Form 3160-3
(August 1999)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
2002 DEC 23 AM 8:52
070 Farmington, NM

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: ☑ DRILL ☐ REENTER	5. Lease Serial No. **NMSF-078213**
1b. Type of Well: ☐ Oil Well ☑ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone	6. If Indian, Allottee or Tribe **N/A** 29790
2. Name of Operator **MARKWEST RESOURCES, INC.**	7. If Unit or CA Agreement, Name and No. **N/A**
3a. Address **155 INVERNESS DR., SUITE 200 ENGLEWOOD, CO. 80112**	8. Lease Name and Well No. ~~LAS COLINAS~~ Federal A **#103**
3b. Phone No. *(include area code)* **(303) 290-8700**	9. API Well No. **30-045-** 31299
4. Location of Well *(Report location clearly and in accordance with any State requirements.*)* At surface **728' FNL & 770' FEL** At proposed prod. zone **SAME**	10. Field and Pool, or Exploratory **BASIN FRUITLAND COAL GAS**
	11. Sec., T., R., M., or Blk. and Survey or Area **A 26-30n-13w NMPM**
14. Distance in miles and direction from nearest town or post office* **3 AIR MILES NORTHEAST OF FARMINGTON POST OFFICE**	12. County or Parish **SAN JUAN** 13. State **NM**

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No. of Acres in lease	17. Spacing Unit dedicated to this well
1,059'	**2,480**	**320 ACRES (E2)**
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. on file
467'	**1,900'**	**KA6084 (BLM - NATIONWIDE)**
21. Elevations (Show whether DF, KDB, RT, GL, etc.) **5,805' GL**	22. Approximate date work will start* **FEB. 15, 2003**	23. Estimated duration **5 DAYS TO DRILL**

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.

24. Attachments

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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be required by the authorized officer.

Comments

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

25. Signature	Name *(Printed/Typed)*	Date
B. Wood	**BRIAN WOOD**	**12-19-02**
Title **CONSULTANT**	**PHONE: 505 466-8120**	**FAX: 505 466-9682**

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
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

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-102
Revised August 15, 2000

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-045-3299	71629	BASIN FRUITLAND COAL GAS

[4] Property Code	[5] Property Name	[6] Well Number
29790	~~LAS~~ Federal A	103

[7] OGRID No.	[8] Operator Name	[9] Elevation
193195	MARKWEST RESOURCES, INC.	5805'

[10] Surface Location

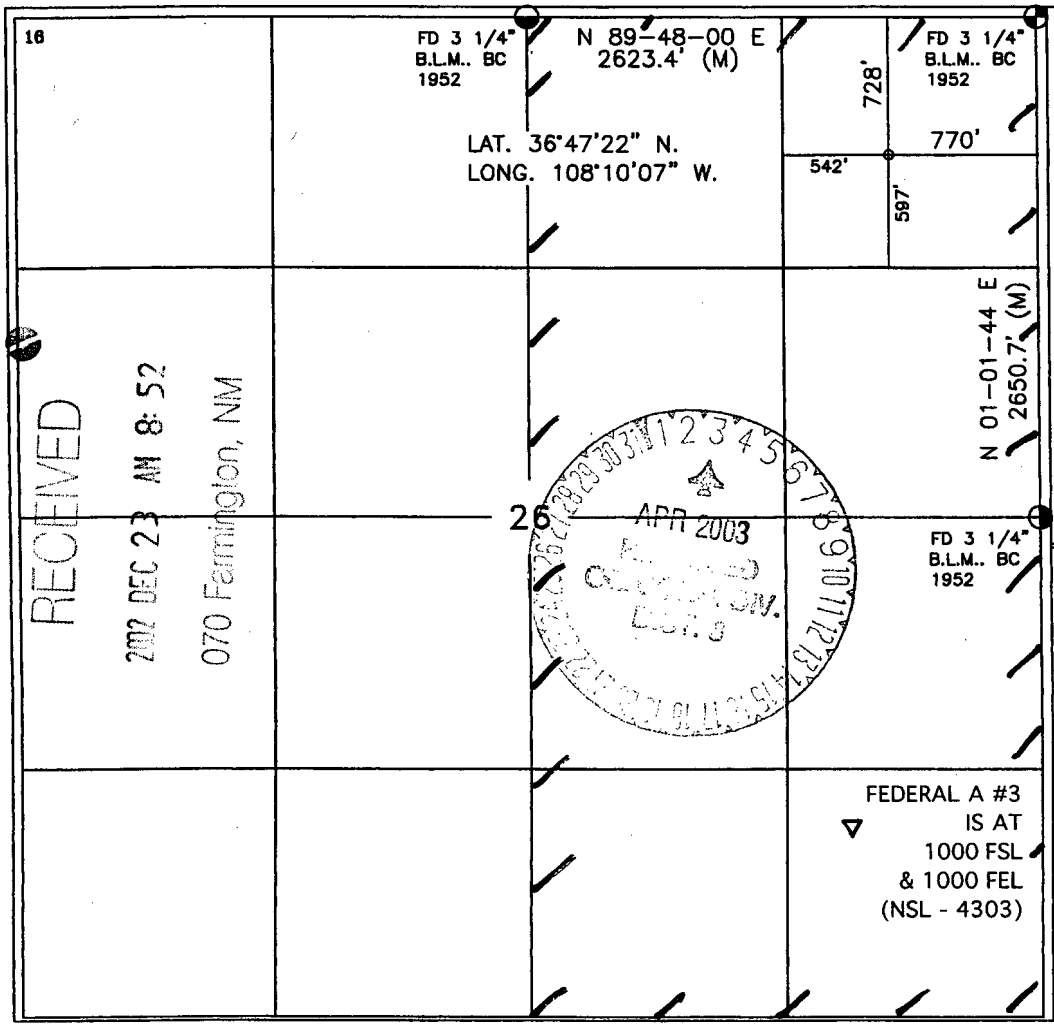
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	26	30-N	13-W		728	NORTH	770	EAST	SAN JUAN

[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

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320			

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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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. 19, 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.

10/26/02
Date of Survey

Signature and Seal of Professional Surveyor:

DAVID A. JOHNSON
NEW MEXICO
14827
REGISTERED PROFESSIONAL SURVEYOR

14827
Certificate Number

MarkWest Resources, Inc.
Las Colinas #103
728' FNL & 770' FEL
Sec. 26, T. 30 N., R. 13 W.
San Juan County, New Mexico

Drilling Program

1. ESTIMATED FORMATION TOPS

Formation Name	GL Depth	KB Depth	Elevation
Ojo Alamo Ss	000'	5'	+5,805'
Kirtland Sh	405'	410'	+5,400'
Fruitland Coal	1,455'	1,460'	+4,350'
Pictured Cliffs Ss	1,825'	1,830'	+3,980'
Total Depth (TD)*	1,900'	1,905'	+3,905'

* all elevations reflect the ungraded ground level of 5,805'

2. NOTABLE ZONES

Gas & Oil Zones	Water Zones	Coal Zone
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 ≈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

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 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

Hole Size	O. D.	Weight (lb/ft)	Grade	Age	Connection	GL Setting Depth
12-1/4"	8-5/8"	24	K-55	New	S T & C	~~400'~~ 440'
6-1/4"	4-1/2"	10.5	K-55	New	S T & C	1,900'

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.

Lead cement will be ≈290 cubic feet (≈100 sacks) Class B light cement with 3% sodium metosilicate + 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.