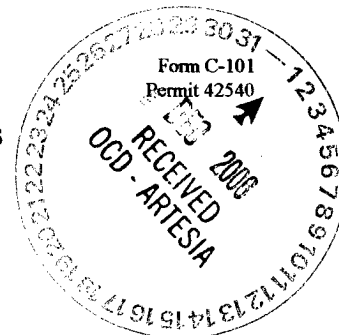


District II
1301 W. Grand Ave., Artesia, NM 88210
Phone: (505) 748-1283 Fax: (505) 748-9720

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505



APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address OGX RESOURCES, LLC P. O. BOX 2064 MIDLAND, TX 79702		2. OGRID Number 217955
		3. API Number 30-015-35270
4. Property Code	5. Property Name FULL CHOKE FED COM	6. Well No. 001

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
	32	24S	28E	C	660	N		W	EDDY

8. Pool Information

MALAGA;MORROW (GAS)	80920
---------------------	-------

Additional Well Information

9. Work Type New Well	10. Well Type GAS	11. Cable/Rotary	12. Lease Type Private	13. Ground Level Elevation 3041
14. Multiple N	15. Proposed Depth 13000	16. Formation Morrow	17. Contractor	18. Spud Date 12/15/2006
Depth to Ground water 600		Distance from nearest fresh water well > 1000		Distance to nearest surface water > 1000
Pit: Liner: Synthetic <input checked="" type="checkbox"/> 12 mils thick Clay Pit Volume: 3000 bbls Drilling Method: Closed Loop System Fresh Water <input checked="" type="checkbox"/> Brine Diesel Oil-based Gas Air				

19. Proposed Casing and Cement Program

Type	Hole Size	Casing Type	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	48	520	700	0
Int1	12.25	9.625	36	2100	700	0
Prod	8.5	7	26	9400	1440	0
Liner1	6.25	4.5	11.6	13000	250	9000

Casing/Cement Program: Additional Comments

Submitted exception to H2S requirements by letter sent to District office on 11-17-06, along with C-144 & maps.

Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
DoubleRam	5000	5000	Weatherford

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

I further certify that the drilling pit will be constructed according to NMOCD guidelines ☒ a general permit, or an (attached) alternative OCD-approved plan.

Printed Name: Ann E. Ritchie (Filed 11-16-06)

Title: Regulatory Agent

OIL CONSERVATION DIVISION

Approved By: **BRYAN G. ARRANT**
DISTRICT II GEOLOGIST

Approved Date: DEC 05 2006 | Expiration Date: DEC 05 2007

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

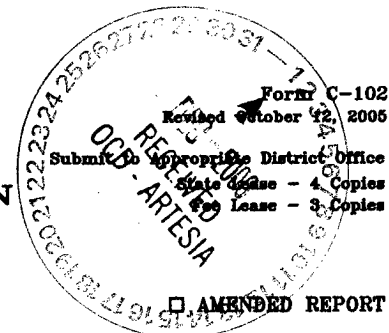
DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505



S

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-35270	Pool Code 80920	Pool Name Undesignated, Malaga Morrow
Property Code 36187	Property Name FULL CHOKE FEDERAL COM	
OCRD No. 217955	Operator Name OGX RESOURCES, L.L.C.	Well Number 1
		Elevation 3041'

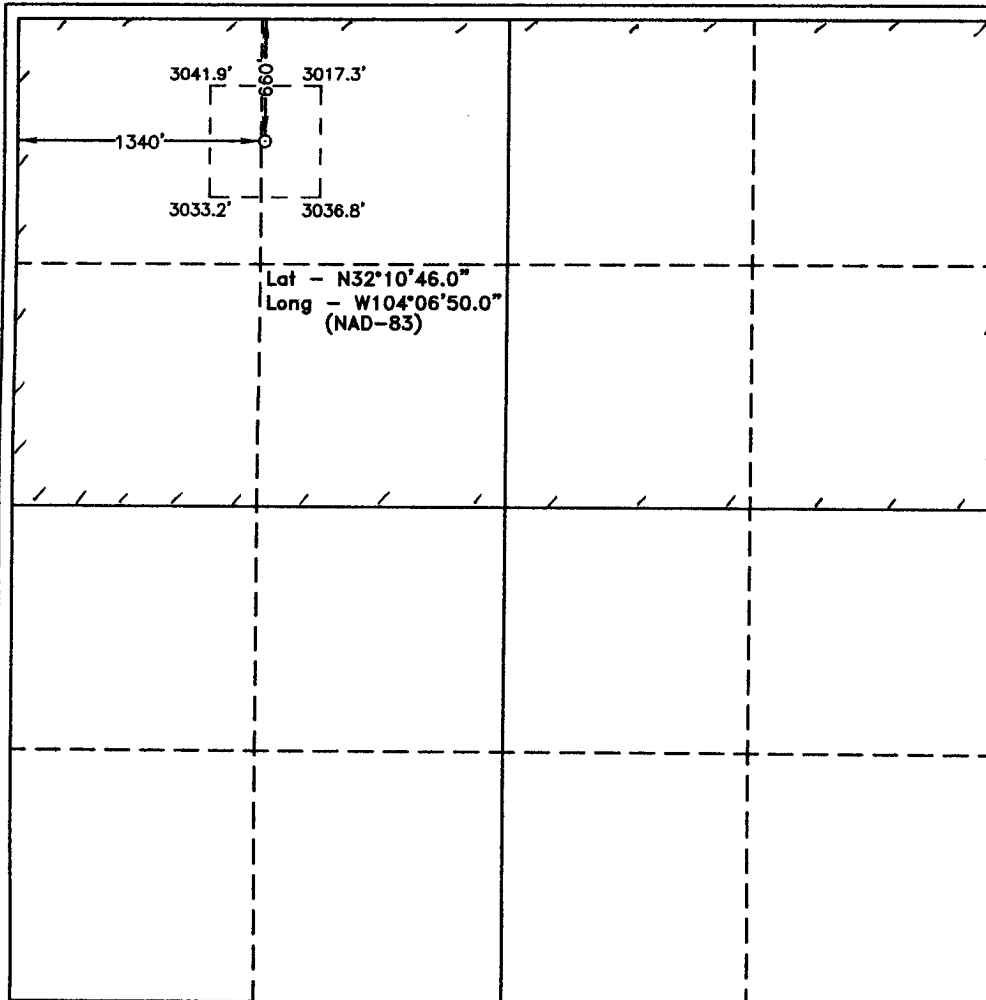
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	32	24 S	28 E		660	NORTH	1340	WEST	EDDY

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
Dedicated Acres 320	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



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 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.

Signature

Date

Ann E. Ritchie
Printed Name

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.

NOVEMBER 10 2006

Date Surveyed

Signature & Seal of Professional Surveyor

7977

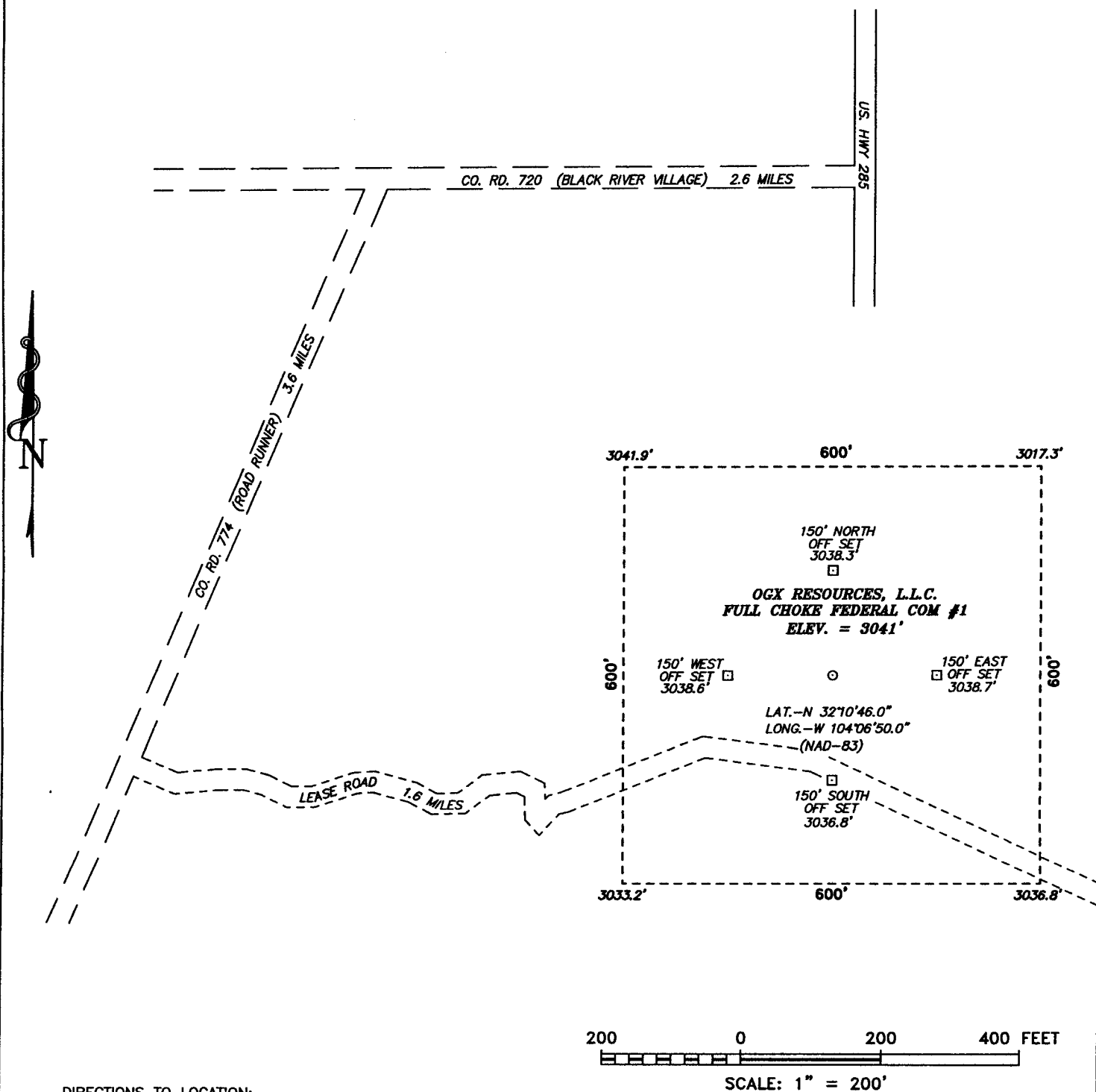
W. D. JONES

NO. 173480

Certificate No. Garry L. Jones 7977

BASIN SURVEYS

**SECTION 32, TOWNSHIP 24 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.**



DIRECTIONS TO LOCATION:

FROM THE JUNCTION OF STATE HWY 285 AND
CO. RD. 720 (BLACK RIVER VILLAGE)
PROCEED WEST 2.8 MILES TO CO. RD. 774
(ROAD RUNNER), ON ROAD RUNNER PROCEED
SOUTHWEST 3.8 MILES TO LEASE ROAD, ON
LEASE ROAD PROCEED 1.6 MILES EAST TO
PROPOSED LOCATION.

BASIN SURVEYS P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number: 17348 Drawn By: J. M. SMALL

Date: 11-06-2006 Disk: 17348W

OGX RESOURCES, L.L.C.

REF: FULL CHOKE FEDERAL COM #1 / Well Pad Topo

FULL CHOKE FEDERAL COM No. 1 LOCATED 660' FROM THE

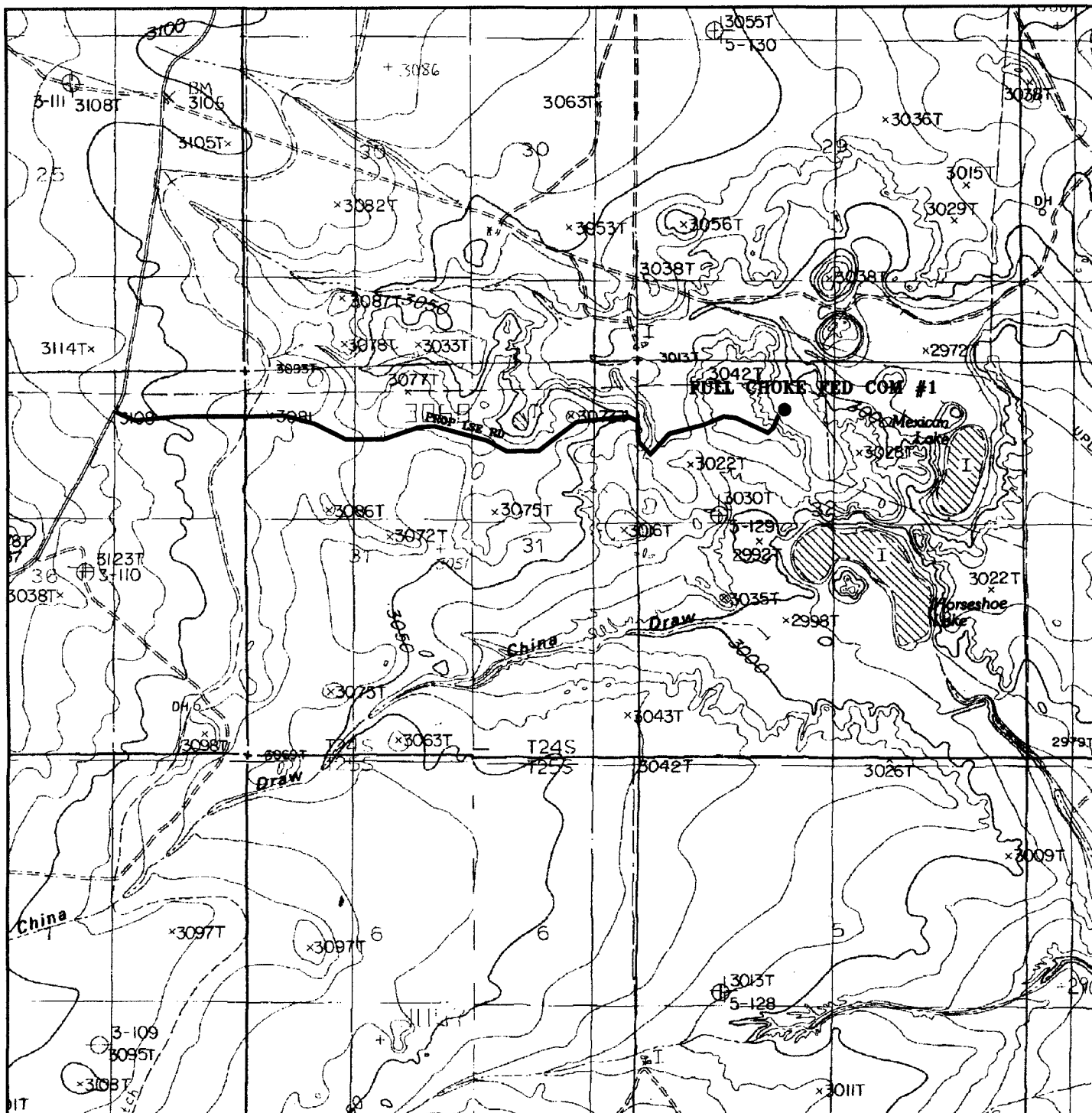
NORTH LINE AND 1340' FROM THE WEST LINE OF

SECTION 32, TOWNSHIP 24 SOUTH, RANGE 28 EAST,

N.M.P.M., EDDY COUNTY, NEW MEXICO.

Survey Date: 11-02-2006

Sheet 1 of 1 Sheets



FULL CHOKE FEDERAL COM #1

660' FNL & 1980' FWL

Section 32, Township 24 South, Range 28 East,
N.M.P.M., Eddy County, New Mexico.

**basin
surveys**

focused on excellence
in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com

W.O. Number: 7182TA

Survey Date: 10-19-2006

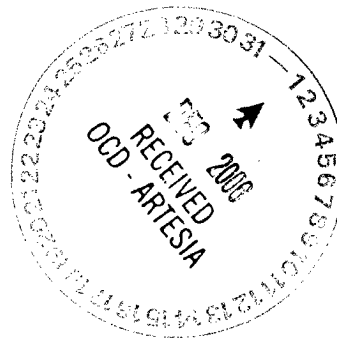
Scale: 1" = 2000'

Date: 10-20-2006

**OGX
RESOURCES
L.L.C.**

November 16, 2006

Oil Conservation Division ✓
Attn: Bryan Arrant
1301 Grand Ave.
Artesia, NM 88210



copy

RE: OGX Resources, LLC, Full Choke Fed Com, Well #1, (C), Sec 32, T24S, R28E, Eddy County, NM

It is not anticipated that we will encounter any H2S during the drilling or completion of the above referenced well.

We are respectfully requesting an exemption from H2S requirements as per NMOCD Rule 118. The anticipated total depth is 13,000' for this proposed Morrow well.

In the event the NMOCD determines that the H2S contingency plan be a part of the permitting of this well, please see our plan attached.

Thank you,

Ann E. Ritchie, Regulatory Agent
OGX Resources, LLC
c/o P.O. Box 953
Midland, TX 79702
432 684-6381/682-1458-fax

cc: OGX Resources-Kip Agar/Midland

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Form C-144
June 1, 2004

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

For drilling and production facilities, submit to appropriate NMOCD District Office.
For downstream facilities, submit to Santa Fe office

Pit or Below-Grade Tank Registration or Closure

Is pit or below-grade tank covered by a "general plan"? Yes ☐ No ☒

Type of action: Registration of a pit or below-grade tank ☒ Closure of a pit or below-grade tank ☐

Operator: OGX Resources, LLC Telephone: 432 684-6381/685-1287 e-mail address: ann.ritchie@wtor.net
Address: c/o Box 953, Midland, TX 79702
Facility or well name: Full Choke Fed Com # 1 API #: 30-015-pending U/L or Qtr/Qtr C Sec 32 T 24S R 28E
County: Eddy Latitude 32.1046.0 Longitude 104.0650.0 NAD: 1927 X 1983 ☐
Surface Owner: Federal ☐ State ☒ Private ☐ Indian ☐

Pit

Type: Drilling ☒ Production ☐ Disposal ☐
Workover ☐ Emergency ☐
Lined ☒ Unlined ☐
Liner type: Synthetic ☒ Thickness 12 mil Clay ☐
Pit Volume 3000 bbls

Below-grade tank

Volume: bbl Type of fluid:
Construction material:
Double-walled, with leak detection? Yes ☐ If not, explain why not.

Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.)	Less than 50 feet	(20 points)
	50 feet or more, but less than 100 feet	(10 points)
	100 feet or more X	(0 points)
Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.)	Yes	(20 points)
	No X	(0 points)
Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.)	Less than 200 feet	(20 points)
	200 feet or more, but less than 1000 feet	(10 points)
	1000 feet or more X	(0 points)
Ranking Score (Total Points)		0

If this is a pit closure: (1) Attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location: (check the onsite box if you are burying in place) onsite ☐ offsite ☐ If offsite, name of facility . (3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No ☐ Yes ☐ If yes, show depth below ground surface ft. and attach sample results. (5) Attach soil sample results and a diagram of sample locations and excavations.

Additional Comments: Drilling pit.

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

Date: 11-16-06

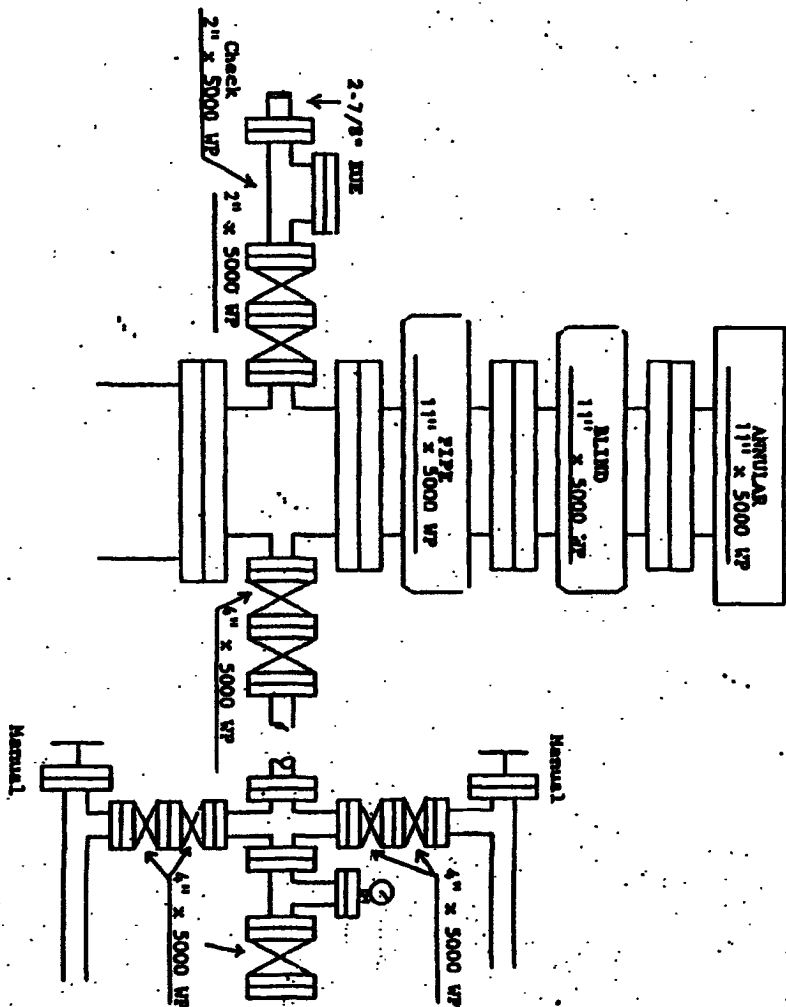
Printed Name/Title Ann E. Ritchie Signature 

Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.

Approval:

Printed Name/Title Signature Date:

Abstract





Newpark Drilling Fluids, LLC



DRILLING FLUIDS PROGRAM

PREPARED FOR:

Full Choke #1

***Section 32, T-24-S, R-28-E
Eddy County, New Mexico***

SUBMITTED TO:

Mr. Kip Agar

***OGX Resources, LLC
P.O. Box 2064
Midland, Texas 79702***

PREPARED BY:

Ken Anthony



Newpark Drilling Fluids, LLC



November 21, 2006

Mr. Kip Agar
OGX Resources, LLC
P.O. Box 2064
Midland, Texas 79702

Dear Mr. Agar,

Enclosed are our drilling fluids recommendations for your Full Choke #1 well in section 32, T-24-S, R-28-E, Eddy County, New Mexico. They are derived from information from your office, offset well data, and our knowledge of the area.

Estimated mud cost is \$ 118,603.34 based on 40 total days with ideal conditions. Severe losses, excessive pressure, stuck pipe or extended days on the well could raise the estimate considerably. Offset wells in this area have experienced abnormal pressures in the 12.5-13.5 pound per gallon range.

Materials	\$121,995.08
Discount	-30,498.77
Drayage	20,000.00
Taxes	<u>7,134.04</u>
Total	\$118,603.34

For questions or comments call (800) 592-4627 or (432) 697-8661. Both are 24-hour numbers.

Sincerely,

Ken Anthony



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

Mud Program Summary

<u>Depth</u>	<u>Hole Size</u>	<u>Casing</u>	<u>Mud Wt.</u>	<u>Viscosity</u>	<u>Fluid Loss</u>	<u>pH</u>
0' – 520'	17-1/2"	13-3/8"	8.6-9.0	32-36	N/C	N/C
250' – 2,100'	12-1/4"	9-5/8"	9.9-10.0	28-29	N/C	9-10
2,100' – 9,400'	8-1/2"	7"	8.4-10.0	28-29	N/C	9-10
9,400' – 10,500'	6-1/8"	-	8.4-10.0	28-29	N/C	9-10
10,500' – 13,000' 9,300'	6-1/8"	4-1/2"	10.1-13.5	38-45	6-8	9-9.5

Potential Problems

17-1/2" Surface Interval 0 – 520'

- Severe seepage and lost circulation.
- Poorly consolidated formations, may require higher than normal viscosity.

12-1/4" Intermediate Interval 520' – 2,100'

- Deviation through the salt.
- Ledges in salt could cause "key-seats".

8-1/2" Interval 2,100' – 9,400'

- Seepage.
- Deviation.
- Abnormal pressure development (Bone Spring and Wolfcamp).

6-1/8" Interval 9,400' – 10,500'

- Seepage.
- Deviation.
- Abnormal pressure development (Lower Wolfcamp).

6-1/8" Interval 10,500' – 13,000'

- Seepage.
- Deviation.
- Abnormal pressure development (Strawn and Atoka).



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

17-1/2" Surface Interval

Interval: 0 – 520'
Hole Size: 17-1/2"
Casing Size: 13-3/8"
Total Days: 1
Mud Type: New Gel/Lime
Properties:
 Weight: 8.6 – 9.0 ppg
 Viscosity: 32 – 36 sec/1000cc
 Filtrate: N/C
 pH: N/C

Interval Discussion:

Spud with a conventional New Gel/Lime "spud mud". Use NewGel and native solids to maintain a sufficient viscosity to keep the hole clean. Mix Paper as needed to control seepage loss. Run fresh water at flowline for dilution and volume. Sweep hole with 5-lbs of Super Sweep every 100 feet drilled. Severe losses may require dry drilling to casing point. **Note: See Lost Circulation Procedures*

At total depth of interval, mix in pre-mix pit, 100 barrels of fresh water- NewGel for a viscosity of 100 sec/1000cc, add 0.25 ppb of Super Sweep. Pump this pill prior to trip to run surface casing.

Materials Consumption & Cost:

90	sx	New Gel
10	sx	Lime
5	sx	Paper
2	bx	Super Sweep



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

12-1/4" Intermediate Interval

Interval: 520' – 2,100'
Hole Size: 12-1/4"
Casing Size: 9-5/8"
Total Days: 4
Mud Type: Brine
Properties:
 Weight: 9.9– 10.0 ppg
 Viscosity: 28-29 sec/1000cc
 Filtrate: N/C
 pH: 9-10

Interval Discussion:

Drill out below Surface Casing with 10.0-ppg brine. Circulate through a controlled portion of the reserve pit for maximum gravitational solids removal. Mix Paper to control seepage losses. Maintain pH control with additions of Caustic Soda. Mix at flow line one gallon of New-55 every 250 feet drilled to promote solids removal. Sweep hole with 50-barrels of system fluid every 500 feet using 5- ppb of Super Sweep. Deviation on this interval can become severe; proper planning of the bottom hole assembly can reduce the deviation.

At total depth sweep the hole using 100-barrels of system fluid - Saltwater Gel for a 60-70 sec/1000cc viscosity and 0.25 pounds per barrel of Super Sweep

Materials Consumption & Cost:

100	sx	Saltwater Gel
25	sx	Paper
15	sx	Caustic Soda
2	cn	New-55
2	bx	Super Sweep



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

8-1/2" Hole Interval

Interval: 2,100' – 9,400'
Hole Size: 8-1/2"
Casing Size: 7"
Total Days: 10
Mud Type: Fresh Water-Brine
Properties:
 Weight: 8.4 – 10.0 ppg
 Viscosity: 28 – 29 sec/1000cc
 Filtrate: N/C
 pH: 9 – 10

Interval Discussion:

Drill out from 9-5/8" casing with fresh water. Circulate through the reserve pit for gravitational solids removal. Use sweeps of Paper to control seepage loss. Mix Caustic Soda for pH control. Mix one gallon of New-55 at flowline for every 250 feet drilled to promote solids settling. Sweep hole with 5-lbs of Super Sweep every 500 feet drilled.

Maintain sufficient brine water on location to raise the mud weight in the event of abnormal pressure in the Bone Springs. At total depth fill pre-mix pit with 200 barrels of system fluid. Use Saltwater Gel to increase viscosity of the pre-mix to 80-90 sec/1000cc, add 0.25-ppb of Super Sweep. Sweep the hole with 100-barrels of the pre-mix and spot the remaining 100-barrels on bottom for logging and casing operations.

Materials Consumption & Cost:

100	sx	Saltwater Gel
75	sx	Paper
30	sx	Caustic Soda
5	cn	New-55
5	bx	Super Sweep



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

6-1/8" Interval

Interval: 9,400' – 10,500'
Hole Size: 6-1/8"
Casing Size: -
Total Days: 4
Mud Type: Fresh water to Brine
Properties:
 Weight: 8.4 – 10.0 ppg
 Viscosity: 28 – 29 sec/1000cc
 Filtrate: N/C
 pH: 9 – 10

Interval Discussion:

Drill out from 7" casing with the fluid from the previous interval. Circulate through the reserve pit for gravitational solids removal. Use sweeps of Paper to control seepage loss. Mix Caustic Soda for pH control. Mix one gallon of New-55 at flow line for every 250 feet drilled to promote solids settling. Sweep hole with 5-lbs of Super Sweep every 500 feet drilled. Before drilling the Atoka, cut brine may be required to balance the formation pressure encountered.

Materials Consumption & Cost:

12	sx	Paper
5	sx	Caustic Soda
1	cn	New-55
1	bx	Super Sweep



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

6-1/8" Production Interval

Interval: 10,500' – 13,000'
Hole Size: 6-1/8"
Casing Size: 4-1/2"
Total Days: 21
Mud Type: Dynazan-New Pac-Starch (white)-Barite
Properties:
 Weight: 10.1 – 13.5 ppg
 Viscosity: 38 – 45 sec/1000cc
 Filtrate: 8 – 6 cc/30min
 pH: 9 – 9.5

Interval Discussion:

Confine circulation to steel pits. Treat the system with Newcide to prevent bacterial degradation of organic materials. Adjust and maintain pH with Caustic Soda. Add Starch (White) to control API filtrate at <10cc. Mix Dynazan to increase the viscosity to 38-40 sec/1000cc. Use S-10 Defoamer to reduce foaming. Small amounts of Desco will modify the rheology. Mix barite to increase fluid density to balance formation pressures encountered.

At 11,800', prior to drilling Morrow, reduce API filtrate to <8cc with White Starch . If abnormal pressures are encountered mix Barite to increase mud weight. Raise viscosity to 40+ sec/1000cc with Dynazan.

Materials Consumption & Cost:

350	tn	Barite (bulk)
20	sx	Soda Ash
150	sx	White Starch
80	sx	Dynazan
40	sx	Caustic Soda
100	sx	Dyna Fiber
25	cn	Newcide
10	sx	Desco
30	cn	S-10 Defoamer



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

ENGINEER / WAREHOUSE INFORMATION

WELL NAME: Full Choke #1

LOCATION: Section 32, T-24-S, R-27-E

Eddy County, New Mexico

MUD ENGINEER: Lynn Pearson Carlsbad, New Mexico

Bill Stewart Hobbs, New Mexico

(800) 592-4627 or (432) 697-8661. Both 24 hours.

WAREHOUSE: Artesia & Lovington, New Mexico

(800) 592-4627 or (432) 697-8661. Both 24 hours.



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

Lost Circulation Procedures

Seepage Losses – Mud consumed at the rate of 2.0-2.5 barrels per barrel of hole drilled (18.5± bbls of mud per 100' of 8-3/4" hole drilled) can be expected. The 1.0-1.5 bbls lost per barrel of hole drilled is due to mud retained on cuttings and filtration losses down hole. Volumes in excess of 20 bbls per 100' of hole should be considered seepage losses and the following remedial action taken:

1. Discontinue drilling and circulate cuttings out of the hole at a reduced rate for 5 minutes. Pull one stand and stop pumps to see if the hole is standing full. Keep pipe moving while checking fluid level.
2. If the hole is standing full while static, the seepage losses may be from excessive cuttings, out of gauge hole or circulating pressure losses (ECD). Break circulation slowly and return to drilling, carefully monitoring mud consumption rates and static hole conditions on connections.
3. If the hole is taking fluid while static, prepare a 50-60 bbl pill of 45-50 viscosity mud with 10-20 ppb of Fiber-Plug and 10-20 ppb of Fiber-Seal, and spot near bottom. Pull five stands and check static level of fluid in the hole. Keep hole full at all times and monitor the mud loss rate.
4. If little or no improvement is noted after pumping the 50-60 barrel LCM pill, prepare a balanced, high-filtrate (50cc/30min@100psi) water based pill (40 bbls). This pill can be formulated with Dynazan or New Gel (floculated with CaCl₂ or Lime) and Barite. Pull pipe above the suspected loss zone and spot the pill outside the drill pipe at 1 barrel per minute. Pull out of the pill, close the hydril and if a float collar is in the string, pump down the annulus until sufficient backpressure is established. Hold the maximum allowable backpressure (300-900 psi) for 2-4 hours, open the hydril and establish full circulation before going to bottom.



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

Severe Losses:

1. Should complete returns be lost, stop the pumps and pull the pipe into the casing while pumping through the fill-up line to keep the hole full.
2. Allow the hole to remain static while filling with mud on the annulus side, monitoring the rate of mud loss.
3. Build 50-60 bbl pill of 45-50-viscosity mud with 10-20 ppb of Fiber-Plug and 10-20 ppb of Fiber-Seal, and spot near bottom. Pull five stands and check static level of fluid in the hole. Keep hole full at all times and monitor the mud loss rate. Should the hole stand full, allow 4-6 hours of healing time before staging back to bottom slowly and resuming drilling.
4. Should only partial returns be established, repeat the LCM pill once more. If complete loss of circulation persist, or if only partial returns can be established after the 2nd LCM pill, prepare a balanced, high-filtrate (50cc/30min@100psi) water based pill (40 bbls). Pull pipe above the suspected loss zone and spot the pill outside the drill pipe at 1 barrel per minute. Pull out of the pill, close the hydril and if a float collar is in the string, pump down the annulus until sufficient backpressure is established. Hold the maximum allowable backpressure (300-900 psi) for 2-4 hours, open the hydril and establish full circulation before going to bottom.
5. Should the LCM pills fail to establish returns, be prepared to squeeze cement into loss zone.

Loss of circulation is a possibility on any well. Although each well is different, there are some basic procedures and drilling practices that can aid in reducing the severity and in some, cases prevent lost circulation. Below is a list of several parameters, which may prove helpful.

1. Maintain viscosities as low as possible and still clean the hole.
2. Maintain mud weights as low as possible without jeopardizing safety.
3. Use slower tripping speeds to prevent swabbing and surging.
4. Break circulation in stages while tripping in the hole.
5. Rotate pipe while breaking circulation.



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

Solids Control

The most important contributing factor to good mud properties is a low native solids content. Conventional means of solids control (dilution, desanders, and desilters), used for water based muds are not economical because these methods can cause loss of liquid portion of the mud and increase chemical consumption. The solids control equipment for this well should include:

- High Speed shale shaker with fine mesh screens.
- Mud Cleaners

Shale Shaker

Use a high-speed shale shaker with fine mesh screens. It is imperative to remove cuttings as quickly as possible before they have a chance to mechanically break up in the circulating system.

Mud Cleaner

Use a mud cleaner using the smallest screen possible (200 mesh). Monitor the discharge to avoid stripping excess amounts of product from the mud.



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

Hydraulics

While drilling the deep mature shales in the Permian Basin, it is important to maintain an API filtrate to prevent hydration of the clays contained in those shales. Equally important is to maintain a Laminar Hydraulic Profile in the annulus while drilling those shales. These shale exhibit a high degree of erosion when the annular profile is in turbulent flow.

The annular velocity in the well bore is a measure to control hole cleaning and to determine the annular hydraulic profile. Critical velocity is the point at which flow transitions from laminar to turbulent flow. Mud weight, Plastic Viscosity, Yield Point, Pump Rate, Hole Diameter and tool diameter all are factors in determining critical velocity.

If adjusting the pump rate will affect the bit nozzle optimization, then the rheology can be adjusted to bring the annular profile into laminar flow.

$$\tau_c = \frac{1.08 PV + 1.08 \sqrt{PV^2 + 9.26(dh-dp)^2 YP M}}{M (dh-dp)}$$

PV = Plastic Viscosity

YP = Yield Point

M = Mud Weight (ppg)

Dh = Diameter of hole (inches)

Dp = Diameter of pipe (inches)

τ_c = Critical Velocity in feet per second.



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Full Choke #1
Section 32, T-24-S, R-28-E
Eddy County, New Mexico

Filtration Control & Filter Cake Quality:

Sealing permeable zones in the well bore has long been accepted as a major function of a drilling fluid. The cost of the filtration control represents a major portion of the mud cost. Traditionally, most of this cost has resulted from controlling the filtration rate as opposed to controlling the filter cake quality. This is understandable since a definitive number is more a comfortable target than a subjective evaluation of a filter cake.

The primary objectives of filtration are:

- Minimize damage to the production zones.
- Optimize formation evaluation.
- Avoid differential pressure sticking of the pipe.
- Avoid under gauged holes due to thick filter cakes.

These objectives are achieved by focusing on important design factors:

- Compatibility of filtrate with formation solids.
- Thin, impermeable, and deformable filter cakes.
- Lubricious and shearable filter cakes.

Filtration Control Mechanisms:

There are four basic mechanisms for controlling filtration control and reducing the filter cake permeability. Understanding these mechanisms along with how filtration control products function is important.

1. **Bridging-** Bridging reduces filtration rates and permeability by plugging or blocking the pore spaces at the face of the filter medium. It generally requires solids about one-third the diameter of the pore space to form a bridge. New Gel, Calcium Carbonate, Lost Circulation Materials, Starch, and Soltex (LST-MD) are primary bridging materials.
2. **Bonding-** Bonding is the connecting or binding of solids together. New Pac, Dynazan, WL-100 and other high molecular weight polymers function as bonding materials. Secondly, these materials function as bridging materials as well as increasing the viscosity of the filtrate.
3. **Deflocculation-** Deflocculants reduce the electro-chemical attraction between solids. This allows solids to be filtered individually, as opposed to flocs, and also reduces the void spaces in the cake created by flocs of solids. Lignite, Chrome Ligno-Sulphonates, Desco, and other low molecular weight polymers perform as deflocculants.
4. **Viscosity-** Fluid loss decreases proportional to the increase in viscosity of the



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filtrate. Temperature alone will change the filtrate viscosity. Therefore, filtration control is more difficult at high temperatures. Any soluble material added to the fluid will viscosify the filtrate.

Hydration, Flocculation, and Deflocculation

The degree of hydration and flocculation of the filtered solids influence filter cake permeability. The effectiveness in permeability reduction may be demonstrated by ranking of clay solids according to their surface characteristics:

- | | |
|---------------------------------------|-----------------------|
| 1. Dehydration/Aggregated/Flocculated | (high permeability) |
| 2. Hydrated/Flocculated | (medium permeability) |
| 3. Hydrated/Deflocculated | (low permeability) |

Since fluid loss and filter cake quality are important design factors, it is important to understand the predominate electro-chemical state of the solids. Initially, cake permeability is reduced as pre-hydrated bentonite is added to the system. When flocculated, these hydrated solids promote deformability or permeability reduction with increased pressure. This results from the compaction of hydrated flocs. With deflocculation, permeability is further decreased, as the void spaces created by the flocs diminish.

During drilling operations, hydrated solids are eventually dehydrated as the solids content increases and/or the system is converted to an inhibitive fluid. At this point, a decision must be made on the basis of economic and operational objectives. More pre-hydrated bentonite and/or other products may be added. These other products include New Pac, Calcium Carbonate, CMC, starch, or one of the new generation polymers.

Fluid loss control is a very complex process. The major factors that affect the process include time, pressure, temperature, filtrate viscosity, solids hydration, flocculation and filter cake erodability. Effective evaluation of the process requires that all factors be given strong consideration. Testing the fluids relative to the various factors is necessary to understand how a fluid may perform under down-hole conditions.



Proposal No: 180267538A

OGX Resources LLC
Full Choke #1

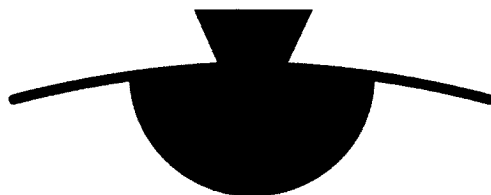
Sec. 32, T24S, R28E
Eddy County, New Mexico
November 22, 2006



Well Recommendation

Prepared for:
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OGX Resources LLC

Prepared by:
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Specifications Writer



POWERVISION®

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Senior Account Manager

Bus Phone: (432) 683-2781

Fax: (432) 683-5947

Operator Name: OGX Resources LLC
Well Name: Full Choke #1
Job Description: 13 3/8" Surface Casing
Date: November 22, 2006



Proposal No: 180267538A

WELL DATA

ANNULAR GEOMETRY

ANNULAR I.D. (in)	DEPTH(ft)	
	MEASURED	TRUE VERTICAL
17.500 HOLE	520	520

SUSPENDED PIPES

DIAMETER (in)		WEIGHT (lbs/ft)	DEPTH(ft)	
O.D.	I.D.		MEASURED	TRUE VERTICAL
13.375	12.715	48	520	520

Float Collar set @ 480 ft
 Mud Density 8.40 ppg
 Est. Static Temp. 84 ° F
 Est. Circ. Temp. 80 ° F

VOLUME CALCULATIONS

352 ft	x	0.6946 cf/ft	with	100 % excess	=	488.7 cf
168 ft	x	0.6946 cf/ft	with	100 % excess	=	233.7 cf
40 ft	x	0.8818 cf/ft	with	0 % excess	=	35.3 cf (inside pipe)
TOTAL SLURRY VOLUME					=	757.7 cf
					=	135 bbls

Operator Name: OGX Resources LLC
Well Name: Full Choke #1
Job Description: 13 3/8" Surface Casing
Date: November 22, 2006



Proposal No: 180267538A

FLUID SPECIFICATIONS

<u>FLUID</u>	<u>VOLUME CU-FT</u>	<u>VOLUME FACTOR</u>	<u>AMOUNT AND TYPE OF CEMENT</u>
1st Lead Slurry	279	/ 1.3	= 200 sacks Class H Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 10 lbs/sack LCM-1 + 50% Fresh Water
2nd Lead Slurry	489	/ 1.8	= 265 sacks (35:65) Poz (Fly Ash):Class C Cement + 2% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 6% bwoc Bentonite + 96.6% Fresh Water
Tail Slurry	269	/ 1.3	= 200 sacks Class C Cement + 2% bwoc Calcium Chloride + 56.4% Fresh Water

Displacement 75.4 bbls DISPLACEMENT @ 8.3 ppg

CEMENT PROPERTIES

	SLURRY NO. 1	SLURRY NO. 2	SLURRY NO. 3
Slurry Weight (ppg)	14.60	12.70	14.80
Slurry Yield (cf/sack)	1.39	1.88	1.34
Amount of Mix Water (gps)	5.63	10.07	6.36
Estimated Pumping Time - 70 BC (HH:MM)	2:00	4:30	3:30

NOTE: Pump 1st Lead Slurry for Lost Circulation.

Operator Name: OGX Resources LLC
Well Name: Full Choke #1
Job Description: 9 5/8" Intermediate Casing
Date: November 22, 2006



Proposal No: 180267538A

WELL DATA

ANNULAR GEOMETRY

ANNULAR I.D. (in)	DEPTH(ft)	
	MEASURED	TRUE VERTICAL
12.715 CASING	520	520
12.250 HOLE	2,100	2,100

SUSPENDED PIPES

DIAMETER (in)		WEIGHT (lbs/ft)	DEPTH(ft)	
O.D.	I.D.		MEASURED	TRUE VERTICAL
9.625	8.921	36	2,100	2,100

Float Collar set @ 2,060 ft
 Mud Density 9.00 ppg
 Est. Static Temp. 96 ° F
 Est. Circ. Temp. 89 ° F

VOLUME CALCULATIONS

520 ft	x	0.3765 cf/ft	with	0 % excess	=	195.8 cf
1,178 ft	x	0.3132 cf/ft	with	179 % excess	=	1030.6 cf
402 ft	x	0.3132 cf/ft	with	100 % excess	=	251.6 cf
40 ft	x	0.4341 cf/ft	with	0 % excess	=	17.4 cf (inside pipe)
TOTAL SLURRY VOLUME					=	1495.4 cf
					=	267 bbls

Operator Name: OGX Resources LLC
Well Name: Full Choke #1
Job Description: 9 5/8" Intermediate Casing
Date: November 22, 2006



Proposal No: 180267538A

FLUID SPECIFICATIONS

<u>FLUID</u>	<u>VOLUME CU-FT</u>	<u>VOLUME FACTOR</u>	<u>AMOUNT AND TYPE OF CEMENT</u>
Lead Slurry	1226	/ 2.4	= 500 sacks (50:50) Poz (Fly Ash):Class C Cement + 5% bwow Sodium Chloride + 0.25 lbs/sack Cello Flake + 5 lbs/sack LCM-1 + 10% bwoc Bentonite + 134.8% Fresh Water
Tail Slurry	269	/ 1.3	= 200 sacks Class C Cement + 2% bwoc Calcium Chloride + 56.4% Fresh Water
Displacement	159.3 bbls DISPLACEMENT @ 8.3 ppg		

CEMENT PROPERTIES

	SLURRY NO. 1	SLURRY NO. 2
Slurry Weight (ppg)	11.80	14.80
Slurry Yield (cf/sack)	2.45	1.34
Amount of Mix Water (gps)	13.57	6.36
Estimated Pumping Time - 70 BC (HH:MM)	4:00	2:30

Operator Name: OGX Resources LLC
 Well Name: Full Choke #1
 Job Description: 7" Production Casing
 Date: November 22, 2006



Proposal No: 180267538A

WELL DATA

ANNULAR GEOMETRY

ANNULAR I.D. (in)	DEPTH(ft)	
	MEASURED	TRUE VERTICAL
8.921 CASING	2,100	2,100
8.750 HOLE	9,400	9,400

SUSPENDED PIPES

DIAMETER (in)		WEIGHT (lbs/ft)	DEPTH(ft)	
O.D.	I.D.		MEASURED	TRUE VERTICAL
7.000	6.276	26	9,400	9,400

STAGE: 1 Float Collar set @ 9,360 ft
 Mud Density 10.00 ppg
 Est. Static Temp. 151 ° F
 Est. Circ. Temp. 133 ° F

VOLUME CALCULATIONS

2,390 ft x 0.1503 cf/ft with 118 % excess = 782.6 cf
 1,010 ft x 0.1503 cf/ft with 50 % excess = 227.7 cf
 40 ft x 0.2148 cf/ft with 0 % excess = 8.6 cf (inside pipe)
 TOTAL SLURRY VOLUME = 1018.9 cf
 = 182 bbls

STAGE: 2 Stage Collar set @ 6,000 ft
 Mud Density 10.00 ppg
 Est. Static Temp. 126 ° F
 Est. Circ. Temp. 111 ° F

VOLUME CALCULATIONS

600 ft x 0.1668 cf/ft with 0 % excess = 100.1 cf
 3,312 ft x 0.1503 cf/ft with 189 % excess = 1438.9 cf
 588 ft x 0.1503 cf/ft with 50 % excess = 132.7 cf
 TOTAL SLURRY VOLUME = 1671.7 cf
 = 298 bbls

Operator Name: OGX Resources LLC
Well Name: Full Choke #1
Job Description: 7" Production Casing
Date: November 22, 2006



Proposal No: 180267538A

FLUID SPECIFICATIONS

STAGE NO.: 1

FLUID	VOLUME CU-FT	VOLUME FACTOR	AMOUNT AND TYPE OF CEMENT
Lead Slurry	783	/ 2.4	= 320 sacks (50:50) Poz (Fly Ash):Class H Cement + 5% bwow Sodium Chloride + 10% bwoc Bentonite + 0.3% bwoc FL-52A + 139.7% Fresh Water
Tail Slurry	236	/ 1.1	= 200 sacks Class H Cement + 0.5% bwoc FL-25 + 46.2% Fresh Water
Displacement			358.1 bbls DISPLACEMENT @ 8.3 ppg

CEMENT PROPERTIES

	SLURRY NO. 1	SLURRY NO. 2
Slurry Weight (ppg)	11.80	15.60
Slurry Yield (cf/sack)	2.45	1.18
Amount of Mix Water (gps)	14.07	5.21
Estimated Pumping Time - 70 BC (HH:MM)	4:00	4:00

STAGE NO.: 2

Lead Slurry	1539	/ 2.4	= 630 sacks (50:50) Poz (Fly Ash):Class C Cement + 5% bwow Sodium Chloride + 10% bwoc Bentonite + 139.7% Fresh Water
FLUID	VOLUME CU-FT	VOLUME FACTOR	AMOUNT AND TYPE OF CEMENT
Tail Slurry	133	/ 1.3	= 100 sacks Class C Cement + 0.3% bwoc FL-62 + 56% Fresh Water
Displacement			229.6 bbls Displacement

CEMENT PROPERTIES

	SLURRY NO. 1	SLURRY NO. 2
Slurry Weight (ppg)	11.80	14.80
Slurry Yield (cf/sack)	2.44	1.33
Amount of Mix Water (gps)	14.07	6.31
Estimated Pumping Time - 70 BC (HH:MM)	4:30	3:15

Operator Name: OGX Resources LLC
Well Name: Full Choke #1
Job Description: 4 1/2" Liner
Date: November 22, 2006



Proposal No: 180267538A

WELL DATA

ANNULAR GEOMETRY

ANNULAR I.D. (in)	DEPTH(ft)	
	MEASURED	TRUE VERTICAL
6.276 CASING	9,400	9,400
6.125 HOLE	13,000	13,000

SUSPENDED PIPES

DIAMETER (in)		WEIGHT (lbs/ft)	DEPTH(ft)	
O.D.	I.D.		MEASURED	TRUE VERTICAL
4.500	4.000	11.6	13,000	13,000

Drill Pipe 4.5 (in) OD, 3.826 (in) ID, 16.6 (lbs/ft) set @ 8,900 ft

Drill Pipe 4.5 (in) OD, 4.0 (in) ID, 11.6 (lbs/ft) set @ 12,960 ft

Depth to Top of Liner 8,900 ft

Float Collar set @ 12,960 ft

Mud Density 10.00 ppg

Est. Static Temp. 179 ° F

Est. Circ. Temp. 143 ° F

VOLUME CALCULATIONS

500 ft	x	0.1044 cf/ft	with	0 % excess	=	52 cf
3,600 ft	x	0.0942 cf/ft	with	36 % excess	=	461 cf
40 ft	x	0.0873 cf/ft	with	0 % excess	=	3 cf (inside pipe)
TOTAL SLURRY VOLUME					=	517 cf
					=	92 bbls

Operator Name: OGX Resources LLC
Well Name: Full Choke #1
Job Description: 4 1/2" Liner
Date: November 22, 2006



Proposal No: 180267538A

FLUID SPECIFICATIONS

Spacer 500.0 gals Ultra Flush II + 202.34 lbs/bbl Barite, Bulk @ 12 ppg

<u>FLUID</u>	<u>VOLUME CU-FT</u>	<u>VOLUME FACTOR</u>	<u>AMOUNT AND TYPE OF CEMENT</u>
Cement Slurry	517	/ 1.1	= 435 sacks Class H Cement + 0.4% bwoc BA-10 + 0.3% bwoc CD-32 + 1% bwoc FL-62 + 45.5% Fresh Water

Displacement 189.7 bbls DISPLACEMENT @ 8.3 ppg

CEMENT PROPERTIES

SLURRY NO. 1

Slurry Weight (ppg)	15.60
Slurry Yield (cf/sack)	1.19
Amount of Mix Water (gps)	5.13
Estimated Pumping Time - 70 BC (HH:MM)	4:00
Free Water (mls) @ ° F @ 90 ° angle	0.0
Fluid Loss (cc/30min) at 1000 psi and ° F	50.0



CONDITIONS

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In the event that Customer and BJ Services have executed a Master Services Agreement covering the work to be performed, such Master Services Agreement shall govern in place of the Terms and Conditions. If you are interested in entering into Master Services Agreement with BJ Services, please contact us through the "Go BJ" button on the BJ Services Web Site.