

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB NO. 1004-0135  
Expires: July 31, 2010

**SUNDRY NOTICES AND REPORTS ON WELLS**  
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*

5. Lease Serial No.  
NMNM94595

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

**SUBMIT IN TRIPLICATE - Other instructions on reverse side.**

1. Type of Well  
 Oil Well  Gas Well  Other

8. Well Name and No.  
REDBUD FEDERAL 3

2. Name of Operator  
COG OPERATING LLC  
Contact: KELLY J HOLLY  
E-Mail: kholly@concho.com

9. API Well No.  
30-015-39759

3a. Address  
550 WEST TEXAS AVENUE SUITE 100  
MIDLAND, TX 79707

3b. Phone No. (include area code)  
Ph: 432-685-4384

10. Field and Pool, or Exploratory  
RED LAKE; GLORIETA YESO,

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
Sec 25 T17S R27E Mer NMP NENW 715FNL 1633FWL

11. County or Parish, and State  
EDDY COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Change to Original APD
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

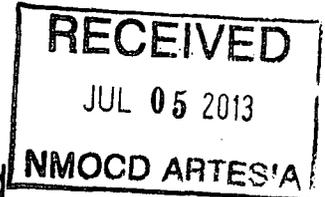
COG Operating LLC submitted APD for this well at this location:

SHL: 715' FNL & 1633' FWL, Unit C  
BHL: 990' FNL & 1650' FWL, Unit C

COG Operating LLC respectfully requests permission to change the SHL to:

SHL: 622' FNL & 1520' FWL, Unit C  
BHL: 990' FNL & 1650' FWL, Unit C

A revised C-102 and directional plan are attached.



Accepted for record

NMOCD *tes*  
7/5/2012

*Eng. OK 7/9/12 CRW*

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #141036 verified by the BLM Well Information System  
For COG OPERATING LLC, sent to the Carlsbad  
Committed to AFMSS for processing by BEVERLY WEATHERFORD on 06/21/2012 ()

Name (Printed/Typed) KELLY J HOLLY

Title PERMITTING TECH

Signature (Electronic Submission)

Date 06/19/2012

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By *[Signature]*

Title *[Signature]* FIELD MANAGER Date 7/2/13

Conditions of approval, if any, are attached. Approval of this notice 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.

Office CARLSBAD FIELD OFFICE

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.

DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6181 Fax: (575) 393-0720

DISTRICT II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-8720

DISTRICT III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505



Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate District Office

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-39759	Pool Code 96836	Pool Name Red Lake; Glorieta Yeso, Northeast
Property Code	Property Name REDBUD FEDERAL	Well Number 3
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3553'

Surface Location

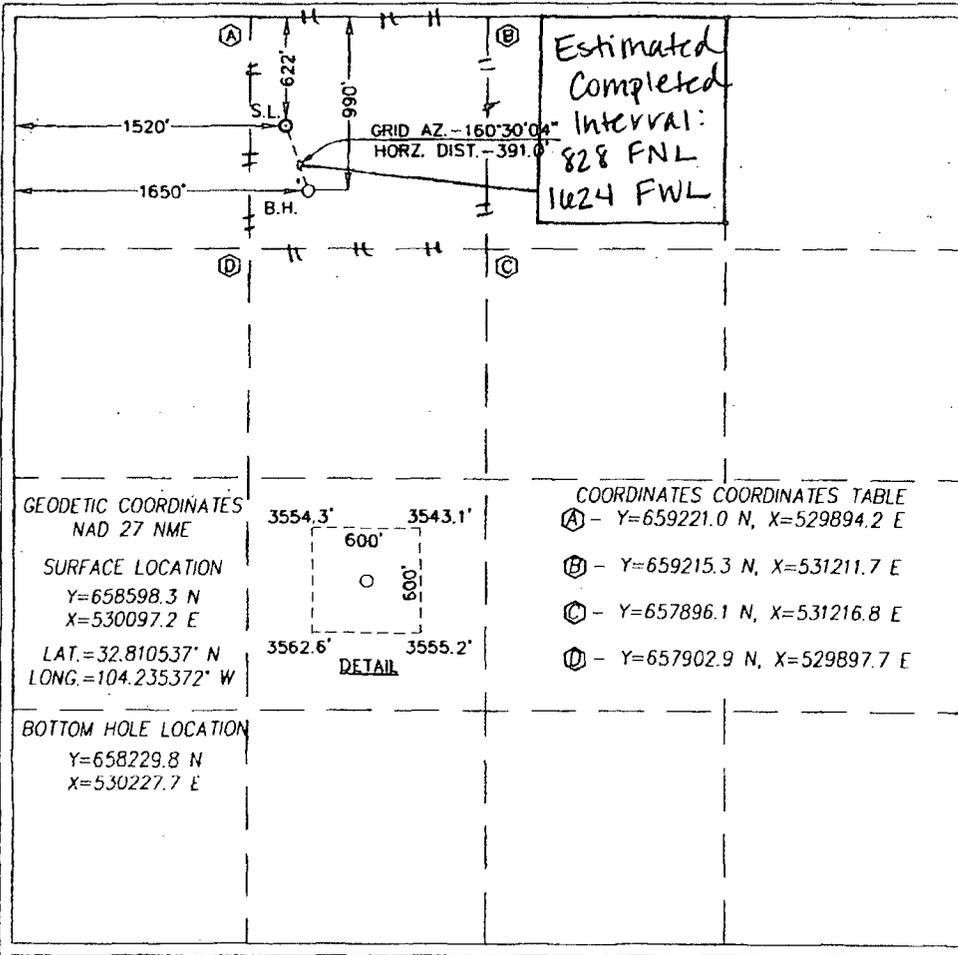
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	25	17-S	27-E		622	NORTH	1520	WEST	EDDY

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
C	25	17-S	27-E		990	NORTH	1650	WEST	EDDY

Dedicated Acres 40	Joint or Infill	Consolidation Code	Order No.
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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



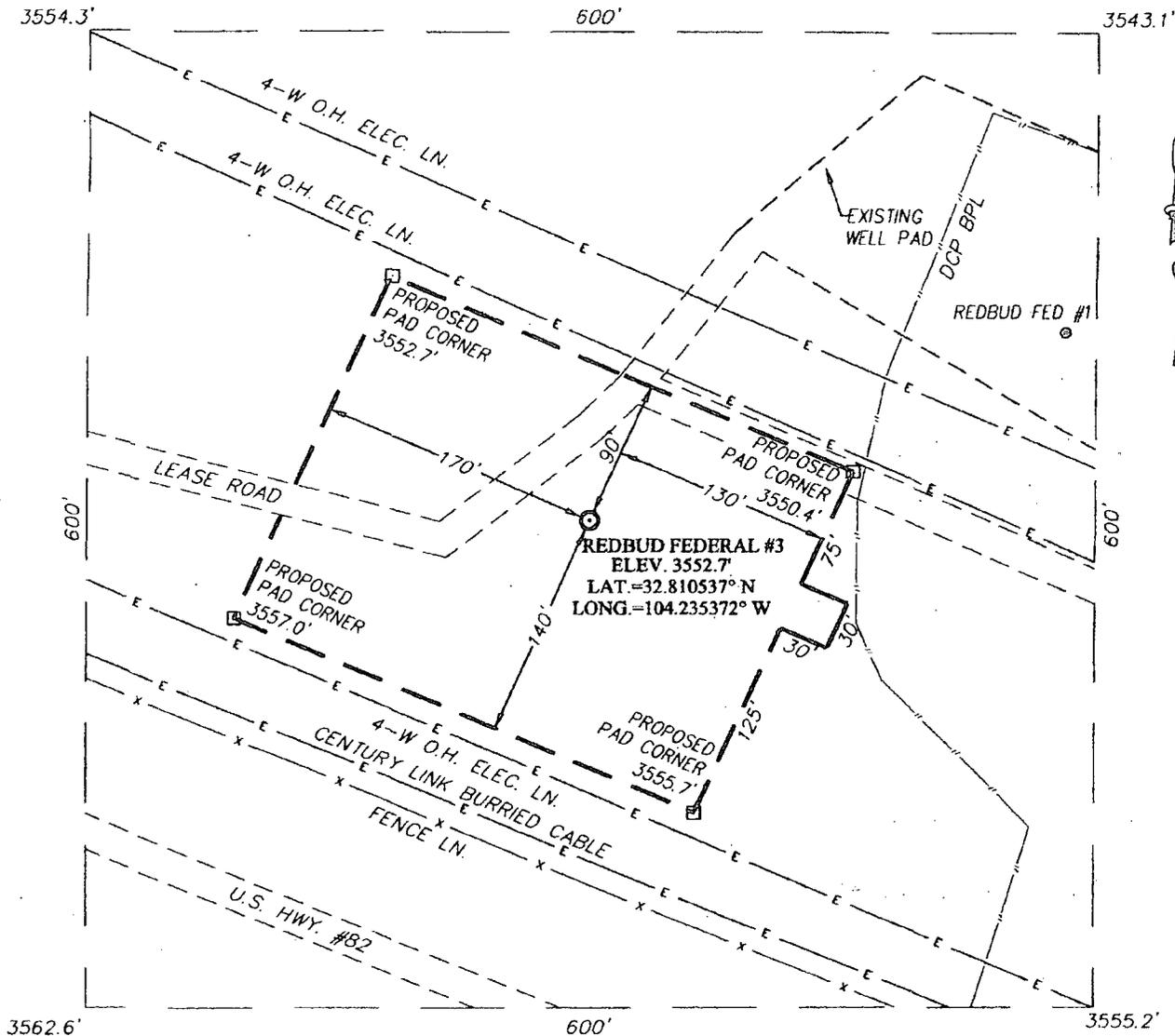
**OPERATOR CERTIFICATION**  
I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *[Signature]* Date: 5-31-12  
Printed Name: Kelly J. Holly  
E-mail Address: kholly@concho.com

**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.

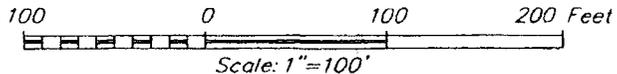
Date of Survey: MAY 12, 2012  
Signature: *[Signature]* Seal of Professional Surveyor:  
Certificate Number: 3239  
Name: Ronald J. Eidson  
ACR JWSC W.O.: 12.11.0884

**SECTION 25, TOWNSHIP 17 SOUTH, RANGE 27 EAST, N.M.P.M.**  
**EDDY COUNTY NEW MEXICO**



**DIRECTIONS TO LOCATION**

FROM THE INTERSECTION OF U.S. HWY. #82 AND CO. RD. #202 (SOUTHERN UNION) GO NORTHEAST ON CO. RD. #202 APPROX. 90 FEET. TURN RIGHT AND GO SOUTHEAST APPROX. 0.35 MILES TO THE LOCATION.



**COG OPERATING, LLC**

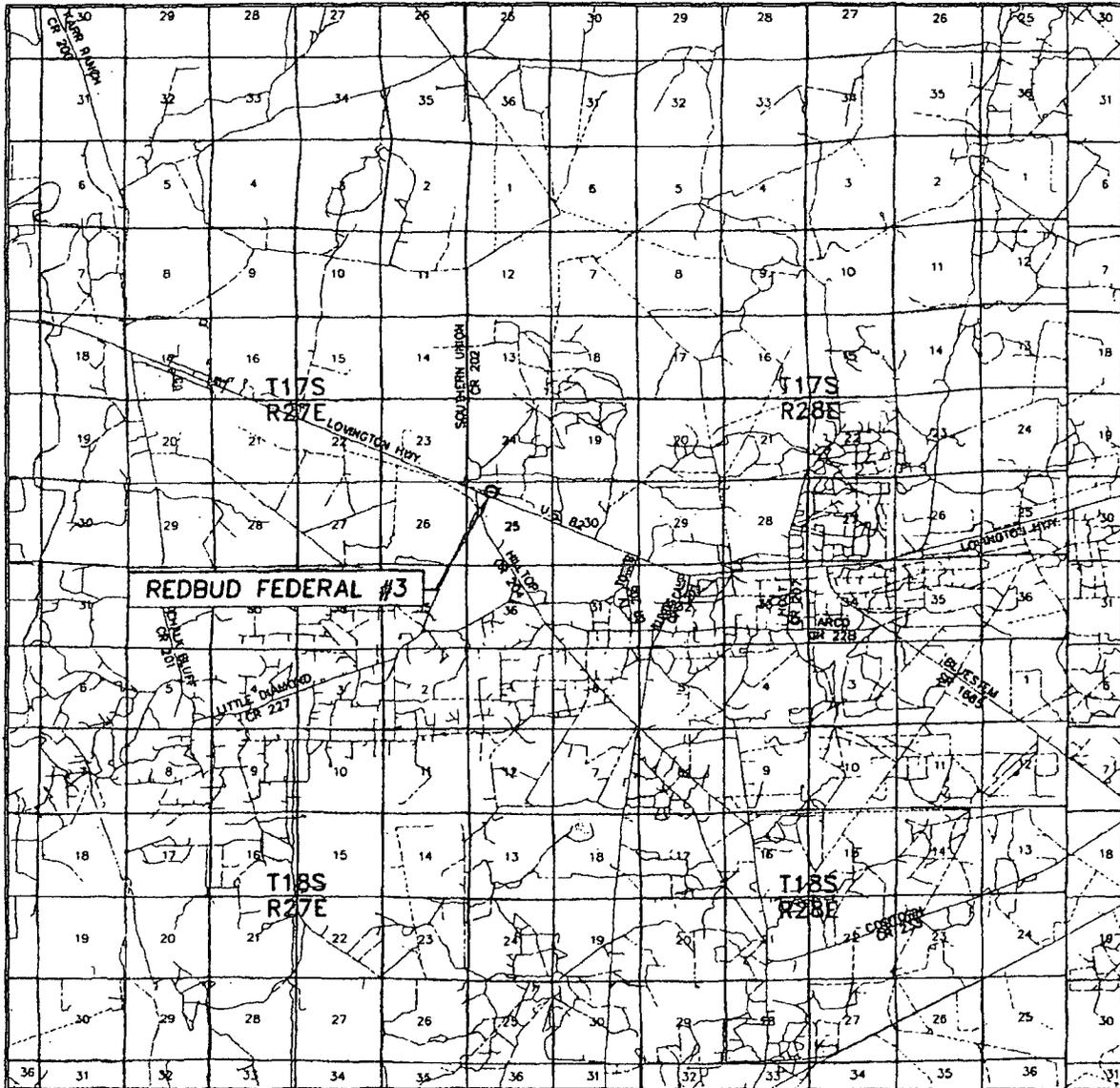
**REDBUD FEDERAL #3 WELL**  
**LOCATED 622 FEET FROM THE NORTH LINE**  
**AND 1520 FEET FROM THE WEST LINE OF SECTION 25,**  
**TOWNSHIP 17 SOUTH, RANGE 27 EAST, N.M.P.M.,**  
**EDDY COUNTY, NEW MEXICO**



PROVIDING SURVEYING SERVICES  
 SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
 412 N. DAL PASO  
 HOBBS, N.M. 88240  
 (575) 393-3117 www.jwsc.biz

Survey Date: 5/12/12	CAD Date: 5/26/12	Drawn By: ACR
W.O. No.: 12110864	Rev:	Rel. W.O.:

# VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 25 TWP. 17-S RGE. 27-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 622' FNL & 1520' FWL

ELEVATION 3553'

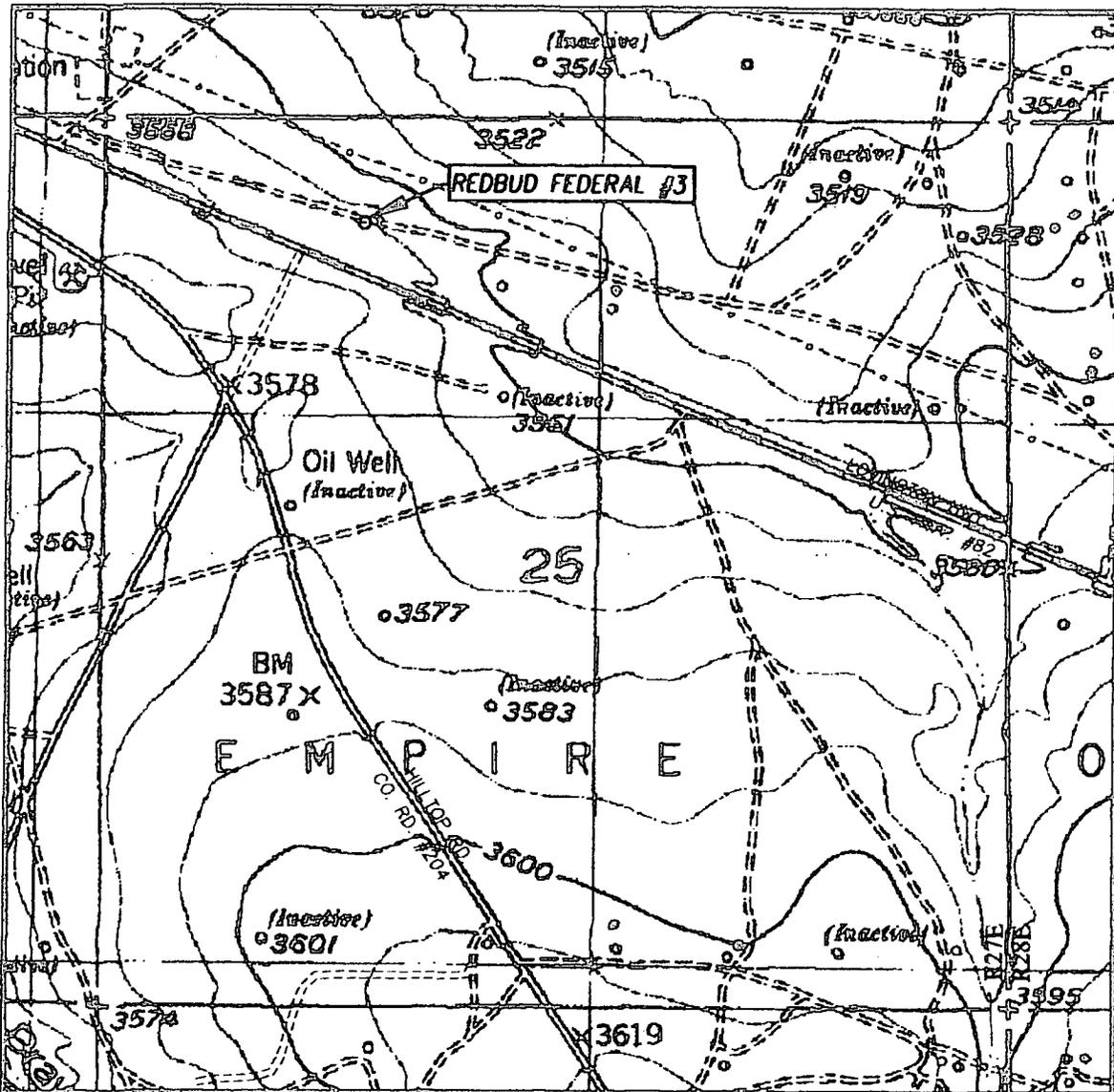
OPERATOR COG OPERATING, LLC

LEASE REDBUD FEDERAL



PROVIDING SURVEYING SERVICES  
 SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
 412 N. DAL PASO  
 HOBBS, N.M. 88240  
 (575) 393-3117

# LOCATION VERIFICATION MAP



SCALE: 1" = 1000'

CONTOUR INTERVAL:  
RED LAKE, N.M. - 10'

SEC. 25 TWP. 17-S RGE. 27-E

SURVEY \_\_\_\_\_ N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 622' FNL & 1520' FWL

ELEVATION 3553'

OPERATOR COG OPERATING, LLC

LEASE REDBUD FEDERAL

U.S.G.S. TOPOGRAPHIC MAP  
RED LAKE, N.M.



PROVIDING SURVEYING SERVICES  
SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
412 N. DAL PASO  
HOBBS, N.M. 88240  
(575) 393-3117 [www.jwsc.biz](http://www.jwsc.biz)



RECEIVED  
JUL 05 2013  
NMOCD ARTESIA

## COG Operating LLC

Eddy County, NM (NAN27 NME)

Redbud Federal #3

OH

Plan #4 7-7/8" Hole

Surface: 622' FNL, 1520' FWL, Sec 25, T17S, R27E, Unit C

BHL: 980' FNL, 1700' FWL, Sec 25, T17S, R27E, Unit C

Top of Paddock = 208' South of Surface & 150' East of Surface @ 3200' T<sub>10</sub>

## Standard Planning Report

12 June, 2012





Scientific Drilling International, Inc.  
Planning Report



EDM 5000.1 Single User Db	Site Redbud Federal #3
COG Operating LLC	GL Elev @ 3554.00usft
Eddy County, NM (NAN27 NME)	GL Elev @ 3554.00usft
Redbud Federal #3	Grid
Redbud Federal #3	Minimum Curvature
OH	
Plan #4 7-7/8" Hole	

**Eddy County, NM (NAN27 NME)**

Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

**Redbud Federal #3**

Site Position:	Northing:	658,598.30 usft	Latitude:	32° 48' 37.933 N	
From: Map	Easting:	530,087.20 usft	Longitude:	104° 14' 7.341 W	
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.05 "

**Redbud Federal #3**

Well Position	+N-S	0.00 usft	Northing:	658,598.30 usft	Latitude:	32° 48' 37.933 N
	+E-W	0.00 usft	Easting:	530,087.20 usft	Longitude:	104° 14' 7.341 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,554.00 usft

**OH**

IGRF2010	07/11/11	7.93	60.61	48.887
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**Plan #4 7-7/8" Hole**

Audit Notes:

Version:	Phase:	PLAN	Tie On Depth:	0.00
0.00	0.00	0.00	0.00	153.28

Depth (ft)	Temperature (F)	Abundance (ppm)	Velocity (ft/min)	Flow (gpm)	Pressure (psi)	Depth (ft)	Depth (ft)	Depth (ft)	YTD (ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	0.00
1,284.40	8.29	153.28	1,283.77	-15.39	7.75	2.00	2.00	48.75	153.28
4,771.73	8.29	153.28	4,750.00	-358.50	180.50	0.00	0.00	0.00	0.00 PBHL-Redbud #3



Scientific Drilling International, Inc.  
Planning Report



EDM 5000.1 Single User Db  
COG Operating LLC  
Eddy County, NM (NAN27 NME)  
Redbud Federal #3  
Redbud Federal #3  
OH  
Plan #4 7-7/8" Hole

Site Redbud Federal #3  
GL Elev @ 3554.00usft  
GL Elev @ 3554.00usft  
Grid  
Minimum Curvature

	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
850.00	0.00	0.00	850.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>8-8/8" Casing</b>										
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>KOP Start Build 2.00"/100'</b>										
1,000.00	1.00	153.28	1,000.00	-0.39	0.20	0.44	2.00	2.00	0.00	0.00
1,100.00	3.00	153.28	1,098.93	-3.51	1.77	3.93	2.00	2.00	0.00	0.00
1,200.00	5.00	153.28	1,199.68	-8.74	4.90	10.90	2.00	2.00	0.00	0.00
1,284.40	6.29	153.28	1,283.77	-15.39	7.75	17.23	2.00	2.00	0.00	0.00
<b>EOC hold 6.29"</b>										
1,300.00	6.29	153.28	1,299.18	-18.88	9.50	21.13	0.00	0.00	0.00	0.00
1,400.00	6.29	153.28	1,398.55	-28.66	14.43	32.09	0.00	0.00	0.00	0.00
1,500.00	6.29	153.28	1,497.95	-38.44	19.35	43.04	0.00	0.00	0.00	0.00
1,600.00	6.29	153.28	1,597.35	-48.22	24.28	53.99	0.00	0.00	0.00	0.00
1,700.00	6.29	153.28	1,696.75	-58.01	29.21	64.94	0.00	0.00	0.00	0.00
1,800.00	6.29	153.28	1,796.15	-67.79	34.13	75.80	0.00	0.00	0.00	0.00
1,900.00	6.29	153.28	1,895.55	-77.57	39.08	86.65	0.00	0.00	0.00	0.00
2,000.00	6.29	153.28	1,994.94	-87.35	43.98	97.60	0.00	0.00	0.00	0.00
2,100.00	6.29	153.28	2,094.34	-97.14	48.91	108.75	0.00	0.00	0.00	0.00
2,200.00	6.29	153.28	2,193.74	-106.92	53.83	119.71	0.00	0.00	0.00	0.00
2,300.00	6.29	153.28	2,293.14	-116.70	58.76	130.66	0.00	0.00	0.00	0.00
2,400.00	6.29	153.28	2,392.54	-126.48	63.68	141.61	0.00	0.00	0.00	0.00
2,500.00	6.29	153.28	2,491.94	-136.27	68.61	152.56	0.00	0.00	0.00	0.00
2,600.00	6.29	153.28	2,591.33	-146.05	73.53	163.52	0.00	0.00	0.00	0.00
2,700.00	6.29	153.28	2,690.73	-155.83	78.46	174.47	0.00	0.00	0.00	0.00
2,800.00	6.29	153.28	2,790.13	-165.61	83.38	185.42	0.00	0.00	0.00	0.00
2,900.00	6.29	153.28	2,889.53	-175.40	88.31	196.37	0.00	0.00	0.00	0.00
3,000.00	6.29	153.28	2,988.93	-185.18	93.24	207.33	0.00	0.00	0.00	0.00
3,100.00	6.29	153.28	3,088.33	-194.96	98.16	218.28	0.00	0.00	0.00	0.00
3,200.00	6.29	153.28	3,187.72	-204.74	103.09	229.23	0.00	0.00	0.00	0.00
3,212.35	6.29	153.28	3,200.00	-205.95	103.89	230.58	0.00	0.00	0.00	0.00
<b>Top of Paddock</b>										
3,229.09	6.29	153.28	3,216.64	-207.59	104.52	232.42	0.00	0.00	0.00	0.00
<b>TG1-Redbud #3</b>										
3,300.00	6.29	153.28	3,287.12	-214.53	108.01	240.18	0.00	0.00	0.00	0.00
3,400.00	6.29	153.28	3,386.52	-224.31	112.94	251.14	0.00	0.00	0.00	0.00
3,500.00	6.29	153.28	3,485.92	-234.09	117.86	262.09	0.00	0.00	0.00	0.00
3,600.00	6.29	153.28	3,585.32	-243.87	122.79	273.04	0.00	0.00	0.00	0.00
3,700.00	6.29	153.28	3,684.72	-253.66	127.71	283.99	0.00	0.00	0.00	0.00
3,800.00	6.29	153.28	3,784.12	-263.44	132.64	294.95	0.00	0.00	0.00	0.00
3,900.00	6.29	153.28	3,883.51	-273.22	137.56	305.90	0.00	0.00	0.00	0.00
4,000.00	6.29	153.28	3,982.91	-283.01	142.49	316.85	0.00	0.00	0.00	0.00
4,100.00	6.29	153.28	4,082.31	-292.79	147.41	327.80	0.00	0.00	0.00	0.00
4,200.00	6.29	153.28	4,181.71	-302.57	152.34	338.76	0.00	0.00	0.00	0.00
4,300.00	6.29	153.28	4,281.11	-312.35	157.27	349.71	0.00	0.00	0.00	0.00
4,400.00	6.29	153.28	4,380.51	-322.14	162.19	360.66	0.00	0.00	0.00	0.00
4,500.00	6.29	153.28	4,479.90	-331.92	167.12	371.61	0.00	0.00	0.00	0.00
4,600.00	6.29	153.28	4,579.30	-341.70	172.04	382.57	0.00	0.00	0.00	0.00
4,700.00	6.29	153.28	4,678.70	-351.48	176.97	393.52	0.00	0.00	0.00	0.00
4,771.73	6.29	153.28	4,750.00	-358.50	180.50	401.38	0.00	0.00	0.00	0.00
<b>FBHL-Redbud #3</b>										





Redbud Federal #3  
 Eddy County, NM (NAN27 NME)  
 Northing (Y) 658598.30  
 Easting (X) 530097.20  
 Plan #4 7-7/8" Hole



Adjusted to Grid North  
 True North: 0.00°  
 Magnetic North: 7.87°  
 Magnetic Field  
 Strength: 0.50 Gauss  
 Dip Angle: 0.01°  
 Date: 07/11/2011  
 Model: 1027-2194

**WELL DETAILS: Redbud Federal #3**

Well ID	UWI	Number	Ground Level Easting	3554.08	Latitude	Longitude	Est
0.00	8.00	06009.00	530097.20	37° 42' 57.00" N	104° 14' 7.54" W		

**BTE DETAILS: Redbud Federal #3**

Well Centre Northing: 658598.30  
 Easting: 530097.20

Regional Universality: 0.00  
 Convergence: 0.04  
 Least North: 0.04

**SECTION DETAILS**

Seq	MD	Top	Bot	TVD	+H/L	-H/L	Obq	True	Vertical	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	1394.40	4.28	153.28	1393.77	-14.28	7.78	2.00	153.28	17.22	
4	4771.73	9.20	153.28	4760.00	-318.50	180.50	0.00	9.20	-41.34	PBM, Redbud #3

Map System: US State Plane 1027 (Estate solution)  
 Datum: NAD 1927 (NADCON CONUS)  
 Ellipsoid: Clarke 1822  
 Zero Merid: West Meridians East 3001

Local Origin: 845 Redbud Federal #3, Old North

Latitude: 37° 42' 57.000" N  
 Longitude: 104° 14' 7.541" W

Grid East: 630091.00  
 Grid North: 658598.30  
 Scale Factor: 1.000

Geographic Model: NAD 1927  
 Source Data: 11 Jul 11  
 Magnetic Declination: 7.87°  
 Dip Angle True Horizontal: 0.01°  
 Magnetic Field Strength: 0.50 G

To convert Magnetic North to Grid Add 7.87°  
 To convert Magnetic North to True North Add 1.00° East  
 To convert True North to Grid Subtract 0.01°

**DESIGN TARGET DETAILS**

Name	TVD	+H/L	-H/L	Number	Easting	Latitude	Longitude	Shape
PBM, Redbud #3	4760.00	-318.50	180.50	658298.00	530097.20	37° 42' 57.00" N	104° 14' 7.541" W	Circle (Radius: 50.00)

**FORMATION TOP DETAILS**

TVD/Fac	MD/Fac	Formation	Dip/Angle	Dp/Cv
3300.00	3317.34	Top of Redbud	0.00	

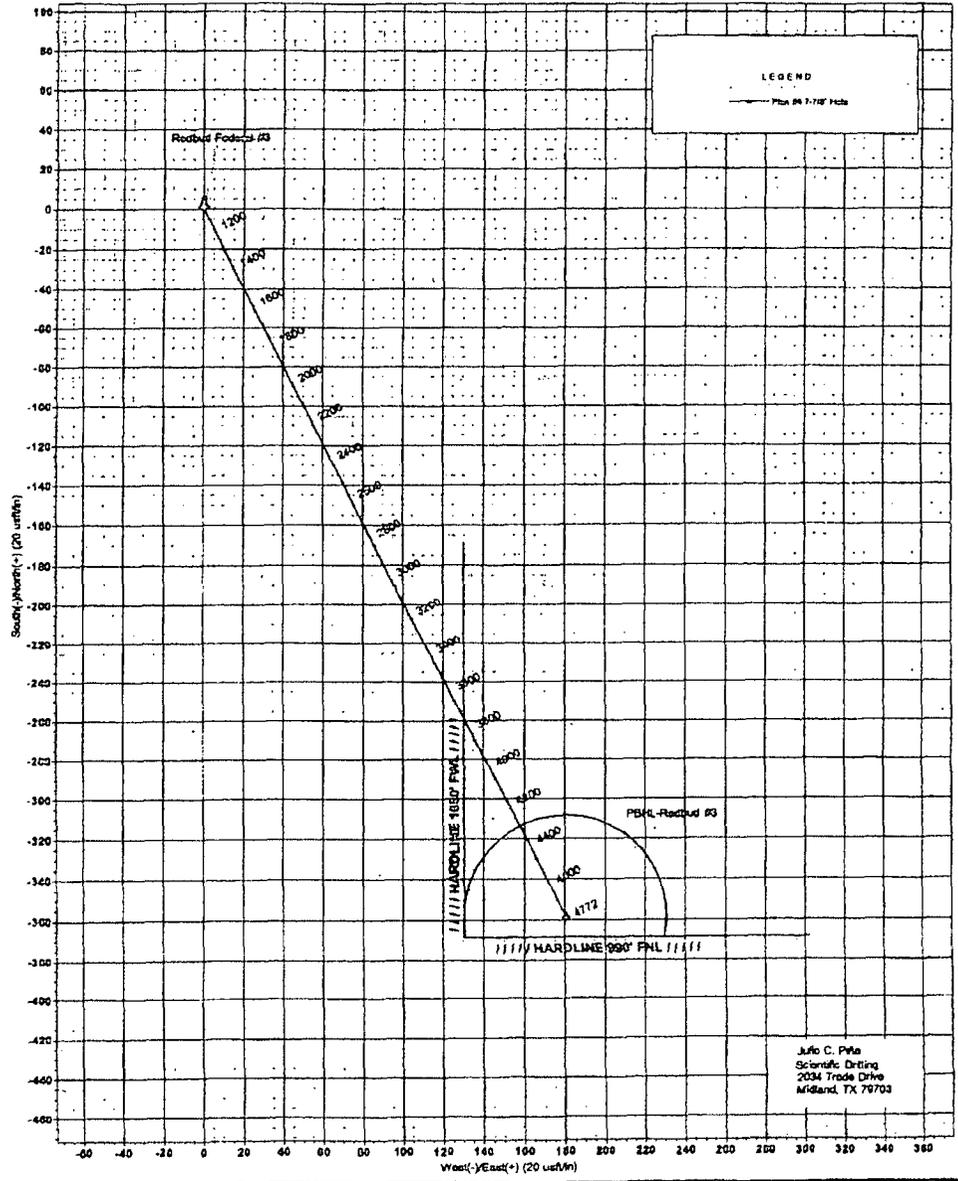
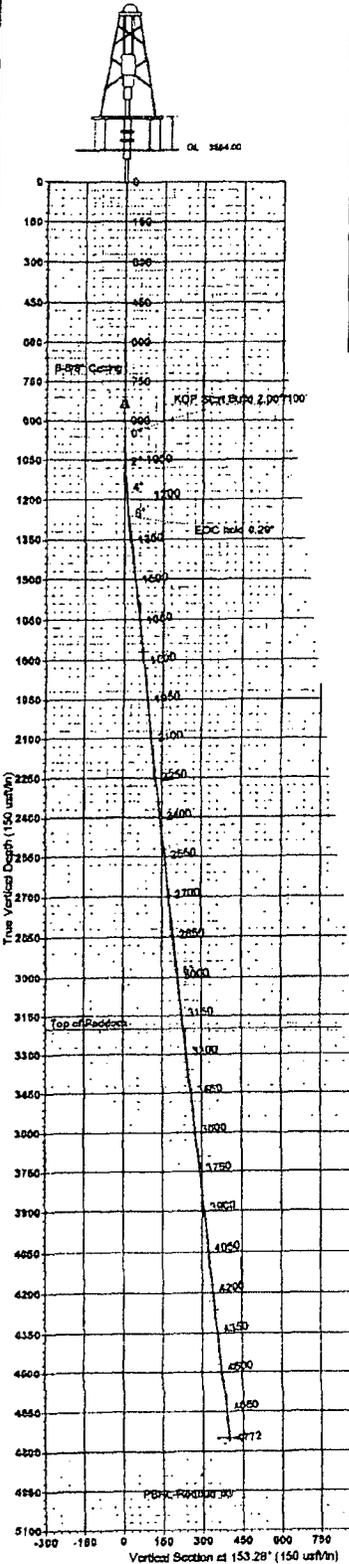
**CASING DETAILS**

TVD	MD	Name	Size
950.00	950.00	8-5/8" Casing	8-5/8"

**PROJECT DETAILS: Eddy County, NM (NAN27 NME)**

Coordinate System: US State Plane 1027 (Estate solution)  
 Datum: NAD 1927 (NADCON CONUS)  
 Ellipsoid: Clarke 1822  
 Zone: West Meridians East 3001

System Datum: Mean Sea Level



John C. Pika  
 Scientific Drilling  
 2004 Trade Drive  
 Midland, TX 79703

**PECOS DISTRICT  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	NM-94595
WELL NAME & NO.:	Redbud Federal #3
SURFACE HOLE FOOTAGE:	715' FNL & 1633' FWL
BOTTOM HOLE FOOTAGE:	990' FNL & 1650' FWL
LOCATION:	Section 25, T. 17 S., R. 27 E., NMPM
COUNTY:	Eddy County, New Mexico

**I. SPECIAL REQUIREMENT(S)**

Recontour drainage after interim reclamation has taken place on west side

**Cave and Karst**

\*\* Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

**Cave/Karst Surface Mitigation**

The following stipulations will be applied to minimize impacts during construction, drilling and production.

**Construction:**

In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

**No Blasting:**

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

**Pad Berming:**

The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

**Tank Battery Liners and Berms:**

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

**Leak Detection System:**

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

**Automatic Shut-off Systems:**

Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

**Cave/Karst Subsurface Mitigation**

The following stipulations will be applied to protect cave/karst and ground water concerns:

**Rotary Drilling with Fresh Water:**

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

**Directional Drilling:**

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

**Lost Circulation:**

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

**Abandonment Cementing:**

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

**Pressure Testing:**

Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.