	306.97	610.07	1840.00	9.60	8.00
8274.77	63.84	69.92	7523.81	1823.81	331.91	636.29	1853.77	10.31	8.00
8304.77	65.53	71.81	7536.64	1832.69	357.53	663.04	1867.24	11.04	8.00
8334.77	67.24	73.64	7548.66	1840.85	383.78	690.29	1880.43	11.78	8.00
8364.77	68.97	75.43	7559.85	1848.27	410.60	717.98	1893.33	12.53	8.00
8394.77	70.72	77.18	7570.18	1854.94	437.97	746.08	1905.94	13.28	8.00
8424.77	72.49	78.89	7579.65	1860.83	465.81	774.52	1918.25	14.05	8.00
8454.77	74.27	80.57	7588.23	1865.96	494.10	803.27	1930.27	14.83	8.00
8484.77	76.07	82.22	7595.91	1870.30	522.77	832.26	1941.98	15.62	8.00
8514.77	77.87	83.84	7602.67	1873.84	551.78	861.45	1953.39	16.41	8.00
8544.77	79.69	85.44	7608.50	1876.59	581.07	890.79	1964.49	17.20	8.00
8574.77	81.51	87.02	7613.40	1878.53	610.61	920.22	1975.28	18.01	8.00
8604.77	83.34	88.59	7617.36	1879.67	640.32	949.70	1985.74	18.81	8.00
CSG - Hold @ 85.00°,90.00° Azm									
8631.92	85.00	90.00	7620.12	1880.00	667.33	976.37	1994.92	19.54	8.00
Begin Build @ 8.00°/ 100 Ft									
8731.92	85.00	90.00	7628.83	1880.00	766.95	1074.55	2030.42	22.19	0.00
8761.92	87.40	90.00	7630.82	1880.00	796.88	1104.05	2041.91	22.97	8.00
8791.92	89.80	90.00	7631.55	1880.00	826.87	1133.60	2053.80	23.74	8.00
Target - Hold @ 90.77°,90.00° Azm									
8804.07	90.77	90.00	7631.49	1880.00	839.02	1145.58	2058.73	24.05	8.00
9304.07	90.77	90.00	7624.73	1880.00	1338.97	1638.30	2308.08	35.46	0.00
9804.07	90.77	90.00	7617.97	1880.00	1838.93	2131.01	2629.84	44.37	0.00
10304.07	90.77	90.00	7611.21	1880.00	2338.88	2623.73	3000.80	51.21	0.00
10804.07	90.77	90.00	7604.45	1880.00	2838.84	3116.45	3404.91	56.49	0.00
11304.07	90.77	90.00	7597.69	1880.00	3338.79	3609.17	3831.70	60.62	0.00
11804.07	90.77	90.00	7590.93	1880.00	3838.75	4101.89	4274.39	63.91	0.00
12304.07	90.77	90.00	7584.17	1880.00	4338.70	4594.60	4728.50	66.57	0.00
12804.07	90.77	90.00	7577.41	1880.00	4838.65	5087.32	5191.05	68.77	0.00
13304.07	90.77	90.00	7570.65	1880.00	5338.61	5580.04	5659.96	70.60	0.00
13804.07	90.77	90.00	7563.89	1880.00	5838.56	6072.76	6133.78	72.15	0.00
14304.07	90.77	90.00	7557.13	1880.00	6338.52	6565.48	6611.44	73.48	0.00
14804.07	90.77	90.00	7550.36	1880.00	6838.47	7058.20	7092.19	74.63	0.00
15304.07	90.77	90.00	7543.60	1880.00	7338.43	7550.91	7575.41	75.63	0.00
15804.07	90.77	90.00	7536.84	1880.00	7838.38	8043.63	8060.68	76.51	0.00
16304.07	90.77	90.00	7530.08	1880.00	8338.33	8536.35	8547.64	77.29	0.00
16804.07	90.77	90.00	7523.32	1880.00	8838.29	9029.07	9036.02	77.99	0.00
17304.07	90.77	90.00	7516.56	1880.00	9338.24	9521.79	9525.61	78.62	0.00

Measured Depth (Ft)	INC Deg	AZM Deg	TVD (Ft)	NS (Ft)	EW (Ft)	VS (Ft)	Closure (Ft)	Closure Dir Deg	DLS "/100Ft
17804.07	90.77	90.00	7509.80	1880.00	9838.20	10014.50	10016.21	79.18	0.00
18304.07	90.77	90.00	7503.04	1880.00	10338.15	10507.22	10507.70	79.69	0.00
18804.07	90.77	90.00	7496.28	1880.00	10838.11	10999.94	10999.95	80.16	0.00
Proposed End of Lateral									
18899.47	90.77	90.00	7494.99	1880.00	10933.50	11093.95	11093.95	80.24	0.00

GEODETIC INFORMATION

Latitude: 36°50'13.9560" N
Dec. Latitude: 36.83721000
Longitude: -107°11'16.7280" W
Dec. Longitude: -107.18798001
Geodetic Group: US State Plane 1983

Geodetic Zone: New Mexico Central Zone
Geodetic Datum: NAD83
Easting: 1365937.18
Northing: 2125378.60
Convergence: -0.56

MAGNETICS INFORMATION

Magnetic Model: C:\HawkEye\IGRF2010.MIF
Date for Magnetics: 08/01/2011
Latitude: 36°50'13.9560" N
Longitude: -107°11'16.7280" W
Magnetic Declination: 9.64
Total Correction(Mag to Grid): 10.21

Field Strength (nt): 50912
B-X Component (nt): 22283
B-Y Component (nt): 3786
B-Z Component (nt): 45620
B-Horz Component (nt): 22603
Dip Angle: 63.64

TARGET DATA

Name	Shape	Latitude	Longitude	Subsea TVD (Ft)	NS (Ft)	EW (Ft)	Side A (Ft)	Side B (Ft)	Diameter (Ft)
jic733C PBHL	CYLINDER	36°50'32.5662" N	-107°09'2.2303" W	420.00	1880.00	10933.50	100.00	100.00	100.00

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 will 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 will 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 required to carry documentation that they have received the proper training.

II. H₂S safety equipment and Systems

Note: All H_2S safety equipment and systems (if necessary) will be in stalled, tested, and operational when drilling reaches a depth of 500 feet above the three days prior to penetrating the first zone containing or reason ably 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 well 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 aquidilbesirens 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 lesting 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.

