

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0136
Expires November 30, 2000

RECEIVED

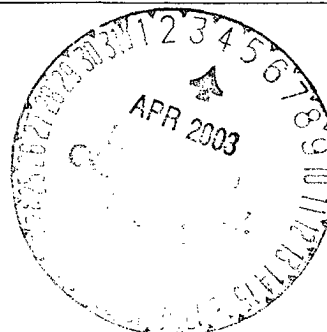
1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMSF-078213
1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator MARKWEST RESOURCES, INC.		7. If Unit or CA Agreement, Name and No. N/A 32228
3a. Address 155 INVERNESS DR., SUITE 200 ENGLEWOOD, CO. 80112	3b. Phone No. (include area code) (303) 290-8700	8. Lease Name and Well No. LAS COLINAS #100
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 2005' FNL & 414' FWL At proposed prod. zone SAME		9. API Well No. 30-045-31301
14. Distance in miles and direction from nearest town or post office* 3 AIR MILES NORTH OF FARMINGTON POST OFFICE		10. Field and Pool, on Exploratory FULCHER PICTURED CLIFFS
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 791'	16. No. of Acres in lease 2,480	11. Sec., T., R., M., or Blk. and Survey or Area E 26-30n-13w NMPM
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Completed: 1,576' Applied for: 21'	19. Proposed Depth 1,900'	12. County or Parish SAN JUAN
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 5,742' GL	22. Approximate date work will start* FEB. 15, 2003	13. State NM
23. Estimated duration 5 DAYS TO DRILL		17. Spacing Unit dedicated to this well 160 ACRES (NW4)
24. Attachments		20. BLM/BIA Bond No. on file KA6084 (BLM - NATIONWIDE)

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

1. Well plat certified by a registered surveyor.	4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
2. A Drilling Plan.	5. Operator certification.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).	6. Such other site specific information and/or plans as may be required by the authorized officer.

Comments

HOLD C104 FOR **NSL**



cc:BLM (&OCD), City, Pippin, Stowe

25. Signature 	Name (Printed/Typed) BRIAN WOOD	Date 12-18-02
Title CONSULTANT	PHONE: 505 466-8120	FAX: 505 466-9682
Approved by (Signature) 	Name (Printed/Typed) David J. Mankiewicz	Date APR - 2 2003
Title	Office	

Application approval does not warrant or certify the 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.

NMOCD

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

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

DISTRICT III
1000 Rio Brazos 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

OIL CONSERVATION DIVISION

2040 South Pacheco
Santa Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-045-31301	² Pool Code 77200	³ Pool Name FULCHER PICTURED CLIFFS
⁴ Property Code 32228	⁵ Property Name LAS COLINAS	⁶ Well Number 100
⁷ OCRID No. 193195	⁸ Operator Name MARKWEST RESOURCES, INC.	⁹ Elevation 5742'

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
E	26	30-N	13-W		2005	NORTH	414	WEST	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
¹² Dedicated Acres 160		¹³ Joint or Infill		¹⁴ Consolidation Code		¹⁵ 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

RECEIVED
2002 DEC 23 AM 8:49
070 Farmington, NM

N 89-48-27 E 2626.1' (M)
FD 3 1/4"
B.L.M. BC
1952

FD 3 1/4"
B.L.M. BC
1952

S 01-09-26 W 2659.20' (M)
2005'

675'

414'

899'

654'

26

NAIL & WASHER
IN ROCK TAGGED
LS 11593

LAT. 36°47'10" N. (NAD '83)
LONG. 108°10'57" W

APR 2003

17 OPERATOR CERTIFICATION

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

Signature

Printed Name
BRIAN WOOD

Title
CONSULTANT

Date
DEC. 18, 2002

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
Signature and Seal of Registered Professional Surveyor

Certificate Number
14827

MarkWest Resources, Inc.
Las Colinas #100
2005' FNL & 414' FWL
Sec. 26, T. 30 N., R. 13 W.
San Juan County, New Mexico

PAGE 1

Drilling Program

1. ESTIMATED FORMATION TOPS

<u>Formation Name</u>	<u>GL Depth</u>	<u>KB Depth</u>	<u>Elevation</u>
Ojo Alamo Ss	000'	12'	+5,742'
Kirtland Sh	305'	317'	+5,437'
Fruitland Coal	1,519'	1,531'	+4,223'
Pictured Cliffs Ss	1,747'	1,759'	+3,995'
Total Depth (TD)*	1,900'	1,905'	+3,842'

* all elevations reflect the ungraded ground level of 5,742'

2. NOTABLE ZONES

<u>Gas & Oil Zones</u>	<u>Water Zones</u>	<u>Coal Zone</u>
Fruitland	Ojo Alamo	Fruitland
Pictured Cliffs	Kirtland	
	Fruitland	

Water zones will be protected with casing, cement, and weighted mud. Fresh water found while drilling will be recorded. Oil or gas shows will be tested for commercial potential based on the geologist's recommendations.

3. PRESSURE CONTROL

Maximum expected bottom hole pressure is \approx 300 psi. The drilling contract has not yet been awarded, thus the exact BOP model to be used is not yet known. A typical 2,000 psi model is on PAGE 3. The well head, casing head, and all pipe, tubing, fittings, valves, and unions placed on or connected with BOP equipment will have a minimum working pressure of 2,000 psi. BOP equipment and all accessories will meet or exceed BLM requirements in 43

MarkWest Resources, Inc.
Las Colinas #100
2005' FNL & 414' FWL
Sec. 26, T. 30 N., R. 13 W.
San Juan County, New Mexico

PAGE 2

CFR Part 3160 and API RP 53 for a 2,000 psi system.

A 2,000 psi double ram hydraulic BOP will be used. There will be one set of pipe rams and one set of blind rams. Sufficient valves will be installed to permit fluid circulation at the surface. Accumulator system capacity will be sufficient to close all BOP equipment with a 50% safety factor.

Accessories will include upper and lower Kelly cocks with handles, stabbing valve to fit drill pipe on the floor at all times, string float at bit, choke manifold with 2" adjustable and 2" positive chokes, and pressure gauge.

Fill, kill, and choke manifold lines will be 2". Choke and kill lines will be anchored, tied, or otherwise secured to prevent whipping if pressure surges.

BOP equipment will be inspected daily. Pressure testing of each component of the BOP equipment will be conducted before drilling out any casing string. A preventer operating test will be performed on each round trip of the pipe, but not more than once every 24 hours. BOPs will be tested every 24 hours. Tests will be recorded on the daily report or I. A. D. C. log.

Drilling or completion operations will not proceed until BOP equipment is found, upon testing, to be serviceable. If the blind rams are closed for any purpose, then the valves on the choke lines or relief lines below the blind rams will be opened prior to opening the rams to bleed off any pressure.

4. CASING & CEMENT

<u>Hole Size</u>	<u>O. D.</u>	<u>Weight (lb/ft)</u>	<u>Grade</u>	<u>Age</u>	<u>Connection</u>	<u>GL Setting Depth</u>
12-1/4"	8-5/8"	24	K-55	New	S T & C	400'
6-1/4"	4-1/2"	10.5	K-55	New	S T & C	1,900'

MarkWest Resources, Inc.
Las Colinas #100
2005' FNL & 414' FWL
Sec. 26, T. 30 N., R. 13 W.
San Juan County, New Mexico

PAGE 4

Surface casing will be cemented to the surface with ≈ 330 cubic feet (≈ 280 sacks) Class B + $1/4$ lb/sk cello-flake + 2% CaCl_2 . Yield = 1.18 cubic feet per sack. Weight = 15.2 pounds per gallon. Volume = 100% excess. W. O. C. = 12 hours. Surface casing will be tested to 500 psi for 30 minutes.

An 8-5/8" notched regular pattern guide shoe with three centralizers will be used on the surface casing. Centralizers will be placed at 120' intervals, starting with the bottom joint. Will Baker Lock the collar to the pin or ring on the bottom joint. Will Baker Lock the shoe on the bottom. Will run a centralizer with a lock on the bottom joint and a centralizer on the second joint.

Production casing will be cemented to the surface. If cement does not circulate to surface, then a temperature survey will be run to determine the actual cement top as needed. W. O. C. = 12 hours. Test to 3,800 psi during completion operations.

Lead cement will be ≈ 290 cubic feet (≈ 100 sacks) Class B light cement with 3% sodium metasilicate + 3 pounds per sack gilsonite + $1/4$ #/sack Flocele. Yield = 2.9 cubic feet per sack. Weight = 11.5 pounds per gallon. Volume is calculated at 100% excess.

Tail cement will be ≈ 78 cubic feet (≈ 50 sacks) Class B with 4% gel + 2% CaCl_2 . + $1/4$ #/sk Flocele. Yield = 1.55 cubic feet per sack. Weight = 14.5 pounds per gallon. Used at 50% excess to cover 500' of formation.

The production casing will use a 4-1/2" cement nose guide shoe with a self fill insert float. The float will be placed one joint above the shoe. Five centralizers will be spaced on every other joint starting with the float collar. Turbulent will be placed at 120' intervals from 960' to the surface. A total of 13 centralizers will be used.