

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

2006 FEB 28 PM 3 06

1a. Type of Work  
DRILL

5. Lease Number  
SF-078499-A  
Unit Reporting Number  
RECEIVED  
FARMINGTON NM

1b. Type of Well  
GAS

6. If Indian, All. or Tribe

2. Operator  
**BURLINGTON**  
RESOURCES Oil & Gas Company

7. Unit Agreement Name

3. Address & Phone No. of Operator  
PO Box 4289, Farmington, NM 87499  
(505) 326-9700

8. Farm or Lease Name  
Hardie  
9. Well Number  
#5M

4. Location of Well  
1030' FNL, 1320' FEL surface  
1960' FNL, 825' FEL bottom hole

10. Field, Pool, Wildcat  
Blanco Mesaverde/Basin Dakota

Surface-Latitude 36°39.0843'N, Longitude 107°38.7159' W  
Bottom Hole-Lat. 36°38.9308'N, Longitude 107°38.6143' W

11. Sec., Twn, Rge, Mer. (NMPM)

W H Sec. 23, T28N, R08W

API # 30-045-33197

14. Distance in Miles from Nearest Town  
14.4 miles to Blanco, NM Post Office

12. County  
San Juan

13. State  
NM

15. Distance from Proposed Location to Nearest Property or Lease Line  
825'

16. Acres in Lease

17. Acres Assigned to Well  
320 E/2

18. Distance from Proposed Location to Nearest Well, Drlg, Compl, or Applied for on this Lease  
308'

19. Proposed Depth  
7293'

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

20. Rotary or Cable Tools  
Rotary

21. Elevations (DF, FT, GR, Etc.)  
6256' GR

22. Approx. Date Work will Start

23. Proposed Casing and Cementing Program  
See Operations Plan attached

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

24. Authorized by: Joni Clark  
Regulatory/Compliance Specialist

Date 2/28/06

PERMIT NO.

APPROVAL DATE

APPROVED BY

TITLE

DATE

Archaeological Report attached

Threatened and Endangered Species Report attached

NOTE: This format is issued in lieu of U.S. BLM Form 3160-3

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

HOLD C104 FOR

directional  
survey

NMOCD

DISTRICT I  
1625 N. French Dr., Hobbs, N.M. 88240

DISTRICT II  
811 South First, Artesia, N.M. 88210

DISTRICT III  
1000 Rio Brasos Rd., Aztec, N.M. 87410

DISTRICT IV  
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals & Natural Resources Department

Form C-102  
Revised August 15, 2000

Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

OIL CONSERVATION DIVISION

2040 South Pacheco  
Santa Fe, NM 87505

2006 FEB 28 PM 3 06

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-045 33197	Pool Code 72319 / 71599	Pool Name Blanco Mesaverde / Basin Dakota
Property Code 16065 35572	Property Name HARDIE	Well Number 5M
OGED No. 14538	Operator Name BURLINGTON RESOURCES OIL AND GAS COMPANY LP	Elevation 6256'

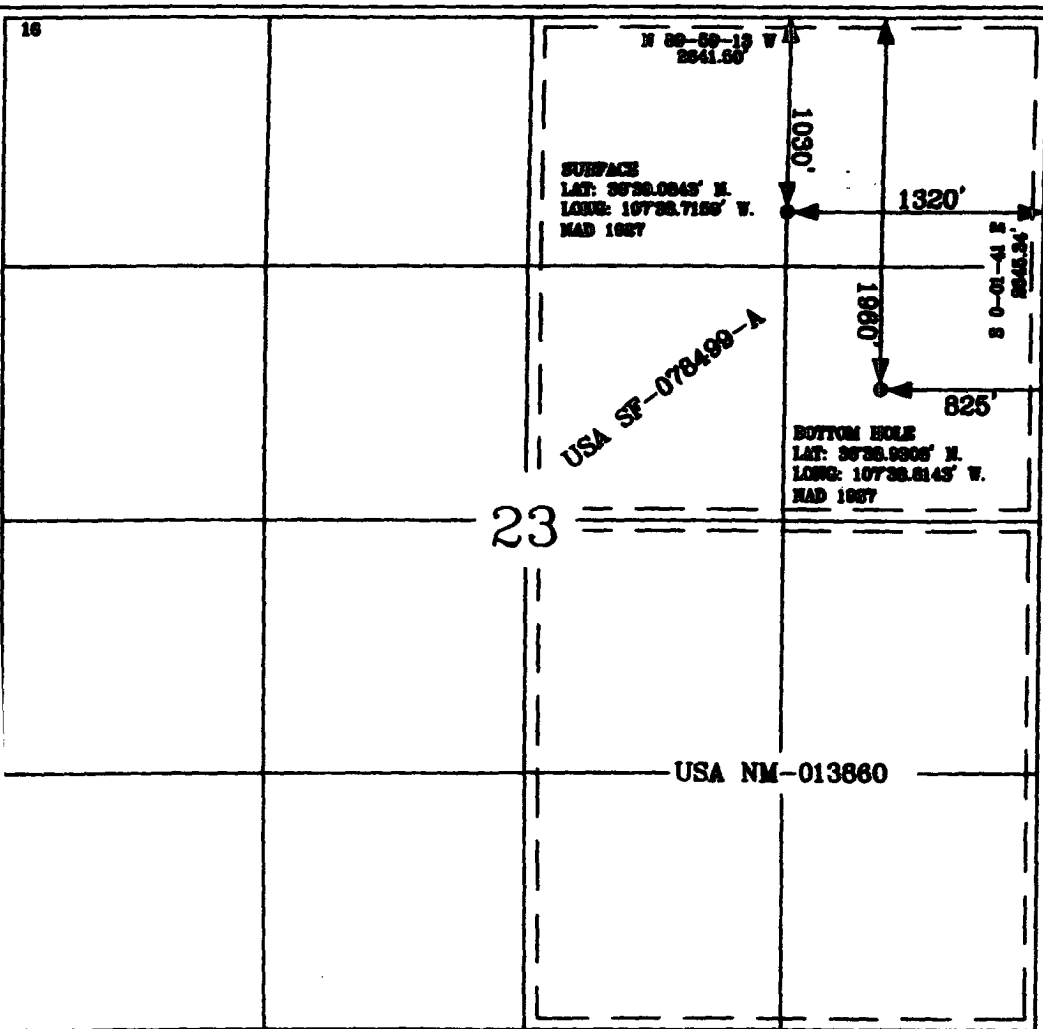
10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	23	28-N	8-W		1030'	NORTH	1320'	EAST	SAN JUAN

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	23	28-N	8-W		1980'	NORTH	825'	EAST	SAN JUAN
Dedicated Acres MV/DK 320 ac E2			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



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature  
Patsy Clugston  
Printed Name  
Sr. Regulatory Specialist  
Title  
01/25/06  
Date

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.

Date of Survey: 1-23-06  
Signature  
NEW MEXICO  
15703  
Certificate Number 15703

Office

Energy, Minerals and Natural Resources

May 27, 2004

District I

1625 N. French Dr., Hobbs, NM 88240

District II

1301 W. Grand Ave., Artesia, NM 88210

District III

1000 Rio Brazos Rd., Aztec, NM 87410

District IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

## OIL CONSERVATION DIVISION

1220 South St. Francis Dr.

Santa Fe, NM 87505

WELL API NO.

30-039- 33197

5. Indicate Type of Lease

STATE ☐FEE ☐

6. State Oil &amp; Gas Lease No.

SF-078499-A

7. Lease Name or Unit Agreement Name

Hardie

8. Well Number

5M

9. OGRID Number

14538

10. Pool name or Wildcat

Blanco Mesaverde/Basin Dakota

SUNDRY NOTICES AND REPORTS ON WELLS  
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:

Oil Well ☐Gas Well ☒

Other

2. Name of Operator

BURLINGTON RESOURCES OIL &amp; GAS COMPANY LP

3. Address of Operator

3401 E. 30TH STREET, FARMINGTON, NM 87402

4. Well Location

Unit Letter A : 1030 feet from the North line and 1320 feet from the East line  
 Section 23 Township 28N Range 8W NMPM County San Juan

11. Elevation (Show whether DR, RKB, RT, GR, etc.)

Pit or Below-grade Tank Application

☐ or Closure ☐

Pit type

New Drill

Depth to Groundwater

&gt;100'

Distance from nearest fresh water well

&gt;1000'

Distance from nearest surface water

&gt;200'

&lt;1000

Pit Liner Thickness:

12

mil

Below-Grade Tank:

Volume

bbls;

Construction Material

## 12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

## NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐TEMPORARILY ABANDON ☐PULL OR ALTER CASING ☐PLUG AND ABANDON ☐CHANGE PLANS ☐MULTIPLE COMPL ☐

OTHER:

New Drill ☒

## SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐COMMENCE DRILLING OPNS. ☐CASING/CEMENT JOB ☐ALTERING CASING ☐P AND A ☐OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

New Drill, Lined:

Burlington Resources proposes to construct a new drilling pit and an associated vent/flare pit. Based on Burlington's interpretation of the Ecosphere's risk ranking criteria, the new drilling pit will be a lined pit as detailed in Burlington's Revised Drilling / Workover Pit Construction / Operation Procedures dated November 11, 2004 on file at the NMOCDC office. A portion of the vent/flare pit will be designed to manage fluids and that portion will be lined as per the risk ranking criteria. Burlington Resources anticipates closing these pits according to the Drilling / Workover Pit Closure Procedure dated August 2, 2004 on file at the NMOCDC office.

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

SIGNATURE

TITLE

Sr. Regulatory Specialist

DATE

2/28/2006

Type or print name

Joni Clark

E-mail address:

jclark@br-inc.com

Telephone No.

505-326-9700

For State Use Only

APPROVED BY

TITLE

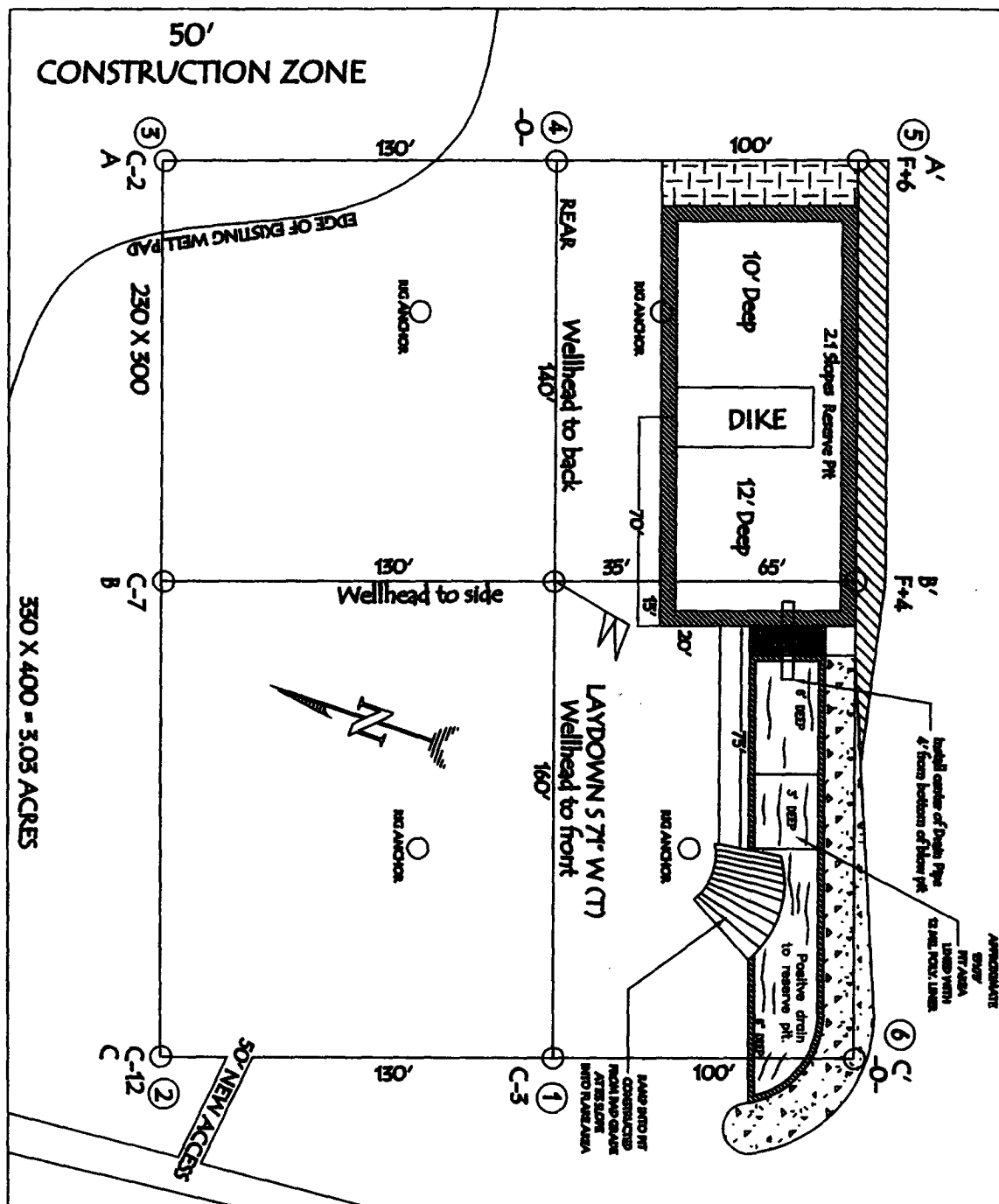
DEPUTY OIL &amp; GAS INSPECTOR, DIST. 43

DATE

MAR 27 2006

Conditions of Approval (if any):

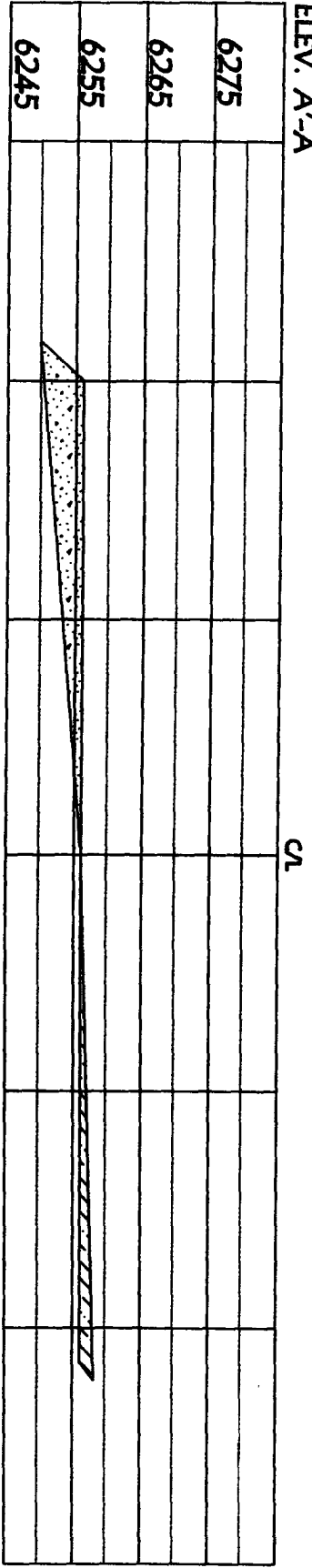
**RESERVE PIT DIKE: TO BE 8" ABOVE DEEP SIDE (OVERFLOW - 3' WIDE AND 1' ABOVE SHALLOW SIDE).  
BLOW PIT: OVERFLOW PIPE 4' ABOVE BOTTOM OF BLOW PIT.**



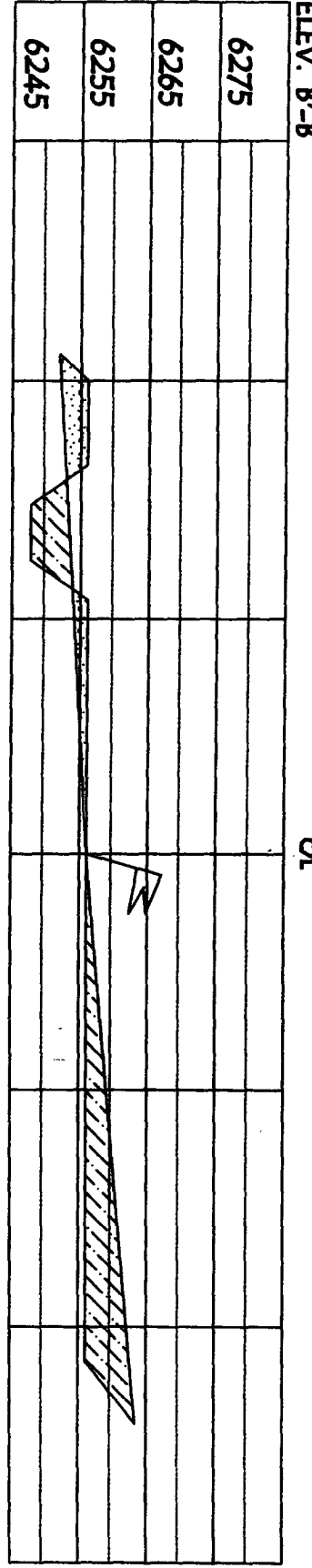
**PIPLINES OR CABLES ON WELL PAD AND OR ACCESS ROAD AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION.**

**BURLINGTON RESOURCES OIL & GAS COMPANY LP**  
 HARDIE 5M, 1030' FNL & 1320' FEL  
 SECTION 23, T-28-N, R-8-W, NMPM, SAN JUAN COUNTY, NM  
 GROUND ELEVATION: 6256', DATE: OCTOBER 18, 2005

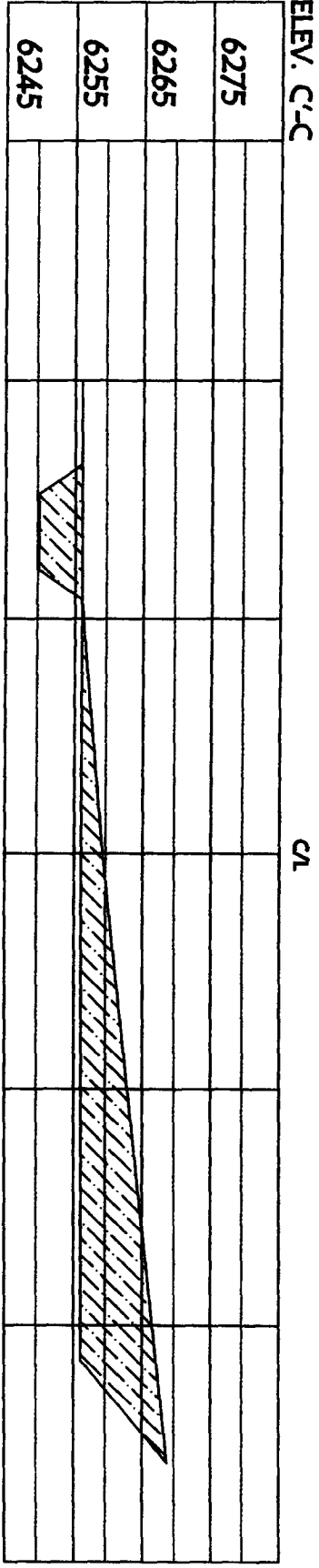
ELEV. A'-A



ELEV. B'-B



ELEV. C'-C



NOTE: VECTOR SURVEYS IS NOT LIABLE FOR UNDERGROUND UTILITIES OR PIPELINES.  
 CONTRACTOR SHOULD CALL ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED BURIED  
 PIPELINES OR CABLES ON WELL PAD AND OR ACCESS ROAD AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION.

## Hardie #5M OPERATIONS PLAN

**Well Name:**     **Hardie #5M**

**Location**     San Juan County, New Mexico  
Surface:     1030' FNL, 1320' FEL, Section 23, T-28-N, R-8-W  
                 Latitude 36° 39.0843'N, Longitude 107° 38.7159'W  
Bottom Hole:     1960' FNL, 825' FEL, Section 23, T-28-N, R-8-W  
                 Latitude 36° 38.9308'N, Longitude 107° 38.6143'W

**Formation**     Blanco Mesa Verde/Basin Dakota  
**Elevation**     6256' GL

<b><u>Formation Tops</u></b>	<b><u>Top (TVD)</u></b>	<b><u>Top (TMD)</u></b>	<b><u>Contents</u></b>
Surface	San Jose		
Ojo Alamo	1835'	1878'	aquifer
Kirtland	1970'	2018'	gas
Fruitland	2647'	2719'	gas
Pictured Cliffs	2792'	2870'	gas
Lewis	2925'	3008'	gas
Huerfano Bentonite	3330'	3428'	gas
Chacra	3747'	3860'	gas
Upper Cliff House	4330'	4464'	gas
Massive Cliff House	4467'	4603'	gas
Menefee	4552'	4688'	gas
<b>Intermediate set point: 100' into Menefee</b>			
Massive Point Lookout	5020'	5157'	gas
Mancos	5442'	5579'	gas
Gallup	6226'	6363'	gas
Greenhorn	6943'	7080'	gas
Graneros	7002'	7139'	gas
Two Wells	7050'	7187'	gas
Upper Cubero	7172'	7309'	gas
Lower Cubero	7195'	7332'	gas
Encinal	7263'	7400'	
<b>TD</b>	<b>7293'</b>	<b>7430'</b>	

### **Logging Program**

Cased Hole – CBL-GR- TD to surface  
Open Hole - None

### **Mud Program**

<b><u>Interval (TMD)</u></b>	<b><u>Type</u></b>	<b><u>Weight</u></b>	<b><u>Vis.</u></b>	<b><u>Fluid Loss</u></b>
0- 350'	Spud	8.4-9.0	40-50	no control
350- 4789'	Non-dispersed	8.4-9.0	30-60	less than 8
4789'- 7463'	Air/Air Mist/Nitrogen	n/a	n/a	n/a

### **Drilling** (Reference Plot #1)

#### **Surface Hole**

Drill to surface casing point of 350' and set 9 5/8" casing.

#### **Intermediate Hole**

Mud drill to kick off point of 400'. At this point the well will be directionally drilled by building 4.0 degrees per 100' with an azimuth of 151.89 degrees. The end of the build will be at a TVD of 777', a TMD of 781', a reach of 50.4', and an angle of 15.24 degrees. This angle and azimuth will be held to a TVD of 4275', a TMD of 4408', and a reach of 1008'. At this point the well will be drilled with a drop of 4.0 degrees per 100'. The end of the drop will be at a TVD of 4652', a TMD of 4789', a reach of 1054', and an angle of 0.0 degrees. 7" casing will be set at 4789' TMD,

#### **Production Hole**

From the shoe of the intermediate string, the well will be drilled vertically with an air hammer to a TMD of 7430' (TVD of 7293'). 4 1/2" casing will be set at this point.

## Materials

### Casing program

<u>Hole Size</u>	<u>Interval (TMD)</u>	<u>Csg. Size</u>	<u>Weight</u>	<u>Grade</u>
12 1/4"	0' - 350'	9 5/8"	32.3#	H-40
8 3/4"	350' - 4789'	7"	23#	L-80
6 1/4"	4789' - 7430'	4 1/2"	11.6#	L-80

### Tubing Program

<u>Hole Size</u>	<u>Interval (TMD)</u>	<u>Csg. Size</u>	<u>Weight</u>	<u>Grade</u>
2 3/8"	0' - 7430'	2 3/8"	4.7#	J-55

### Wellhead Equipment

9 5/8" x 7" X 4 1/2" x 2 3/8" - 11" (2000 psi) wellhead assembly

### Cementing:

9 5/8" surface casing conventionally drilled: **200% excess cement to bring cement to surface**

Run **329 ft<sup>3</sup> (257 sks)** Type III cement with 3% CaCl<sub>2</sub> and 1/4 pps celloflake (1.28 sks/ ft<sup>3</sup>). Wait on cement appropriate time until cement achieves 250 psi compressive strength at 60° F prior to nipple up of BOPE. Wait on cement for 8 hrs for conventionally set holes before pressure testing or drilling out from under surface.

7" production casing: **50% excess cement to bring cement to surface**

Lead with **955 ft<sup>3</sup> (449 sks)** Premium Lite w/ 3% CaCl<sub>2</sub>, 0.25 pps Cello-Flake, 5 pps LCM-1, 0.4% FL-52 and 0.4% SMS (2.13 sks/ft<sup>3</sup>). Tail with **124 ft<sup>3</sup> (90 sks)** Type III cmt. w/ 1% CaCl<sub>2</sub>, 0.25 pps Cello-Flake and 0.2% FL-52 (1.38 sks/ft<sup>3</sup>). If cement does not circulate to surface, a CBL or a temperature survey will be run to determine TOC.

4 1/2" production casing: **30% excess cement to achieve 100' overlap with intermediate casing**

Run **364 ft<sup>3</sup> (184 sks)** Premium Lite HS FM + 0.25pps Cello-Flake, 0.3% CD-32, 6.25pps LCM-1, 1% FL-52 (1.98 sks/ft<sup>3</sup>).

Saw tooth guide shoe on bottom. Bowspring centralizers will be run in accordance with Onshore Order #2.

### BOP and Tests:

Surface to production TD - 11", 2000 psi double gate BOP stack (Reference Figure #1).

Prior to drilling out surface casing, test BOPE and casing to 600 psi for 30 minutes.

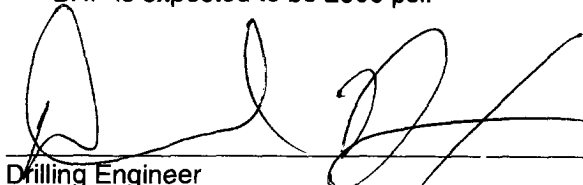
Surface to Total Depth - choke manifold (Reference Figure #2).

Pipe rams will be actuated at least once each day and blind rams will be actuated once each trip to test proper functioning. A Kelly cock valve and drill string safety valves to fit each drill string will be maintained and available on the rig floor.

BOPE tests will be performed using an appropriately sized test plug and test pump and will be recorded using calibrated test gauges and a properly calibrated strip or chart recorder. The test will be recorded in the driller's log and will include a low pressure test requirement of 250 psig held for five minutes and a high pressure test requirement held for ten minutes as described in Onshore Order No. 2 or otherwise noted in the APD. A successful BOPE test using a test plug is considered when no pressure drop occurs over the duration of the test. Test gauges and recorders must be of the proper range and resolution commensurate with the authorized test pressure. Where the intermediate casing strings are used, only one BOPE test will be necessary contingent upon the test being conducted to the highest approved test pressure to which BOPE will be exposed. Casing pressure tests must be held for 30 minutes with no more than 10 percent pressure drop during the duration of the test.

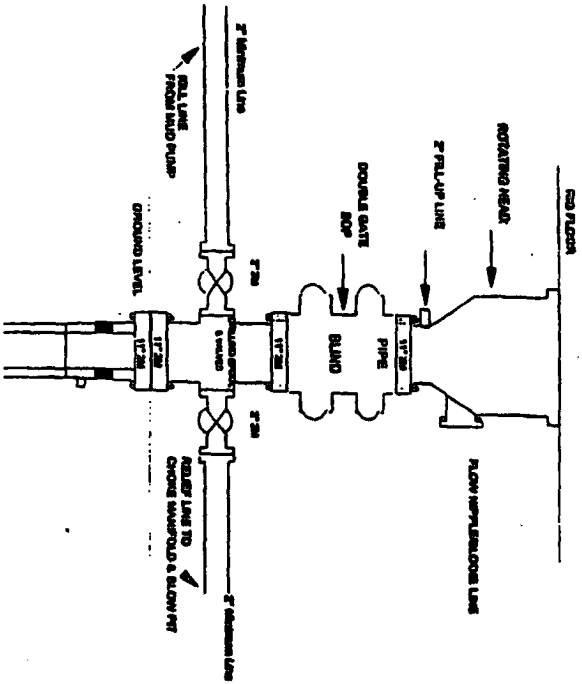
### Additional Information:

- This gas is dedicated.
- The East half of section 23 is dedicated to the Mesaverde and Dakota of this well.
- New casing will be utilized.
- Pipe movement (reciprocation) will be done if hole conditions permit.
- No abnormal pressure zones are expected.
- BHP is expected to be 2000 psi.

 2/28/05  
Drilling Engineer Date

# Burlington Resources

## Drilling Rig 2000 psi System



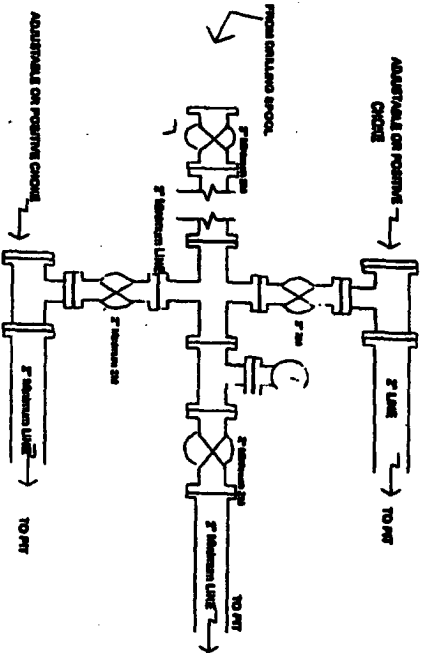
BOP installation from Surface Casing Point to Total Depth. 17\"/>

Figure #1

4-20-01

# BURLINGTON RESOURCES

## Drilling Rig Choke Manifold Configuration 2000 psi System



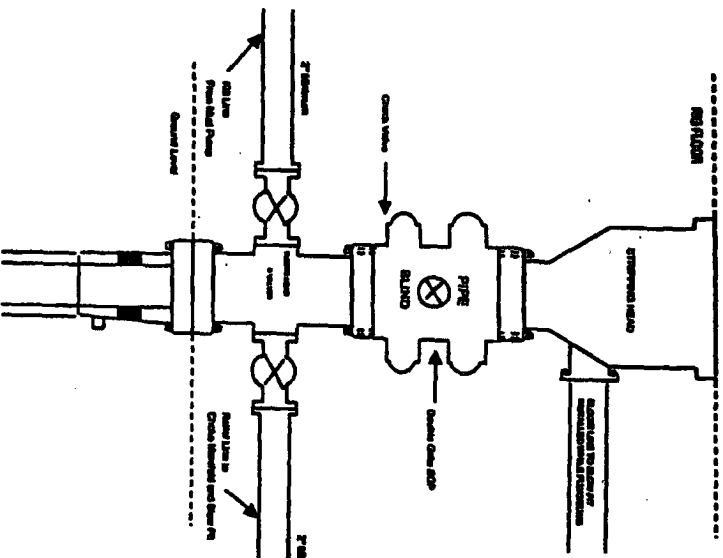
Choke manifold installation from Surface Casing Point to Total Depth. 2,000psi working pressure equipment with two chokes.

Figure #3

4-20-01

# BURLINGTON RESOURCES

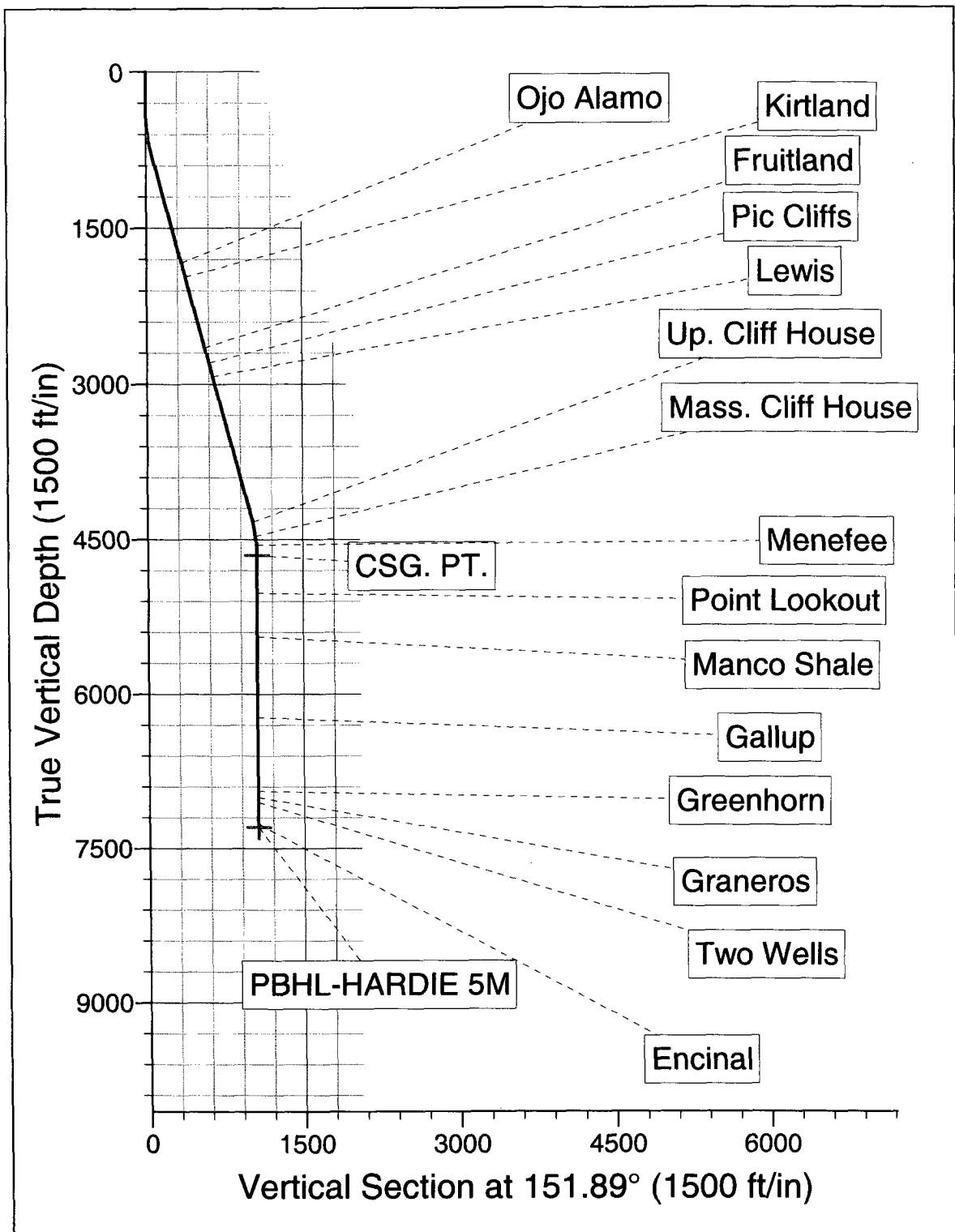
## Completion/Workover Rig BOP Configuration 2,000 psi System



Minimum BOP installation for all Completion/Workover Operations. 7-1/16\"/>

Figure #2





Plot 1: Hardie 5M