

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

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

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		8. Well Name and No. PLU BIG SINKS 24-25-30 USA 1H
2. Name of Operator BOPCO LP Contact: WHITNEY MCKEE E-Mail: wbmckee@basspet.com		9. API Well No. 30-015-41648 41693
3a. Address P.O. BOX 2760 MIDLAND, TX 79702	3b. Phone No. (include area code) Ph: 432-683-2277	10. Field and Pool, or Exploratory UNDESIGNATED, BONE SPRING WULDCAT G-05 S2630040; B.S.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 13 T25S R30E SWSW 85FSL 690FWL 32.123257 N Lat, 103.240463 W Lon		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			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

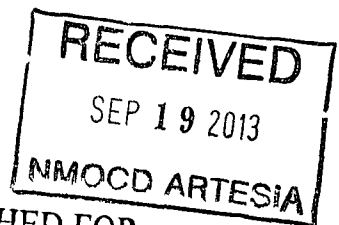
13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths 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 recompletion 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.)

API# 30-015-41648

BOPCO, L.P. request to skid 50? from Poker Lake Unit Big Sinks 24-25-30 #1H to Poker Lake Unit Big Sinks 24-25-30 #1H. A new well will be spotted on the same pad 50? east of the current surface hole location: 85? FSL, 740? FWL. Skid and new well is necessary due to loss of surface hole.

Sundry for pad extension:

BOPCO, L.P. request to extend the current pad that the PLU Big Sink 24-25-30 #1H is located on 50? to the east, thus allowing BOPCO to reset conductor, MH/RH and begin a new well with the same name PLU Big Sinks 24-25-30 #1H on the same location.

SEE ATTACHED FOR
CONDITIONS OF APPROVALREG-0025 'N SL' Accepted for record
NMOC D TCS/15/2013

14. I hereby certify that the foregoing is true and correct. Electronic Submission #220193 verified by the BLM Well Information System For BOPCO LP, sent to the Carlsbad Committed to AFMSS for processing by CHRISTOPHER WALLS on 09/18/2013 ()	
Name (Printed/Typed) BRIAN BRAUN	Title DRILLING ENGINEER
Signature [Signature]	Date 09/16/2013

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By [Signature]	Title AFM	Date 9/18/13
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 CFO

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.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007

TES
9/19/2013

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. BHL:NMLC 0063079A
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name see pg 1 of 8 pt for complete leases
2. Name of Operator BOPCO, L. P.		7. If Unit or CA Agreement, Name and No. Poker Lake Unit NMINM 71016X
3a. Address P. O. Box 2760 Midland, TX 79702		8. Lease Name and Well No. PLU Big Sinks 24-25-30 USA #1Y <356402>
3b. Phone No. (include area code) 432-683-2277		9. API Well No. 30-015-41693
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface SWSW, U1. M, 85' FSL & 740' FWL, Lat:N32.123264, Long:W103.840297 At proposed prod. zone 70' FSL, 660' FWL, Sec24, T25S-R30E, Lat:N32.108582, Long:W103.840619		10. Field and Pool, or Exploratory Undesignated (None Spring) WILDCAT
11. Sec., T. R. M. or Blk. and Survey or Area Sec 13, T25S-R30E		12. County or Parish Eddy County
13. State NM		
15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 70'	16. No. of acres in lease 3805.08	17. Spacing Unit dedicated to this well 160
18. Distance from proposed location to nearest well, drilling, completed, applied for, on this lease, ft. 50'	19. Proposed Depth 14,373' MD/ 9,251' TVD	20. BLM/BIA Bond No. on file COB 000050
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,301' GL	22. Approximate date work will start 08/21/2013	23. Estimated duration 21 Days

24. Attachments

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

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

25. Signature <i>Courtney Lockhart</i>	Name (Printed/Typed) Courtney Lockhart	Date 9-17-13
Title Regulatory Analyst		
Approved by (Signature) <i>Septin J. Coff</i>	Name (Printed/Typed) Carlsbad	Date 9/18/13
Title AFM	Office Carlsbad	

Application approval 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.
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.

*(Instructions on page 2)

Require "NSL" TES
9/18/2013

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

DISTRICT I

1625 N. French Dr., Hobbs, NM 88240
Phone (505) 393-8101 Fax: (505) 393-0720

DISTRICT II

811 S. First St., Artesia, NM 88210
Phone (505) 746-1823 Fax: (505) 746-9720

DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3400 Fax: (505) 476-3400State of New Mexico
Energy, Minerals and Natural Resources DepartmentForm C-102
Revised August 1, 2011Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-015-41693	Pool Code 96046	Pool Name UNDESIGNATED, BONE SPRING
Property Code 306402-40115	Property Name WILDCAT G-05 52630010; BS.	Well Number 1Y-1
OGRID No. 260737	Operator Name BOPCO, L.P.	Elevation 3301'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	13	25 S	30 E		85	SOUTH	740	WEST	EDDY

Bottom Hole Location If Different From Surface

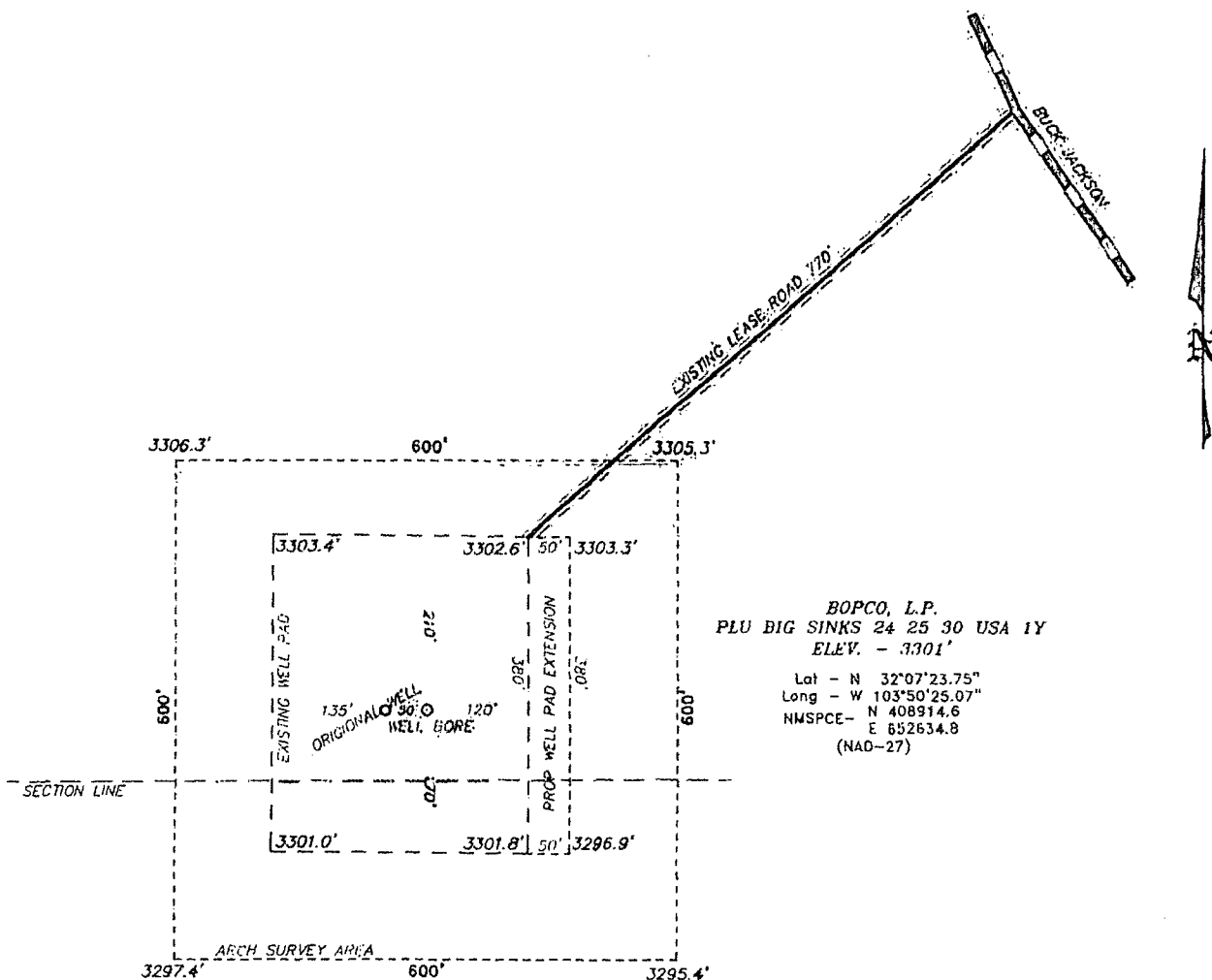
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	24	25 S	30 E		70	SOUTH	660	WEST	EDDY

Dedicated Acres 160	Joint or Infill	Consolidation Code	Order No. NSL
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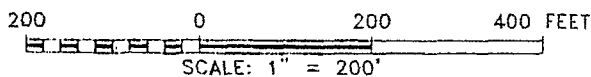
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SURFACE LOCATION Lat - N 32°07'23.75" Long - W 103°50'25.07" NMSPCE - N 408914.6 E 652634.8 (NAD-27) PROPOSED BOTTOM HOLE LOCATION Lat - N 32°06'30.91" Long - W 103°50'26.21" NMSPCE - N 403575.8 E 652561.0 (NAD-27)		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 or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or a voluntary pooling agreement or a compulsory pooling order heretofore entered by the Division. <i>Courtney Lockhart</i> Signature Date: 9-17-13 Courtney Lockhart Printed Name cjlockhart@basspet.com Email Address 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. SEP 18 2013 Date Surveyed Signature of Professional Surveyor Certification Number 7977 BASS PETROLEUM 0' 1000' 2000' 3000' 4000' SCALE: 1" = 2000' WO Num.: 29414
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SECTION 13, TOWNSHIP 25 SOUTH, RANGE 30 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



LOVING, NM IS ± 19 MILES TO THE NORTHEAST OF LOCATION.



Directions to Location:

FROM THE JUNCTION OF OF BUCK JACKSON AND
TWIN WELLS, GO SOUTHEAST ON BUCK JACKSON FOR
2.9 MILES TO LEASE ROAD, GO SOUTHWEST ON
LEASE ROAD FOR 0.1 MILES TO WELL PAD AND
PROPOSED LOCATION.



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P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241

(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

BOPCO, L.P. 

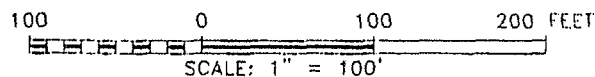
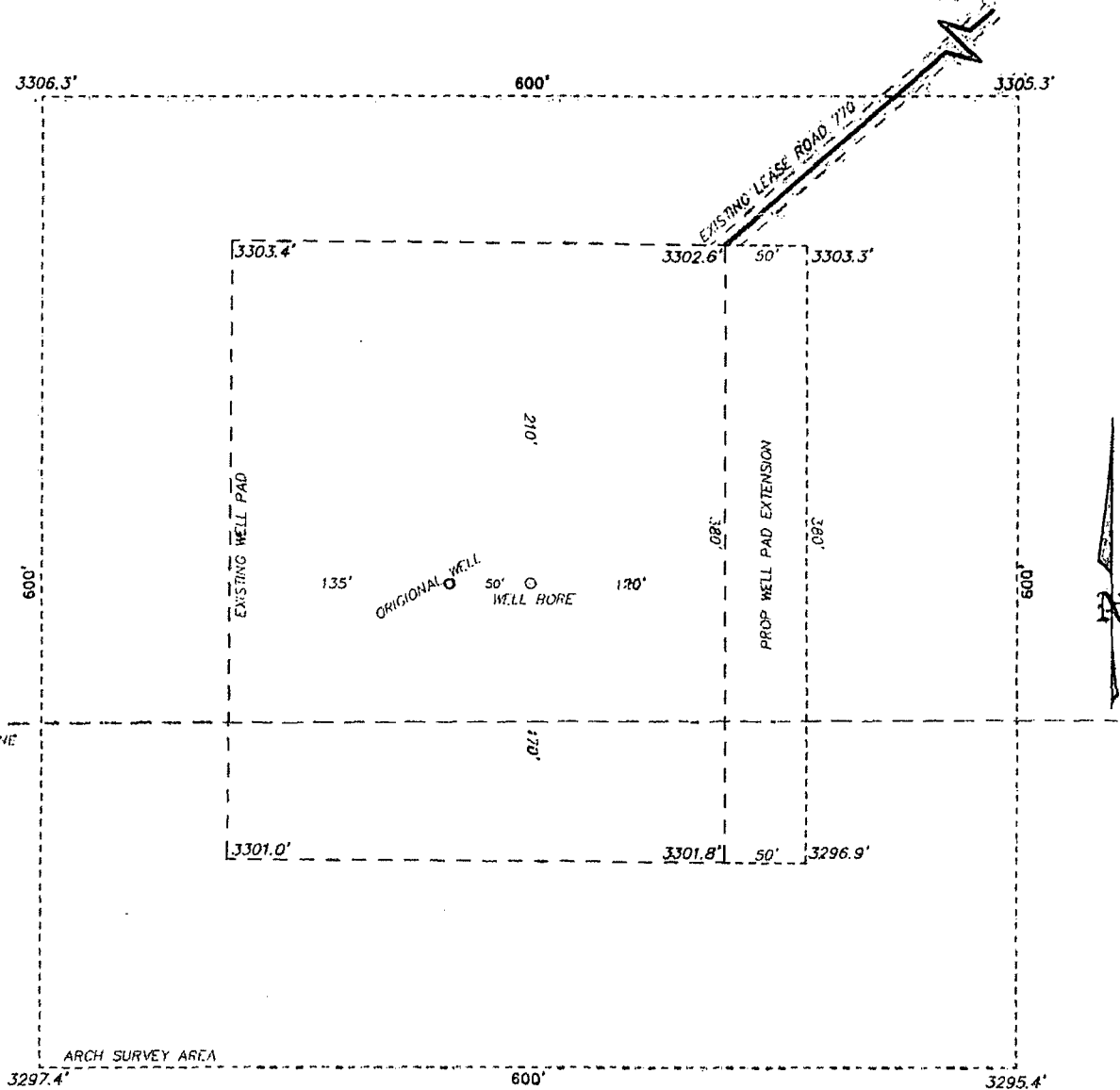
REF: PLU BIG SINKS 24 25 30 USA 1Y / WELL PAD TOPO

THE PLU BIG SINKS 24 25 30 USA 1Y LOCATED 85' FROM
THE SOUTH LINE AND 740' FROM THE WEST LINE OF
SECTION 13, TOWNSHIP 25 SOUTH, RANGE 30 EAST.

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

W.O. Number: 29414	Drawn By: J. SMALL	Date: 09-17-2013	Survey Date: 09-16-2013	Sheet 1 of 1 Sheets
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SECTION 13, TOWNSHIP 25 SOUTH, RANGE 30 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



BOPCO, L.P. 

REF: PLU BIG SINKS 24 25 30 USA 1Y / WELL PAD TOPO

THE PLU BIG SINKS 24 25 30 USA 1Y LOCATED 85' FROM
THE SOUTH LINE AND 740' FROM THE WEST LINE OF
SECTION 13, TOWNSHIP 25 SOUTH, RANGE 30 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

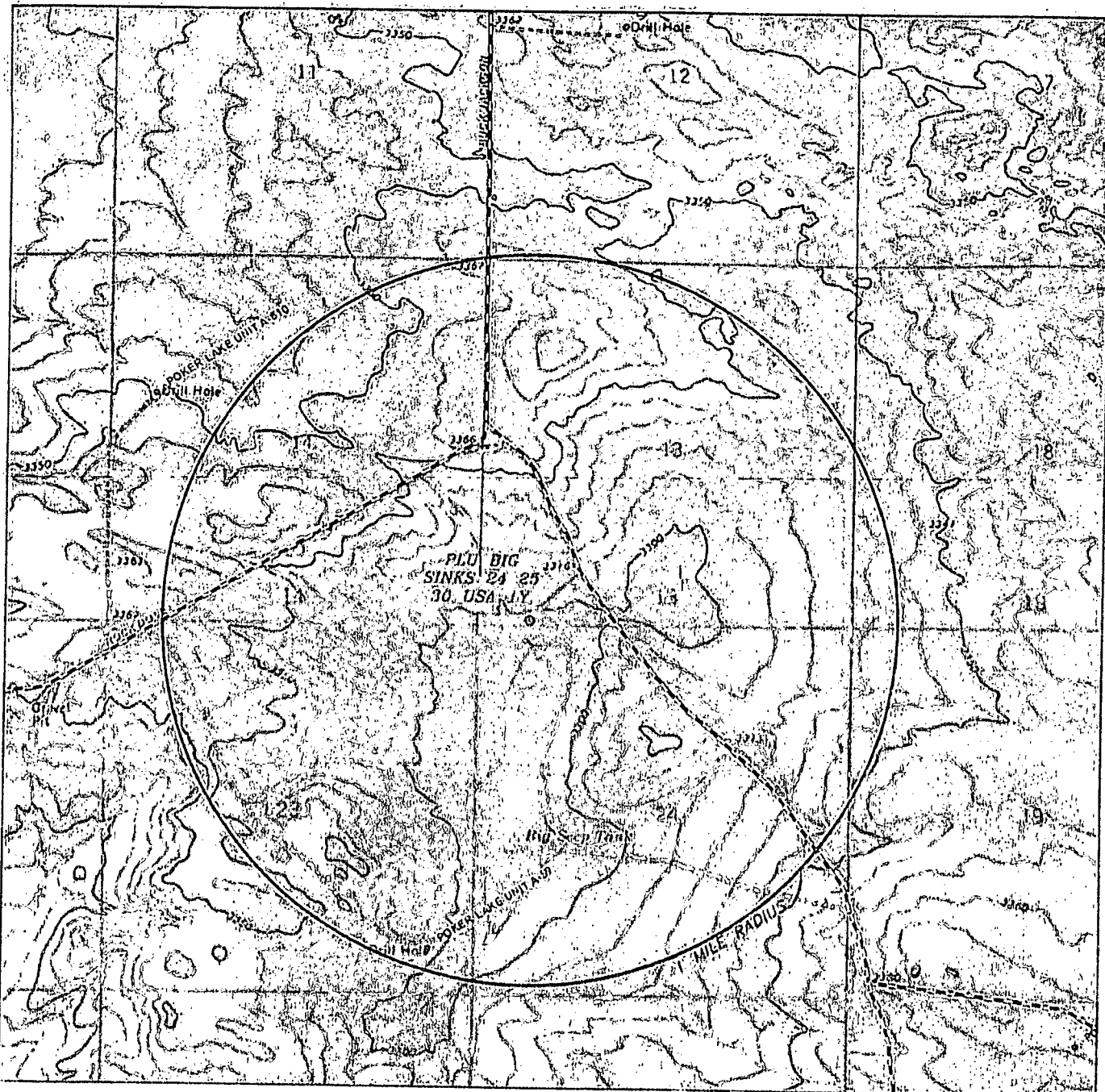
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W.O. Number: 29414	Drawn By: J. SMALL	Date: 08-09-2013	Survey Date: 09-16-2013	Sheet 1 of 1 Sheets
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PLU BIG SINKS 24 25 30 USA 1Y

Located 85' FSL and 740' FWL

Section 13, Township 25 South, Range 30 East,
N.M.P.M., Eddy County, New Mexico.

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0' 1000' 2000' 3000' 4000'

SCALE: 1" = 2000'

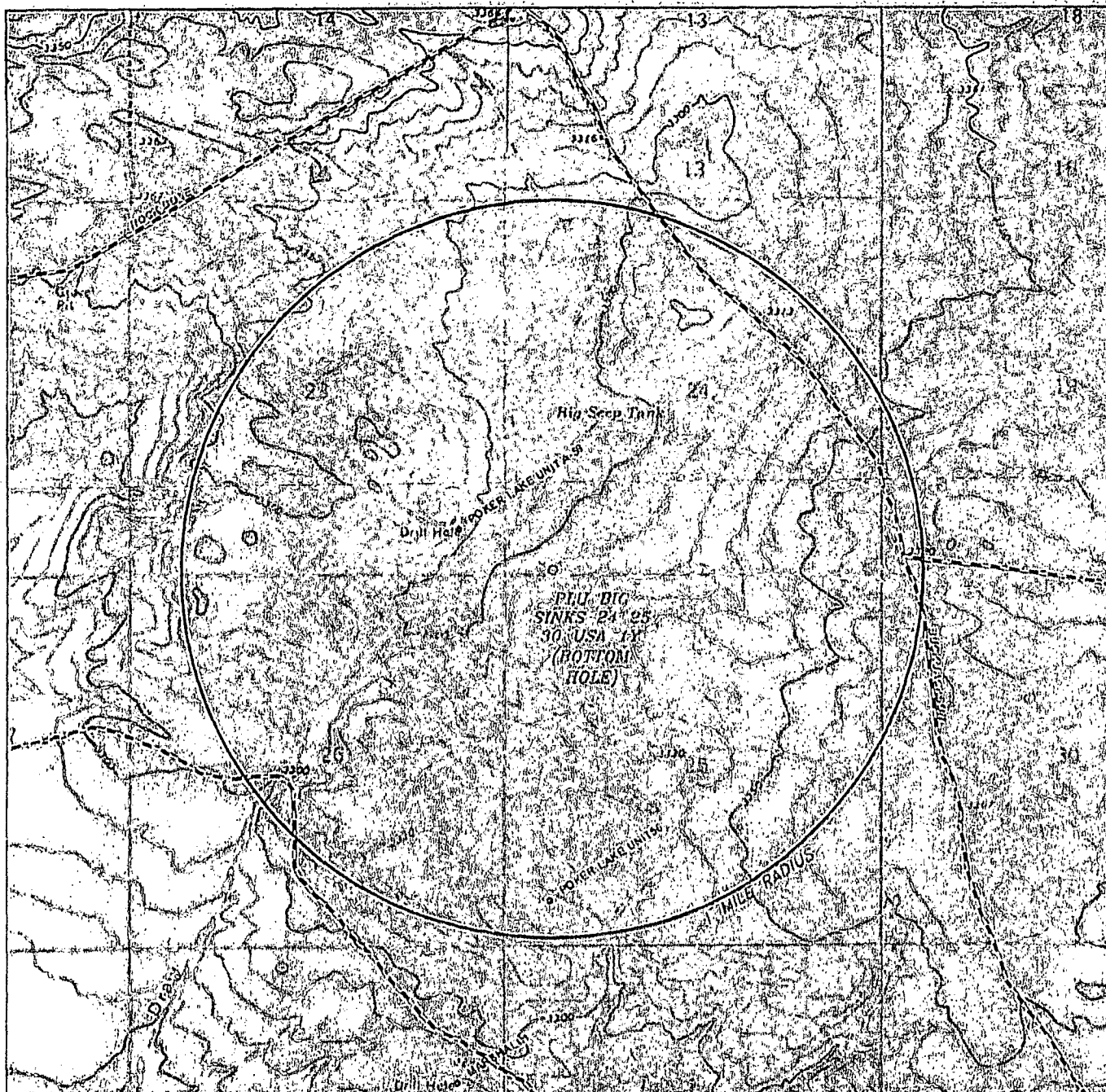
W.O. Number: JMS 29414

Survey Date: 09-16-2013

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND



BOPCO, L.P.



PLU BIG SINKS 24 25 30 USA 1Y (BOTTOM HOLE)

Located 70' FSL and 660' FWL

Section 24, Township 25 South, Range 30 East,
N.M.P.M., Eddy County, New Mexico.

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0' 1000' 2000' 3000' 4000'

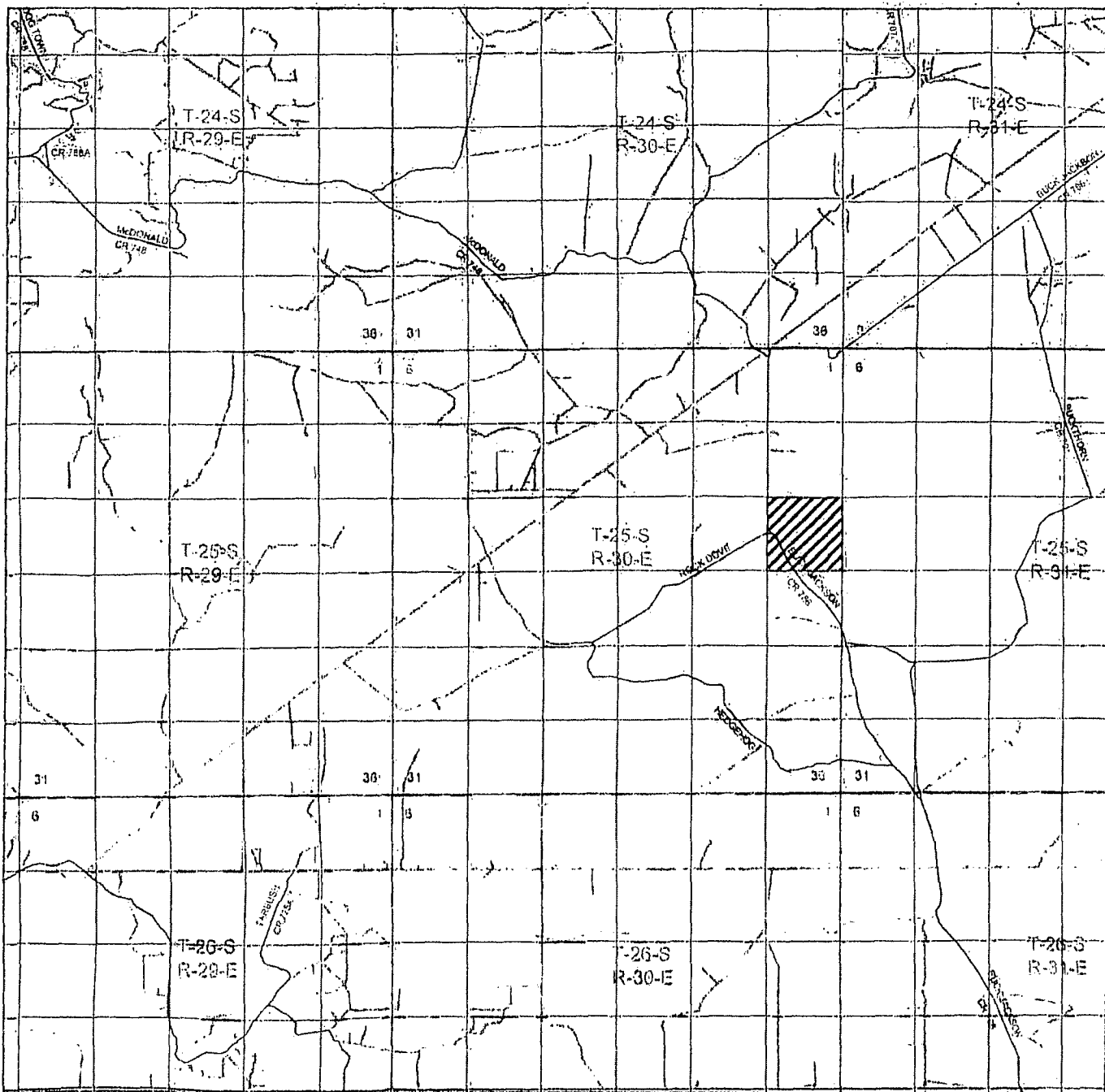
SCALE: 1" = 2000'

W.O. Number: JMS 29414

Survey Date: 09-16-2013

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND

BOPCO, L.P.



PLU BIG SINKS 24 25 30 USA 1Y

Located 85' FSL and 740' FWL

Section 13, Township 25 South, Range 30 East,
N.M.P.M., Eddy County, New Mexico.

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0 1 MI 2 MI 3 MI 4 MI

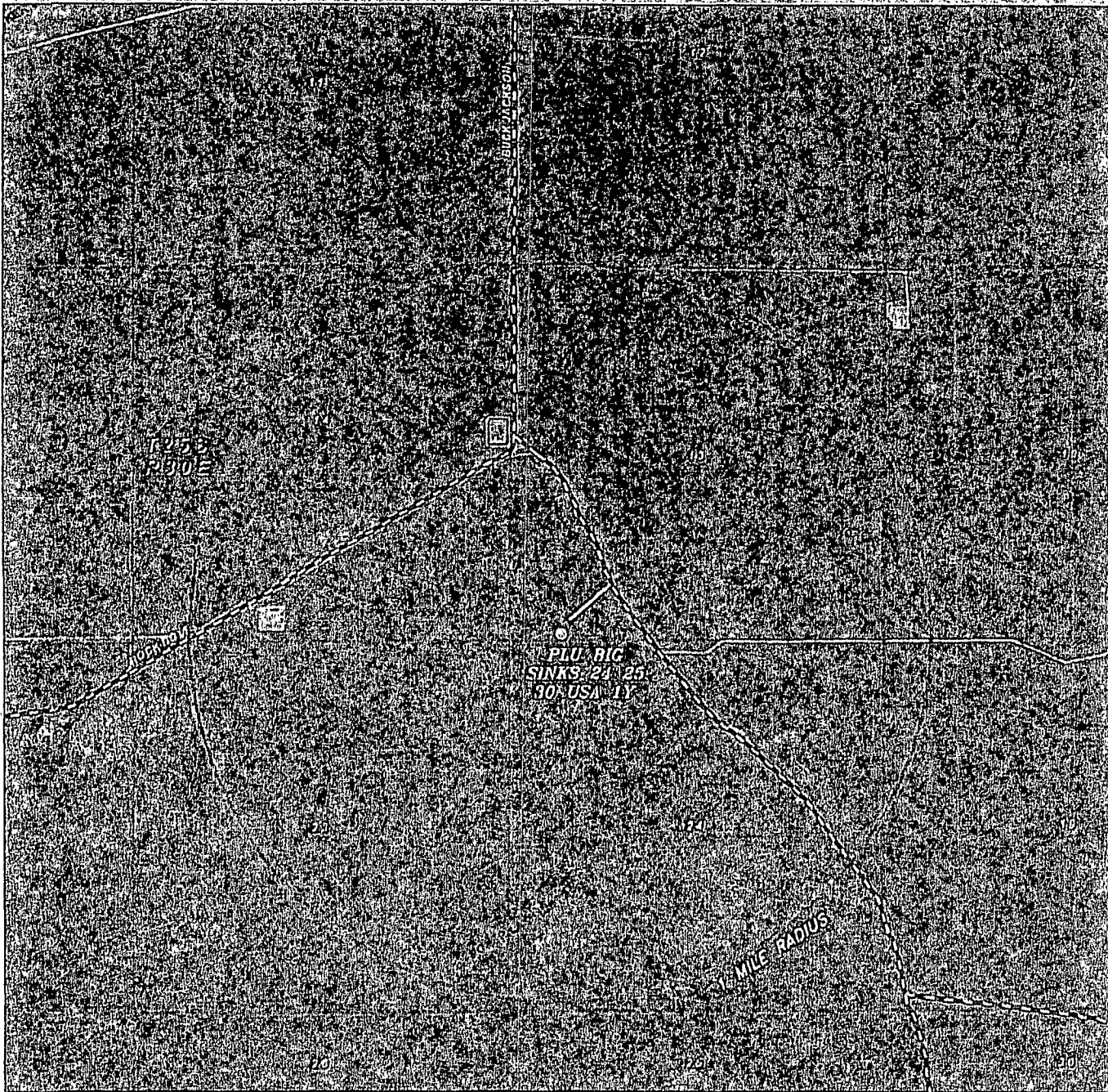
SCALE: 1" = 2 MILES

W.O. Number: JMS 29414

Survey Date: 09-16-2013

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND

BOPCO, L.P.



PLU BIG SINKS 24 25 30 USA 1Y
 Located 85' FSL and 740' FWL
 Section 13, Township 25 South, Range 30 East,
 N.M.P.M., Eddy County, New Mexico.

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0' 1000' 2000' 3000' 4000'

SCALE: 1" = 2000'

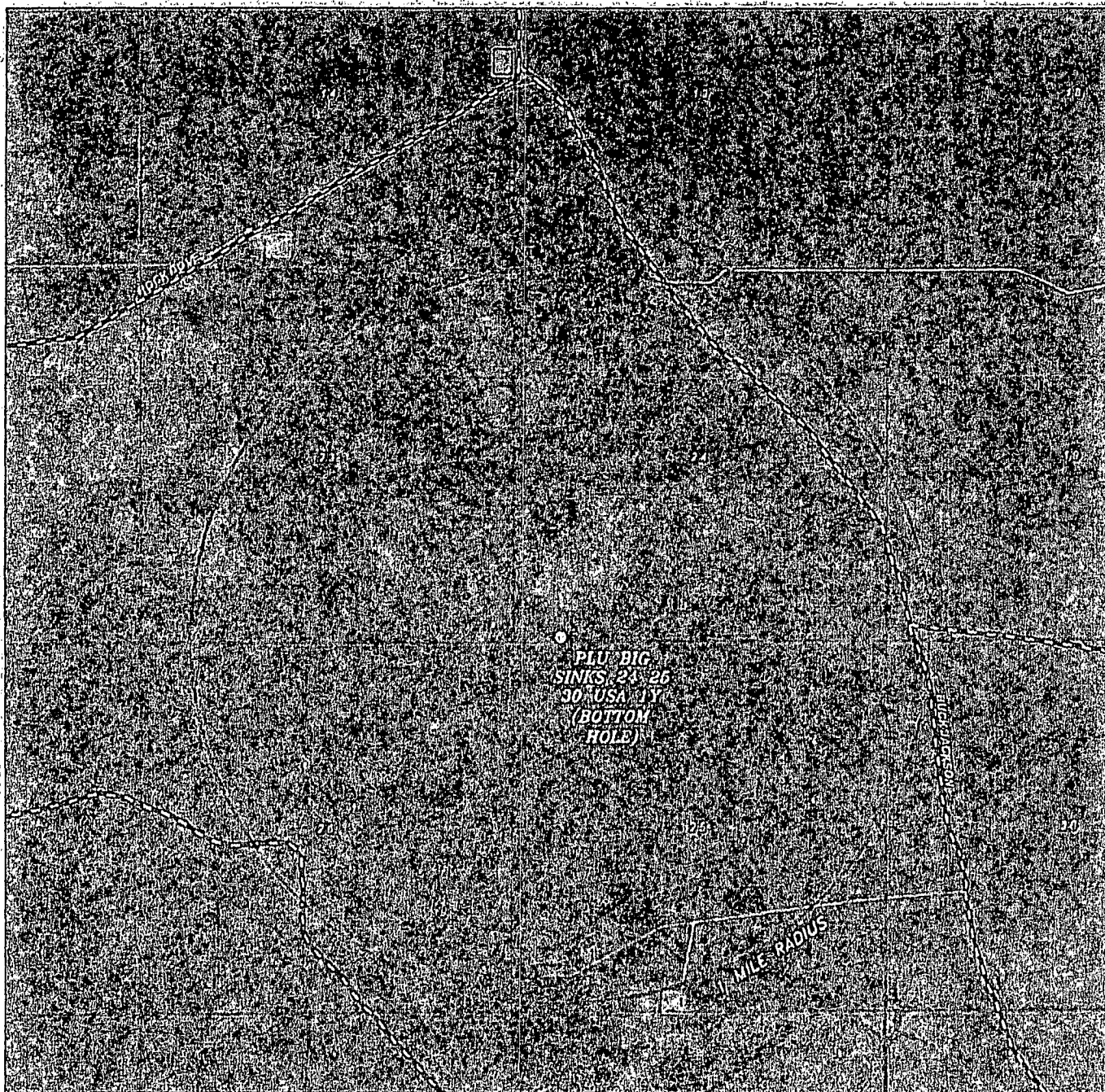
W.O. Number: JMS 29114

Survey Date: 09-16-2013

YELLOW TINT - USA LAND
 BLUE TINT - STATE LAND
 NATURAL COLOR - FEE LAND



BOPCO, L.P.



PLU BIG SINKS 24 25 30 USA 1Y (BOTTOM HOLE)

Located 70' FSL and 660' FWL

Section 24, Township 25 South, Range 30 East,
N.M.P.M., Eddy County, New Mexico.

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0' 1000' 2000' 3000' 4000'

SCALE 1" = 2000'

W.O. Number: JMS 28418

Survey Date: 09-16-2013

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND

BOPCO, L.P.



Company: Bopco, L.P.
Field: Eddy County, NM (NAD27)
Location: Big Sinks Unit
Well: PLU Big Sinks 24-25-30 USA #1Y
Original Hole

Plan: Plan #1 (PLU Big Sinks 24-25-30 USA #1Y/Original Hole)
RKB=22' @ 3323.00usft (Latshaw Rig #14)

gyro/data

Precision Wellbore Placement

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	8697.00	0.00	0.00	8697.00	0.00	0.00	0.00	0.00	0.00	
3	9596.39	89.94	180.79	9269.96	-572.30	-7.91	10.00	180.79	572.35	
4	14363.35	89.94	180.79	9275.00	-5338.80	-73.80	0.00	0.00	5339.31	PBHL (BS 24-25-30 USA #1Y)

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL (BS 24-25-30 USA #1Y)	9275.00	-5338.80	-73.80	403575.80	652561.00	Rectangle (Sides: L4766.00 W40.00)

WELL DETAILS: PLU Big Sinks 24-25-30 USA #1Y

Ground Level: 3301.00		RKB=22' @ 3323.00usft (Latshaw Rig #14)			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	408914.60	652634.80	32° 7' 23.746 N	103° 50' 25.067 W

ANNOTATIONS

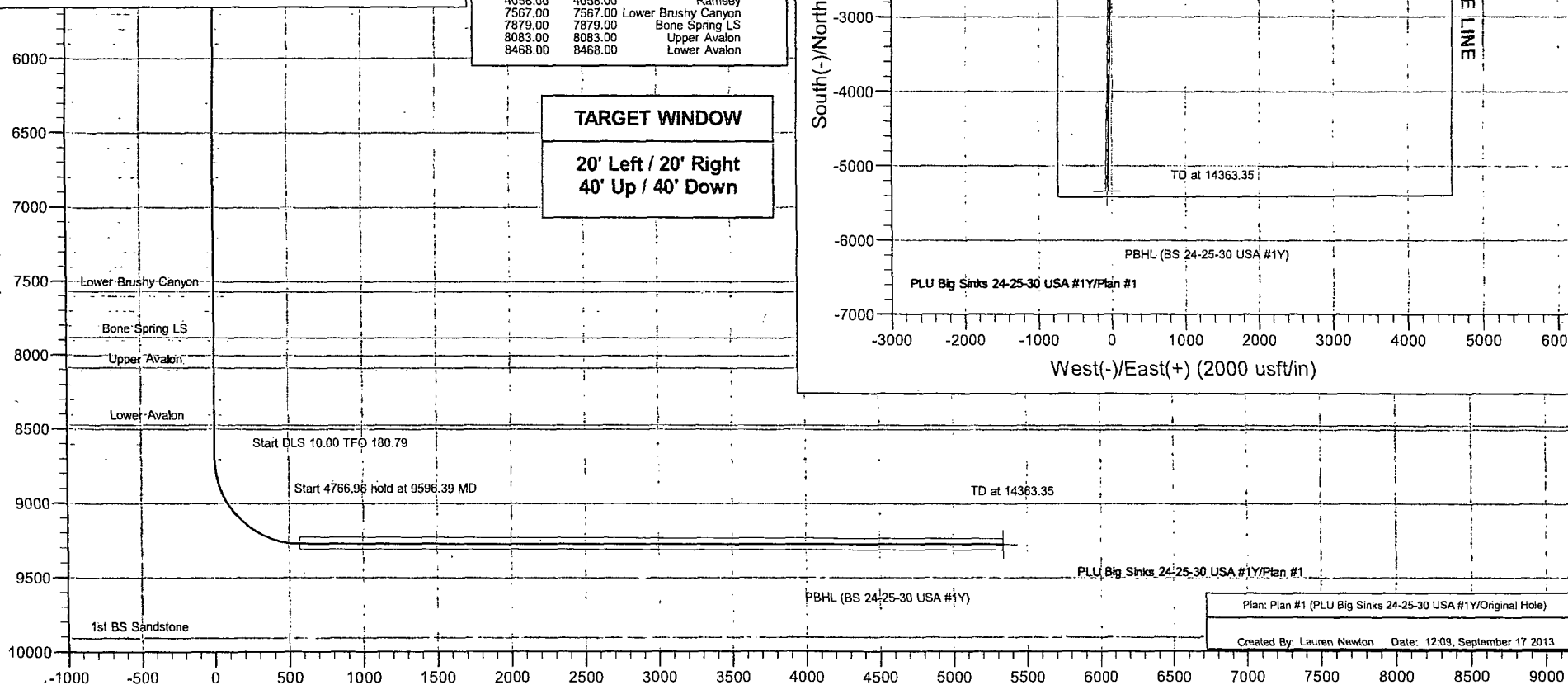
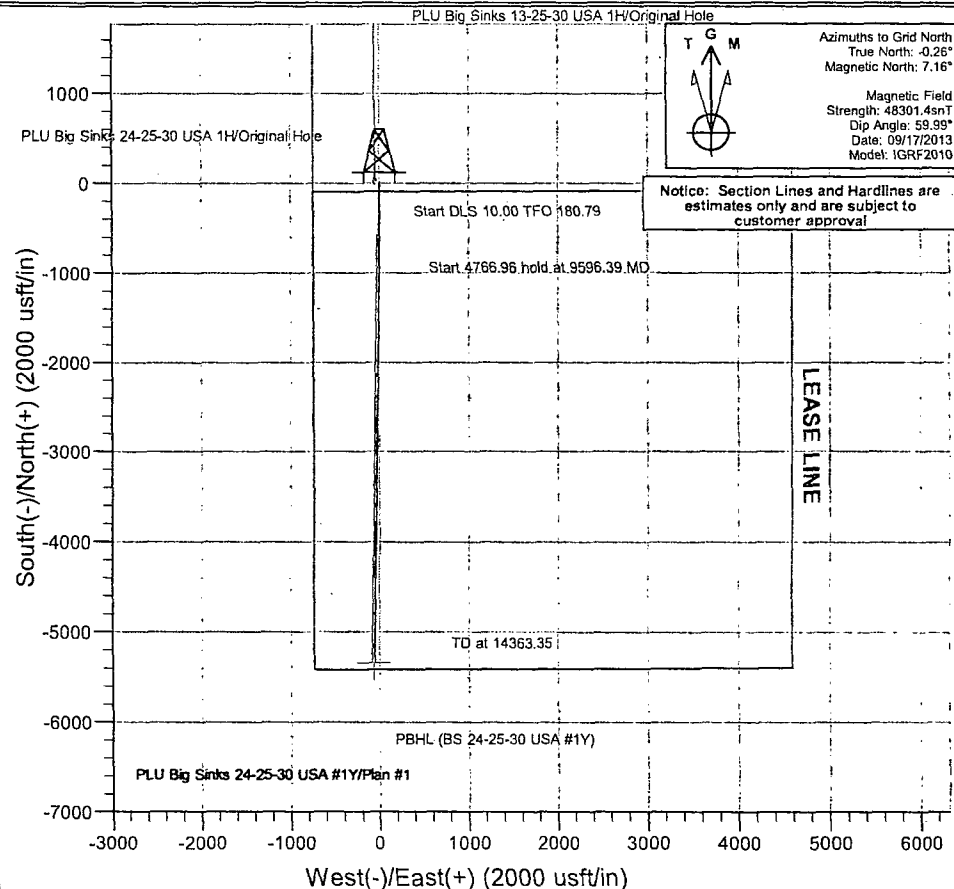
FORMATION TOPS ALONG WELLPATH

TVD	MD	Annotation
8697.00	8697.00	Start DLS 10.00 TFO 180.79
9269.96	9596.39	Start 4766.96 hold at 9596.39 MD
9275.00	14363.35	TD at 14363.35

TVDPATH	MDPATH	Formation
956.00	956.00	Rustler
1266.00	1266.00	Salado
4006.00	4006.00	Lamar Lime
4058.00	4058.00	Ramsey
7567.00	7567.00	Lower Brushy Canyon
7879.00	7879.00	Bone Spring LS
8083.00	8083.00	Upper Avalon
8468.00	8468.00	Lower Avalon

TARGET WINDOW

20' Left / 20' Right
40' Up / 40' Down



Plan: Plan #1 (PLU Big Sinks 24-25-30 USA #1Y/Original Hole)

Created By: Lauren Newton Date: 12/09, September 17 2013



Bopco, L.P.

Eddy County, NM (NAD27)

Big Sinks Unit

PLU Big Sinks 24-25-30 USA #1Y

Original Hole

Plan: Plan #1

Standard Planning Report

17 September, 2013

gyro/data

Precision Wellbore Placement



Database:	Gyrodatta	Local Co-ordinate Reference:	Well: PLU Big Sinks 24-25-30 USA #1Y
Company:	Bopco, L.P.	TVD Reference:	RKB#22' @ 3323.00usft (Lalshaw Rig #14)
Project:	Eddy County, NM (NAD27)	MD Reference:	RKB#22' @ 3323.00usft (Lalshaw Rig #14)
Site:	Big Sinks Unit	North Reference:	Grid
Well:	PLU Big Sinks 24-25-30 USA #1Y	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Project:	Eddy County, NM (NAD27)		
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		

Site:	Big Sinks Unit		
Site Position:	Northings:	408,914.60 usft	Latitude: 32° 7' 23.746 N
From: Map	Easting:	652,634.80 usft	Longitude: 103° 50' 25.067 W
Position Uncertainty:	0.00 usft	Slot Radius: 13-3/16"	Grid Convergence: 0.26°

Well:	PLU Big Sinks 24-25-30 USA #1Y		
Well Position	+N/-S	0.00 usft	Northings: 408,914.60 usft
	+E/-W	0.00 usft	Easting: 652,634.80 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level: 3,301.00 usft

Wellbore:	Original Hole		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	09/17/13	7.43	59.99	48,301

Design:	Plan #1		
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Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			180.79

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,697.00	0.00	0.00	8,697.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,596.39	89.94	180.79	9,269.96	-572.30	-7.91	10.00	10.00	-19.93	180.79	
14,363.36	89.94	180.79	9,275.00	-5,338.80	-73.80	0.00	0.00	0.00	0.00	PBHL (BS 24-25-30 L



Database:	Gyrodata	Local Co-ordinate Reference:	Well PLU Big Sinks 24-25-30 USA #14
Company:	Bonco, LLP	TVD Reference:	RKB=22' @ 3323'00usft (Lalshaw Rig #14)
Project:	Eddy County NM (NAD27)	MD Reference:	RKB=22' @ 3323'00usft (Lalshaw Rig #14)
Site:	Big Sinks Unit	North Reference:	Grid
Well:	PLU Big Sinks 24-25-30 USA #14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan # 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
956.00	0.00	0.00	956.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,266.00	0.00	0.00	1,266.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado									
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,006.00	0.00	0.00	4,006.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamar Lime									
4,031.00	0.00	0.00	4,031.00	0.00	0.00	0.00	0.00	0.00	0.00
8158									
4,058.00	0.00	0.00	4,058.00	0.00	0.00	0.00	0.00	0.00	0.00
Ramsey									
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00



Database:	Gyrodata	Local Co-ordinate Reference:	Well P/U Big Sinks 24-25-30 USA #1Y
Company:	Bopco, L.P.	TVD Reference:	RKB=22' @ 3323.00usft (Lalshaw Rig #14)
Project:	Eddy County, NM (NAD27)	MD Reference:	RKB=22' @ 3323.00usft (Lalshaw Rig #14)
Site:	Big Sinks Unit	North Reference:	Grid
Well:	P/U Big Sinks 24-25-30 USA #1Y	Survey Calculation Method:	(Minimum) Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	N-S (usft)	E-W (usft)	Vertical Section (usft)	Dogleg Rate (%/100usft)	Build Rate (%/100usft)	Turn Rate (%/100usft)
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,567.00	0.00	0.00	7,567.00	0.00	0.00	0.00	0.00	0.00	0.00
Lower Brushy Canyon									
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,879.00	0.00	0.00	7,879.00	0.00	0.00	0.00	0.00	0.00	0.00
Bone Spring LS									
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,083.00	0.00	0.00	8,083.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Avalon									
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,468.00	0.00	0.00	8,468.00	0.00	0.00	0.00	0.00	0.00	0.00
Lower Avalon									
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00
8,697.00	0.00	0.00	8,697.00	0.00	0.00	0.00	0.00	0.00	0.00
Start DLS 10.00 TFO 180.79									



Database:	Gyrodata	Local Co-ordinate Reference:	Well Path: Big Sinks (24-25-30) USA #14
Company:	Bopco, LLP	TVD Reference:	RKB=22' @ 3323.00usft (Latshaw Rig #14)
Project:	Eddy County, NM (NAD27)	MD Reference:	RKB=22' @ 3323.00usft (Latshaw Rig #14)
Site:	Big Sinks Unit	North Reference:	Grid
Well:	Big Sinks (24-25-30) USA #14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,700.00	0.30	180.79	8,700.00	-0.01	0.00	0.01	10.00	10.00	0.00	
8,750.00	5.30	180.79	8,749.92	-2.45	-0.03	2.45	10.00	10.00	0.00	
8,800.00	10.30	180.79	8,799.45	-9.23	-0.13	9.23	10.00	10.00	0.00	
8,850.00	15.30	180.79	8,848.19	-20.31	-0.28	20.31	10.00	10.00	0.00	
8,900.00	20.30	180.79	8,895.78	-35.58	-0.49	35.59	10.00	10.00	0.00	
8,950.00	25.30	180.79	8,941.86	-54.95	-0.76	54.96	10.00	10.00	0.00	
9,000.00	30.30	180.79	8,986.07	-78.26	-1.08	78.27	10.00	10.00	0.00	
9,050.00	35.30	180.79	9,028.09	-105.34	-1.46	105.35	10.00	10.00	0.00	
9,100.00	40.30	180.79	9,067.58	-135.97	-1.88	135.98	10.00	10.00	0.00	
9,150.00	45.30	180.79	9,104.26	-169.93	-2.35	169.94	10.00	10.00	0.00	
9,200.00	50.30	180.79	9,137.83	-206.95	-2.86	206.97	10.00	10.00	0.00	
9,250.00	55.30	180.79	9,168.05	-246.76	-3.41	246.78	10.00	10.00	0.00	
9,300.00	60.30	180.79	9,194.69	-289.05	-4.00	289.08	10.00	10.00	0.00	
9,350.00	65.30	180.79	9,217.54	-333.51	-4.61	333.54	10.00	10.00	0.00	
9,400.00	70.30	180.79	9,236.42	-379.78	-5.25	379.82	10.00	10.00	0.00	
9,450.00	75.30	180.79	9,251.20	-427.52	-5.91	427.57	10.00	10.00	0.00	
9,500.00	80.30	180.79	9,261.77	-476.37	-6.59	476.42	10.00	10.00	0.00	
9,550.00	85.30	180.79	9,268.03	-525.96	-7.27	526.01	10.00	10.00	0.00	
9,596.39	89.94	180.79	9,269.96	-572.30	-7.91	572.35	10.00	10.00	0.00	
Start 4766.96 hold at 9596.39 MD										
9,600.00	89.94	180.79	9,269.96	-575.90	-7.96	575.96	0.00	0.00	0.00	
9,700.00	89.94	180.79	9,270.07	-675.89	-9.34	675.96	0.00	0.00	0.00	
9,800.00	89.94	180.79	9,270.17	-775.88	-10.73	775.96	0.00	0.00	0.00	
9,900.00	89.94	180.79	9,270.28	-875.87	-12.11	875.96	0.00	0.00	0.00	
10,000.00	89.94	180.79	9,270.38	-975.86	-13.49	975.96	0.00	0.00	0.00	
10,100.00	89.94	180.79	9,270.49	-1,075.85	-14.87	1,075.96	0.00	0.00	0.00	
10,200.00	89.94	180.79	9,270.60	-1,175.85	-16.25	1,175.96	0.00	0.00	0.00	
10,300.00	89.94	180.79	9,270.70	-1,275.84	-17.64	1,275.96	0.00	0.00	0.00	
10,400.00	89.94	180.79	9,270.81	-1,375.83	-19.02	1,375.96	0.00	0.00	0.00	
10,500.00	89.94	180.79	9,270.91	-1,475.82	-20.40	1,475.96	0.00	0.00	0.00	
10,600.00	89.94	180.79	9,271.02	-1,575.81	-21.78	1,575.96	0.00	0.00	0.00	
10,700.00	89.94	180.79	9,271.13	-1,675.80	-23.17	1,675.96	0.00	0.00	0.00	
10,800.00	89.94	180.79	9,271.23	-1,775.79	-24.55	1,775.96	0.00	0.00	0.00	
10,900.00	89.94	180.79	9,271.34	-1,875.78	-25.93	1,875.96	0.00	0.00	0.00	
11,000.00	89.94	180.79	9,271.44	-1,975.77	-27.31	1,975.96	0.00	0.00	0.00	
11,100.00	89.94	180.79	9,271.55	-2,075.76	-28.69	2,075.96	0.00	0.00	0.00	
11,200.00	89.94	180.79	9,271.65	-2,175.75	-30.08	2,175.96	0.00	0.00	0.00	
11,300.00	89.94	180.79	9,271.76	-2,275.74	-31.46	2,275.96	0.00	0.00	0.00	
11,400.00	89.94	180.79	9,271.87	-2,375.73	-32.84	2,375.96	0.00	0.00	0.00	
11,500.00	89.94	180.79	9,271.97	-2,475.72	-34.22	2,475.96	0.00	0.00	0.00	
11,600.00	89.94	180.79	9,272.08	-2,575.71	-35.60	2,575.96	0.00	0.00	0.00	
11,700.00	89.94	180.79	9,272.18	-2,675.70	-36.99	2,675.96	0.00	0.00	0.00	
11,800.00	89.94	180.79	9,272.29	-2,775.69	-38.37	2,775.96	0.00	0.00	0.00	
11,900.00	89.94	180.79	9,272.39	-2,875.68	-39.75	2,875.96	0.00	0.00	0.00	
12,000.00	89.94	180.79	9,272.50	-2,975.67	-41.13	2,975.96	0.00	0.00	0.00	
12,100.00	89.94	180.79	9,272.61	-3,075.66	-42.52	3,075.96	0.00	0.00	0.00	
12,200.00	89.94	180.79	9,272.71	-3,175.65	-43.90	3,175.96	0.00	0.00	0.00	
12,300.00	89.94	180.79	9,272.82	-3,275.64	-45.28	3,275.96	0.00	0.00	0.00	
12,400.00	89.94	180.79	9,272.92	-3,375.63	-46.66	3,375.96	0.00	0.00	0.00	
12,500.00	89.94	180.79	9,273.03	-3,475.62	-48.04	3,475.96	0.00	0.00	0.00	
12,600.00	89.94	180.79	9,273.13	-3,575.61	-49.43	3,575.96	0.00	0.00	0.00	
12,700.00	89.94	180.79	9,273.24	-3,675.60	-50.81	3,675.96	0.00	0.00	0.00	
12,800.00	89.94	180.79	9,273.35	-3,775.60	-52.19	3,775.96	0.00	0.00	0.00	
12,900.00	89.94	180.79	9,273.45	-3,875.59	-53.57	3,875.96	0.00	0.00	0.00	



Database:	Gyrodata	Local Co-ordinate Reference:	Well Rigs: Big Sinks 24-25-30 USA #1Y
Company:	Bopco, LLP	TVD Reference:	RKB=22' @ 3323.00usft (Lalshaw Rig #14)
Project:	Eddy County, NM (NAD27)	MD Reference:	RKB=22' @ 3323.00usft (Lalshaw Rig #14)
Site:	Big Sinks Unit	North Reference:	Grid
Well:	PLU Big Sinks 24-25-30 USA #1Y	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
13,000.00	89.94	180.79	9,273.56	-3,975.58	-54.96	3,975.96	0.00	0.00	0.00	
13,100.00	89.94	180.79	9,273.66	-4,075.57	-56.34	4,075.96	0.00	0.00	0.00	
13,200.00	89.94	180.79	9,273.77	-4,175.56	-57.72	4,175.96	0.00	0.00	0.00	
13,300.00	89.94	180.79	9,273.88	-4,275.55	-59.10	4,275.96	0.00	0.00	0.00	
13,400.00	89.94	180.79	9,273.98	-4,375.54	-60.48	4,375.96	0.00	0.00	0.00	
13,500.00	89.94	180.79	9,274.09	-4,475.53	-61.87	4,475.96	0.00	0.00	0.00	
13,600.00	89.94	180.79	9,274.19	-4,575.52	-63.25	4,575.96	0.00	0.00	0.00	
13,700.00	89.94	180.79	9,274.30	-4,675.51	-64.63	4,675.96	0.00	0.00	0.00	
13,800.00	89.94	180.79	9,274.40	-4,775.50	-66.01	4,775.96	0.00	0.00	0.00	
13,900.00	89.94	180.79	9,274.51	-4,875.49	-67.40	4,875.96	0.00	0.00	0.00	
14,000.00	89.94	180.79	9,274.62	-4,975.48	-68.78	4,975.96	0.00	0.00	0.00	
14,100.00	89.94	180.79	9,274.72	-5,075.47	-70.16	5,075.96	0.00	0.00	0.00	
14,200.00	89.94	180.79	9,274.83	-5,175.46	-71.54	5,175.96	0.00	0.00	0.00	
14,300.00	89.94	180.79	9,274.93	-5,275.45	-72.92	5,275.96	0.00	0.00	0.00	
14,363.36	89.94	180.79	9,275.00	-5,338.80	-73.80	5,339.31	0.00	0.00	0.00	
D=14363.36 PBHL (BS 24-25-30 USA #1Y)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
PBHL (BS 24-25-30 US/	0.06	180.79	9,275.00	-5,338.80	-73.80	403,575.80	652,561.00	32° 6' 30.915 N	103° 50' 26.209 W	
- plan hits target center										
- Rectangle (sides W40.00 H4,766.00 D80.00)										

Casing/Points										
Measured Depth (usft)	Vertical Depth (usft)						Casing Diameter (")	Hole Diameter (")		
	9,277.00	5 1/2"					5-1/2	6		
4,031.00	4,031.00	8 5/8"					8-5/8	11		

Formations										
Measured Depth (usft)	Vertical Depth (usft)						Dip (°)	Dip Direction (°)		
		Name				Lithology				
956.00	956.00	Rustler					0.00			
1,266.00	1,266.00	Salado					0.00			
4,006.00	4,006.00	Lamar Lime					0.00			
4,058.00	4,058.00	Ramsey					0.00			
7,567.00	7,567.00	Lower Brushy Canyon					0.00			
7,879.00	7,879.00	Bone Spring LS					0.00			
8,083.00	8,083.00	Upper Avalon					0.00			
8,468.00	8,468.00	Lower Avalon					0.00			



Database:	Gyrodata	Local Co-ordinate Reference:	Well (PLU) Big Sinks 24:25:30 USA #1Y
Company:	Bopco, L.P.	TVD Reference:	RKB=22' @ 3323.00usft (Lalshaw Rig #14)
Project:	Eddy County NM (NAD27)	MD Reference:	RKB=22' @ 3323.00usft (Lalshaw Rig #14)
Site:	Big Sinks Unit	North Reference:	Grid
Well:	PLU Big Sinks 24:25:30 USA #1Y	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	Plan #1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		N-S (usft)	E-W (usft)	
8,697.00	8,697.00	0.00	0.00	Start DLS 10.00 TFO 180.79
9,596.39	9,269.96	-572.30	-7.91	Start 4766.96 hold at 9596.39 MD
14,363.36	9,275.00	-5,338.80	-73.80	TD at 14363.35



Bopco, L.P.

Eddy County, NM (NAD27)

Big Sinks Unit

PLU Big Sinks 24-25-30 USA #1Y

Original Hole

Plan #1

Anticollision Report

17 September, 2013

gyro/data

Precision Wellbore Placement



Company:	Bopco, L.P.	Local Co-ordinate Reference:	Well: PLU Big Sinks 24-25-30 USA #1Y
Project:	Eddy County, NM (NAD27)	TVD Reference:	RKB=22 @ 13323.00 usft (Latshaw Rig #14)
Reference Site:	Big Sinks Unit	MD Reference:	RKB=22 @ 13323.00 usft (Latshaw Rig #14)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	PLU Big Sinks 24-25-30 USA #1Y	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Original Hole	Database:	Gyrodata
Reference Design:	Plan #1	Offset TVD Reference:	Reference Datum

Reference:	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,500.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool/Program:	Date: 09/17/13	
From (usft)	To (usft)	Survey (Wellbore)
0.00	14,363.36	Plan #1 (Original Hole)
		Tool Name
		MWD
		Description
		MWD - Standard

Site Name	Reference		Distance		Separation Factor	Warning
	Measured Depth (usft)	Offset Measured Depth (usft)	Between Centres (usft)	Between Ellipses (usft)		
Offset Well - Wellbore - Design						
Big Sinks Unit						
PLU Big Sinks 13-25-30 USA 1H - Original Hole - Original	7,363.69	7,362.57	50.19	18.45	1.581	CC
PLU Big Sinks 13-25-30 USA 1H - Original Hole - Original	7,400.00	7,398.66	50.27	18.37	1.576	ES, SF
PLU Big Sinks 24-25-30 USA 1H - Original Hole - Original	0.00	0.00	51.69			
PLU Big Sinks 24-25-30 USA 1H - Original Hole - Original	100.00	97.17	52.11	51.41	74.704	ES
PLU Big Sinks 24-25-30 USA 1H - Original Hole - Original	1,100.00	1,097.50	79.24	67.24	6.601	SF

Offset Design: Big Sinks Unit - PLU Big Sinks 13-25-30 USA 1H - Original Hole - Original Hole											Offset Well Error:	0.00 usft	
Survey Program:		17-MWD										Offset Well Error:	0.00 usft
Reference		Offset		Semi-Major Axis		Distance		Minimum Separation		Separation	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference Offset (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Factor		
0.00	0.00	0.00	2.10	0.00	0.00	-53.79	38.00	-51.90	64.36				
100.00	100.00	96.60	98.69	0.09	0.12	-53.78	38.61	-52.71	65.35	65.15	0.21	316.262	
200.00	200.00	196.61	198.68	0.31	0.33	-53.42	40.13	-54.07	67.35	66.71	0.64	105.243	
300.00	300.00	296.59	298.64	0.54	0.55	-52.53	42.13	-54.96	69.26	68.18	1.08	63.978	
400.00	400.00	396.55	398.57	0.76	0.77	-51.30	44.60	-55.66	71.34	69.82	1.52	46.849	
500.00	500.00	496.75	498.74	0.99	0.97	-50.31	46.71	-56.29	73.16	71.21	1.95	37.461	
600.00	600.00	597.15	599.11	1.21	1.19	-49.24	48.79	-56.61	74.73	72.35	2.39	31.292	
700.00	700.00	696.84	698.78	1.44	1.40	-47.96	50.74	-56.28	75.79	72.96	2.83	26.814	
800.00	800.00	796.68	798.57	1.66	1.61	-46.01	54.04	-55.99	77.83	74.57	3.26	23.862	
900.00	900.00	896.82	898.68	1.89	1.83	-44.45	56.70	-55.63	79.44	75.74	3.70	21.488	
1,000.00	1,000.00	996.92	998.71	2.11	2.05	-42.20	60.10	-54.49	81.13	76.99	4.14	19.598	
1,100.00	1,100.00	1,097.26	1,099.00	2.34	2.26	-40.27	62.99	-53.36	82.56	77.98	4.58	18.038	
1,200.00	1,200.00	1,196.93	1,198.65	2.56	2.46	-39.70	64.58	-53.62	83.95	78.95	5.00	16.782	
1,300.00	1,300.00	1,297.29	1,299.01	2.78	2.67	-39.65	65.70	-54.45	85.33	79.90	5.43	15.716	
1,400.00	1,400.00	1,397.64	1,399.35	3.01	2.87	-39.99	66.11	-55.44	86.28	80.43	5.86	14.729	
1,500.00	1,500.00	1,497.92	1,499.62	3.23	3.08	-40.84	65.72	-56.81	86.88	80.59	6.29	13.814	
1,600.00	1,600.00	1,598.07	1,599.75	3.46	3.28	-42.22	64.58	-58.59	87.20	80.48	6.72	12.975	
1,700.00	1,700.00	1,698.04	1,699.69	3.68	3.49	-43.64	63.34	-60.39	87.52	80.37	7.15	12.237	
1,800.00	1,800.00	1,798.04	1,799.67	3.91	3.70	-44.98	62.16	-62.13	87.89	80.30	7.59	11.586	
1,900.00	1,900.00	1,898.07	1,899.68	4.13	3.91	-46.26	61.01	-63.76	88.25	80.23	8.02	11.003	
2,000.00	2,000.00	1,998.33	1,999.92	4.36	4.12	-47.41	59.91	-65.17	88.53	80.07	8.46	10.466	
2,100.00	2,100.00	2,098.75	2,100.34	4.58	4.33	-48.09	59.03	-65.77	88.38	79.48	8.90	9.932	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Company:	Bopeco, L.P.	Local Co-ordinate Reference:	Well P.L.U. BigSinks/24-25-30\USA #1.Y
Project:	Eddy County, NM (NAD27)	TVD Reference:	RKB#22 @ 3323.00usft (Lalshaw Rig #14)
Reference Site:	BigSinks Unit	IMD Reference:	RKB#22 @ 3323.00usft (Lalshaw Rig #14)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	P.L.U. BigSinks/24-25-30\USA #1.Y	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Original Hole	Database:	Gyrodata
Reference Design:	Plan #1	Offset TVD Reference:	Reference Datum

Offset Design: BigSinks Unit - P.L.U. BigSinks/13-25-30\USA #1.H - Original Hole - Original Hole														Offset Site Error:	0.00 usft
Survey Program: 17-MWD														Offset Well Error:	0.00 usft
Reference: 17-MWD															
Offset: 17-MWD															
Samt Major Axis															
Reference: 17-MWD															
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference Depth (usft)	Offset Depth (usft)	High/Low (usft)	Offset Wellbore Control (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
2,200.00	2,200.00	2,199.14	2,200.73	4.81	4.55	-48.44	58.22	-65.67	87.76	78.43	9.34	9.399			
2,300.00	2,300.00	2,299.51	2,301.09	5.03	4.76	-48.89	57.01	-65.33	86.72	76.94	9.78	8.870			
2,400.00	2,400.00	2,399.45	2,401.01	5.26	4.96	-49.52	55.46	-64.99	85.44	75.24	10.21	8.369			
2,500.00	2,500.00	2,499.27	2,500.82	5.48	5.17	-50.47	53.70	-65.06	84.36	73.72	10.64	7.929			
2,600.00	2,600.00	2,599.16	2,600.69	5.71	5.37	-51.65	51.79	-65.46	83.47	72.40	11.07	7.541			
2,700.00	2,700.00	2,699.05	2,700.56	5.93	5.57	-52.96	49.83	-66.02	82.72	71.22	11.50	7.195			
2,800.00	2,800.00	2,798.62	2,800.12	6.16	5.78	-54.22	48.12	-66.77	82.30	70.38	11.93	6.901			
2,826.13	2,826.13	2,824.65	2,826.13	6.22	5.83	-54.52	47.76	-67.00	82.28	70.25	12.04	6.835			
2,900.00	2,900.00	2,898.24	2,899.72	6.38	5.98	-55.26	46.97	-67.73	82.43	70.07	12.36	6.671			
3,000.00	3,000.00	2,998.43	2,999.90	6.61	6.19	-55.99	46.24	-68.51	82.66	69.86	12.79	6.462			
3,100.00	3,100.00	3,098.66	3,100.14	6.83	6.40	-56.35	45.80	-68.81	82.65	69.43	13.23	6.249			
3,200.00	3,200.00	3,199.11	3,200.58	7.06	6.61	-56.64	45.21	-68.67	82.22	68.55	13.66	6.017			
3,300.00	3,300.00	3,299.61	3,301.07	7.28	6.83	-57.01	44.23	-68.13	81.24	67.13	14.10	5.761			
3,400.00	3,400.00	3,400.26	3,401.70	7.50	7.04	-57.49	42.72	-67.03	79.51	64.96	14.54	5.468			
3,500.00	3,500.00	3,500.46	3,501.88	7.73	7.25	-58.08	40.73	-65.38	77.05	62.07	14.98	5.144			
3,600.00	3,600.00	3,600.00	3,601.39	7.95	7.46	-58.50	39.13	-63.86	74.91	59.50	15.41	4.861			
3,700.00	3,700.00	3,699.93	3,701.30	8.18	7.67	-58.70	38.04	-62.55	73.22	57.38	15.85	4.621			
3,800.00	3,800.00	3,800.23	3,801.58	8.40	7.88	-58.96	36.72	-61.01	71.22	54.94	16.28	4.375			
3,900.00	3,900.00	3,899.73	3,901.07	8.63	8.09	-59.23	35.35	-59.38	69.11	52.40	16.71	4.135			
4,000.00	4,000.00	3,999.17	4,000.49	8.85	8.29	-59.11	34.99	-58.50	68.17	51.03	17.15	3.976			
4,100.00	4,100.00	4,099.21	4,100.53	9.08	8.50	-58.79	34.92	-57.65	67.40	49.82	17.58	3.834			
4,200.00	4,200.00	4,199.22	4,200.54	9.30	8.72	-58.50	34.79	-56.78	66.80	48.58	18.02	3.696			
4,300.00	4,300.00	4,298.97	4,300.29	9.53	8.92	-58.04	34.90	-55.93	65.93	47.48	18.45	3.573			
4,387.08	4,387.08	4,385.77	4,387.08	9.72	9.11	-57.10	35.70	-55.19	65.73	46.91	18.83	3.492			
4,400.00	4,400.00	4,398.65	4,399.96	9.75	9.13	-56.92	35.88	-55.09	65.74	46.86	18.88	3.481			
4,500.00	4,500.00	4,498.87	4,500.16	9.98	9.34	-55.55	37.17	-54.17	65.70	46.38	19.32	3.401			
4,600.00	4,600.00	4,599.17	4,600.46	10.20	9.55	-54.50	37.87	-53.10	65.22	45.47	19.75	3.302			
4,700.00	4,700.00	4,698.99	4,700.27	10.43	9.76	-53.49	38.47	-51.97	64.66	44.48	20.19	3.203			
4,800.00	4,800.00	4,798.83	4,800.09	10.65	9.97	-52.21	39.46	-50.89	64.40	43.78	20.62	3.123			
4,900.00	4,900.00	4,898.96	4,900.21	10.88	10.18	-51.05	40.33	-49.90	64.16	43.11	21.05	3.048			
5,000.00	5,000.00	4,999.05	5,000.30	11.10	10.39	-50.29	40.72	-49.03	63.74	42.25	21.49	2.966			
5,100.00	5,100.00	5,098.99	5,100.24	11.33	10.59	-49.74	40.92	-48.31	63.31	41.39	21.92	2.888			
5,200.00	5,200.00	5,198.92	5,200.17	11.55	10.80	-49.32	41.05	-47.76	62.98	40.63	22.35	2.818			
5,300.00	5,300.00	5,298.85	5,300.09	11.78	11.01	-48.90	41.27	-47.30	62.77	39.99	22.78	2.755			
5,400.00	5,400.00	5,398.83	5,400.07	12.00	11.21	-48.44	41.57	-46.89	62.66	39.45	23.21	2.699			
5,500.00	5,500.00	5,498.91	5,500.15	12.23	11.42	-48.12	41.71	-46.52	62.48	38.84	23.65	2.642			
5,600.00	5,600.00	5,598.90	5,600.15	12.45	11.63	-47.98	41.64	-46.21	62.21	38.13	24.08	2.583			
5,700.00	5,700.00	5,698.81	5,700.05	12.67	11.84	-48.08	41.46	-46.16	62.05	37.53	24.51	2.531			
5,800.00	5,800.00	5,798.78	5,800.02	12.90	12.05	-48.39	41.17	-46.36	62.01	37.06	24.95	2.485			
5,900.00	5,900.00	5,898.79	5,900.03	13.12	12.26	-48.80	40.81	-46.63	61.96	36.58	25.38	2.441			
6,000.00	6,000.00	5,898.85	6,000.09	13.35	12.47	-49.24	40.40	-46.87	61.88	36.06	25.82	2.397			
6,100.00	6,100.00	6,098.94	6,100.18	13.57	12.68	-49.51	40.04	-46.89	61.66	35.41	26.25	2.349			
6,200.00	6,200.00	6,199.14	6,200.38	13.80	12.89	-49.78	39.54	-46.75	61.23	34.54	26.69	2.294			
6,300.00	6,300.00	6,299.36	6,300.59	14.02	13.10	-50.44	38.48	-46.59	60.43	33.30	27.13	2.228			
6,400.00	6,400.00	6,399.23	6,400.46	14.25	13.31	-51.19	37.31	-46.39	59.53	31.97	27.96	2.160			
6,500.00	6,500.00	6,499.07	6,500.29	14.47	13.52	-51.55	36.62	-46.13	58.90	30.90	27.99	2.104			
6,600.00	6,600.00	6,599.06	6,600.28	14.70	13.73	-51.86	36.07	-45.94	58.41	29.98	28.43	2.055			
6,700.00	6,700.00	6,699.07	6,700.29	14.92	13.94	-52.47	35.30	-45.96	57.95	29.09	28.86	2.008			
6,800.00	6,800.00	6,799.37	6,800.59	15.15	14.15	-52.80	34.58	-45.55	57.19	27.89	29.30	1.952			
6,900.00	6,900.00	6,899.61	6,900.81	15.37	14.36	-52.41	34.10	-44.30	55.91	26.17	29.73	1.880			
7,000.00	7,000.00	6,999.61	7,000.80	15.60	14.57	-51.36	33.99	-42.52	54.44	24.28	30.17	1.805			
7,100.00	7,100.00	7,099.58	7,100.75	15.82	14.78	-49.66	34.30	-40.39	53.00	22.40	30.60	1.732			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Gyrodata, Inc.
Anticollision Report

gyrodata

Precision Wellbore Placement

Company:	Bopeco, IL/P	Local Co-ordinate Reference:	Well PLU/Big/Sinks 24-25-30/USA #1Y
Project:	Eddy County, NM (NAD27)	TVD Reference:	RKB=22' @ 3323.00usft (Lalshaw Rig #14)
Reference Site:	Big/Sinks Unit	MD Reference:	RKB=22' @ 3323.00usft (Lalshaw Rig #14)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	PLU/Big/Sinks 24-25-30/USA #1Y	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	Original Hole	Database:	Gyrodata
Reference Design:	Plan #1	Offset TVD Reference:	Reference Datum

Offset Design: Big/Sinks Unit - PLU/Big/Sinks 24-25-30/USA #1Y - Original Hole - Original Hole														Offset Site Error:	0.00 usft
Survey Program: 17-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
7,200.00	7,200.00	7,199.54	7,200.68	16.05	14.99	-47.88	34.63	-38.30	51.63	20.60	31.03	1.664			
7,300.00	7,300.00	7,299.27	7,300.40	16.27	15.20	-46.25	34.88	-36.44	50.44	18.98	31.47	1.603			
7,363.69	7,363.69	7,362.57	7,363.69	16.41	15.33	-45.35	35.28	-35.70	50.19	18.45	31.74	1.581 CC			
7,400.00	7,400.00	7,398.66	7,399.78	16.50	15.40	-44.89	35.62	-35.48	50.27	18.37	31.90	1.576 ES, SF			
7,500.00	7,500.00	7,498.37	7,499.48	16.72	15.61	-43.89	36.88	-35.47	51.17	18.84	32.33	1.583			
7,600.00	7,600.00	7,598.42	7,599.53	16.95	15.82	-43.31	37.94	-35.76	52.14	19.38	32.76	1.591			
7,700.00	7,700.00	7,698.45	7,699.55	17.17	16.03	-43.12	38.69	-36.23	53.01	19.81	33.20	1.597			
7,800.00	7,800.00	7,798.45	7,799.54	17.39	16.24	-43.17	39.28	-36.84	53.86	20.22	33.64	1.601			
7,900.00	7,900.00	7,898.42	7,899.51	17.62	16.45	-43.45	39.72	-37.63	54.72	20.65	34.07	1.606			
8,000.00	8,000.00	7,998.38	7,999.46	17.84	16.66	-44.00	40.03	-38.65	55.64	21.14	34.51	1.613			
8,100.00	8,100.00	8,098.23	8,099.31	18.07	16.87	-44.65	40.35	-39.85	56.72	21.78	34.94	1.623			
8,200.00	8,200.00	8,198.05	8,199.12	18.29	17.08	-45.03	41.05	-41.09	58.09	22.71	35.37	1.642			
8,300.00	8,300.00	8,298.03	8,299.09	18.52	17.29	-45.28	41.95	-42.36	59.63	23.82	35.81	1.665			
8,400.00	8,400.00	8,398.04	8,399.08	18.74	17.50	-45.64	42.74	-43.72	61.15	24.91	36.24	1.687			
8,500.00	8,500.00	8,498.68	8,499.72	18.97	17.71	-45.80	43.32	-44.55	62.14	25.46	36.68	1.694			
8,600.00	8,600.00	8,599.04	8,600.08	19.19	17.92	-45.29	43.72	-44.16	62.15	25.03	37.11	1.674			
8,616.34	8,616.34	8,615.30	8,616.34	19.23	17.96	-45.05	43.89	-43.97	62.13	24.95	37.18	1.671			
8,697.00	8,697.00	8,692.31	8,693.31	19.41	18.12	-44.67	45.37	-44.84	63.90	26.37	37.53	1.703			
8,700.00	8,700.00	8,695.05	8,696.05	19.42	18.12	134.59	45.53	-44.91	64.08	26.54	37.54	1.707			
8,750.00	8,749.92	8,740.00	8,740.74	19.50	18.22	136.97	49.93	-46.62	70.70	33.04	37.66	1.877			
8,800.00	8,799.45	8,783.11	8,783.18	19.58	18.31	140.98	57.04	-49.16	84.02	46.37	37.65	2.231			
8,850.00	8,848.19	8,823.66	8,822.58	19.67	18.39	145.62	66.34	-51.18	103.71	66.23	37.48	2.767			
8,900.00	8,895.78	8,859.84	8,857.20	19.75	18.47	149.67	76.77	-52.36	129.62	92.51	37.11	3.493			
8,950.00	8,941.86	8,891.10	8,886.64	19.84	18.54	152.52	87.25	-53.04	161.26	124.68	36.57	4.409			
9,000.00	8,986.07	8,915.00	8,908.79	19.92	18.59	153.71	96.23	-53.52	197.91	161.99	35.92	5.510			
9,050.00	9,028.09	8,930.00	8,922.43	20.01	18.63	152.88	102.45	-53.86	236.92	203.68	35.25	6.779			
9,100.00	9,067.58	8,948.87	8,939.34	20.12	18.67	151.94	110.82	-54.28	283.02	248.47	34.55	8.193			
9,150.00	9,104.26	8,962.00	8,950.94	20.25	18.71	148.69	116.96	-54.52	329.44	295.36	34.08	9.667			
9,200.00	9,137.83	8,968.67	8,956.79	20.40	18.72	140.88	120.16	-54.61	377.43	343.04	34.40	10.973			
9,250.00	9,168.05	8,973.88	8,961.35	20.58	18.74	125.34	122.69	-54.66	426.43	390.07	36.37	11.726			
9,300.00	9,194.69	8,975.71	8,962.94	20.79	18.74	92.82	123.58	-54.67	475.96	436.46	39.50	12.048			
9,350.00	9,217.54	8,974.50	8,961.88	21.02	18.74	53.42	122.99	-54.66	525.59	489.75	35.84	14.663			
9,400.00	9,236.42	8,970.55	8,958.43	21.29	18.73	31.15	121.07	-54.63	574.95	544.36	30.59	18.797			
9,450.00	9,251.20	8,962.00	8,950.94	21.59	18.71	20.21	116.96	-54.52	623.68	596.03	27.65	22.556			
9,500.00	9,261.77	8,962.00	8,950.94	21.92	18.71	15.20	116.96	-54.52	671.53	645.29	26.24	25.594			
9,550.00	9,268.03	8,948.77	8,939.24	22.28	18.67	11.45	110.77	-54.28	718.15	692.83	25.33	28.357			
9,596.39	9,269.96	8,940.07	8,931.48	22.64	18.65	9.34	106.85	-54.10	760.22	735.25	24.98	30.435			
9,600.00	9,269.96	8,939.35	8,930.84	22.67	18.65	9.32	106.53	-54.08	763.44	738.46	24.98	30.559			
9,700.00	9,270.07	8,930.00	8,922.43	23.52	18.63	9.06	102.45	-53.86	853.61	828.44	25.17	33.912			
9,800.00	9,270.17	8,909.20	8,903.46	24.49	18.58	8.50	93.95	-53.40	944.94	919.60	25.34	37.290			
9,900.00	9,270.28	8,898.00	8,893.08	25.54	18.55	8.23	89.73	-53.17	1,037.48	1,011.88	25.60	40.531			
10,000.00	9,270.38	8,883.18	8,879.22	26.68	18.52	7.89	84.47	-52.88	1,130.87	1,105.00	25.87	43.715			
10,100.00	9,270.49	8,866.00	8,863.04	27.89	18.48	7.52	78.73	-52.51	1,224.95	1,198.79	26.16	46.822			
10,200.00	9,270.60	8,866.00	8,863.04	29.17	18.48	7.52	78.73	-52.51	1,319.61	1,293.05	26.57	49.672			
10,300.00	9,270.70	8,849.06	8,846.95	30.50	18.45	7.16	73.47	-52.07	1,414.70	1,387.78	26.91	52.563			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Company:	Bopco, L.P.	Local Co-ordinate Reference:	Well: PLU(Big Sinks)24-25-30, USA #1Y
Project:	Eddy County, NM (NAD27)	TVD Reference:	RKB=22' @ 3323.00usft (Lalshaw Rig #14)
Reference Site:	Big Sinks Unit	MD Reference:	RKB=22' @ 3323.00usft (Lalshaw Rig #14)
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	PLU(Big Sinks)24-25-30, USA #1Y	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at:	2.00 Sigma
Reference Wellbore:	(Original Hole)	Database:	Gyrodata
Reference Design:	Plan #1	Offset TVD Reference:	Reference Datum

Offset Design: Big Sinks Unit - PLU(Big Sinks)24-25-30, USA #1Y - Original Hole - Original Hole														Offset Site Error:	0.00 usft
Survey Program: BS-CB-GYRO-MS														Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi-Major Axis Reference (usft)	Offset Reference (usft)	High Side Toolface (°)	Offset Wellbore Centre N/S (usft)	Offset Wellbore Centre E/W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
0.00	0.00	0.00	2.00	0.00	0.00	-92.44	-2.20	-51.60	51.69						
100.00	100.00	97.17	99.16	0.09	0.61	-91.63	-1.48	-52.08	52.11	51.41	0.70	74.704 ES			
200.00	200.00	196.09	197.94	0.31	1.63	-87.04	2.83	-54.83	54.95	53.01	1.94	28.389			
300.00	300.00	296.16	297.83	0.54	2.47	-82.26	7.91	-58.19	58.77	55.77	3.00	19.616			
400.00	400.00	396.58	398.13	0.76	3.40	-78.83	12.03	-60.92	62.12	57.98	4.15	14.984			
500.00	500.00	496.39	497.85	0.99	4.26	-76.26	15.50	-63.37	65.27	60.04	5.23	12.475			
600.00	600.00	596.28	597.63	1.21	5.19	-73.48	19.53	-65.86	68.73	62.35	6.38	10.775			
700.00	700.00	696.77	698.02	1.44	6.09	-70.94	23.45	-67.88	71.84	64.34	7.50	9.581			
800.00	800.00	797.31	798.49	1.66	7.02	-68.71	26.95	-69.16	74.24	65.59	8.65	8.584			
900.00	900.00	897.76	898.89	1.89	7.94	-66.81	29.91	-69.81	75.95	66.16	9.79	7.761			
1,000.00	1,000.00	997.59	998.70	2.11	8.83	-65.55	32.01	-70.43	77.37	66.47	10.90	7.098			
1,100.00	1,100.00	1,097.50	1,098.58	2.34	9.72	-64.47	34.14	-71.50	79.24	67.24	12.01	6.601 SF			
1,200.00	1,200.00	1,116.00	1,117.08	2.56	9.88	-64.31	34.48	-71.69	114.91	102.52	12.39	9.273			
1,300.00	1,300.00	1,116.00	1,117.08	2.78	9.88	-64.31	34.48	-71.69	199.47	186.86	12.62	15.810			
1,400.00	1,400.00	1,116.00	1,117.08	3.01	9.88	-64.31	34.48	-71.69	293.90	281.05	12.84	22.885			
1,500.00	1,500.00	1,116.00	1,117.08	3.23	9.88	-64.31	34.48	-71.69	391.10	378.03	13.07	29.931			
1,600.00	1,600.00	1,116.00	1,117.08	3.46	9.88	-64.31	34.48	-71.69	489.43	476.14	13.29	36.822			
1,700.00	1,700.00	1,116.00	1,117.08	3.68	9.88	-64.31	34.48	-71.69	588.33	574.81	13.52	43.527			
1,800.00	1,800.00	1,116.00	1,117.08	3.91	9.88	-64.31	34.48	-71.69	687.54	673.80	13.74	50.035			
1,900.00	1,900.00	1,116.00	1,117.08	4.13	9.88	-64.31	34.48	-71.69	786.96	772.99	13.97	56.348			
2,000.00	2,000.00	1,116.00	1,117.08	4.36	9.88	-64.31	34.48	-71.69	886.50	872.31	14.19	62.470			
2,100.00	2,100.00	1,116.00	1,117.08	4.58	9.88	-64.31	34.48	-71.69	986.14	971.72	14.42	68.408			
2,200.00	2,200.00	1,116.00	1,117.08	4.81	9.88	-64.31	34.48	-71.69	1,085.84	1,071.20	14.64	74.168			
2,300.00	2,300.00	1,116.00	1,117.08	5.03	9.88	-64.31	34.48	-71.69	1,185.60	1,170.73	14.87	79.757			
2,400.00	2,400.00	1,116.00	1,117.08	5.26	9.88	-64.31	34.48	-71.69	1,285.39	1,270.30	15.09	85.182			
2,500.00	2,500.00	1,116.00	1,117.08	5.48	9.88	-64.31	34.48	-71.69	1,385.21	1,369.90	15.31	90.450			
2,600.00	2,600.00	1,116.00	1,117.08	5.71	9.88	-64.31	34.48	-71.69	1,485.06	1,469.52	15.54	95.567			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

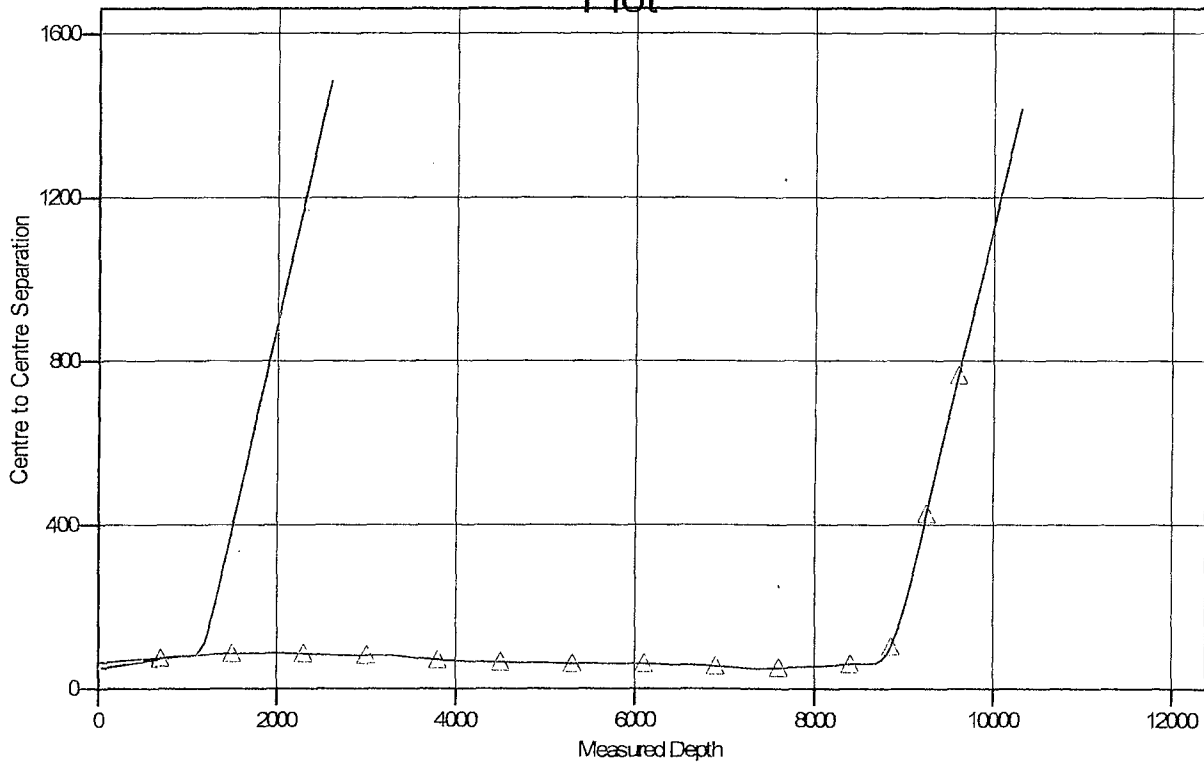


Company:	Bopco, L.P.	Local Coordinate Reference:	Well (PLU) Big Sinks 24-25-30 USA #1Y
Project:	Eddy County, NM (NAD27)	TVD Reference:	RKB=22' @ 3323.00usft (Latshaw Rig #14)
Reference Site:	Big Sinks Unit	MDI Reference:	RKB=22' @ 3323.00usft (Latshaw Rig #14)
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	PLU (Big Sinks 24-25-30 USA #1Y)	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at:	2.00 sigma
Reference Wellbore:	(Original Hole)	Database:	Gyrodata
Reference Design:	Plan #1	Offset TVD Reference:	Reference Datum

Reference Depths are relative to RKB=22' @ 3323.00usft (Latshaw Rig)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: PLU Big Sinks 24-25-30 USA #1Y
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.26°

Ladder Plot



LEGEND

25-30 USA 1H, Original Hole, Original Hole V0 — PLU Big Sinks 24-25-30 USA 1H, Original Hole, Original Hole V0

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Company:	Bopco, L.P.	Local Co-ordinate Reference:	Well PLU Big Sinks 24-25-30 USA #1Y
Project:	Eddy County, NM (NAD27)	TVD Reference:	RKB=22' @ 3323.00usft (Latshaw Rig #14)
Reference Site:	Big Sinks Unit	MD Reference:	RKB=22' @ 3323.00usft (Latshaw Rig #14)
Site Error:	0.00usft	North Reference:	Grid
Reference Well:	PLU Big Sinks 24-25-30 USA #1Y	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output error are at:	2.00'sigma
Reference Wellbore:	Original Hole	Database:	Gyrodata
Reference Design:	Plan #1	Offset TVD Reference:	Reference Datum

Reference Depths are relative to RKB=22' @ 3323.00usft (Latshaw Rig

Offset Depths are relative to Offset Datum

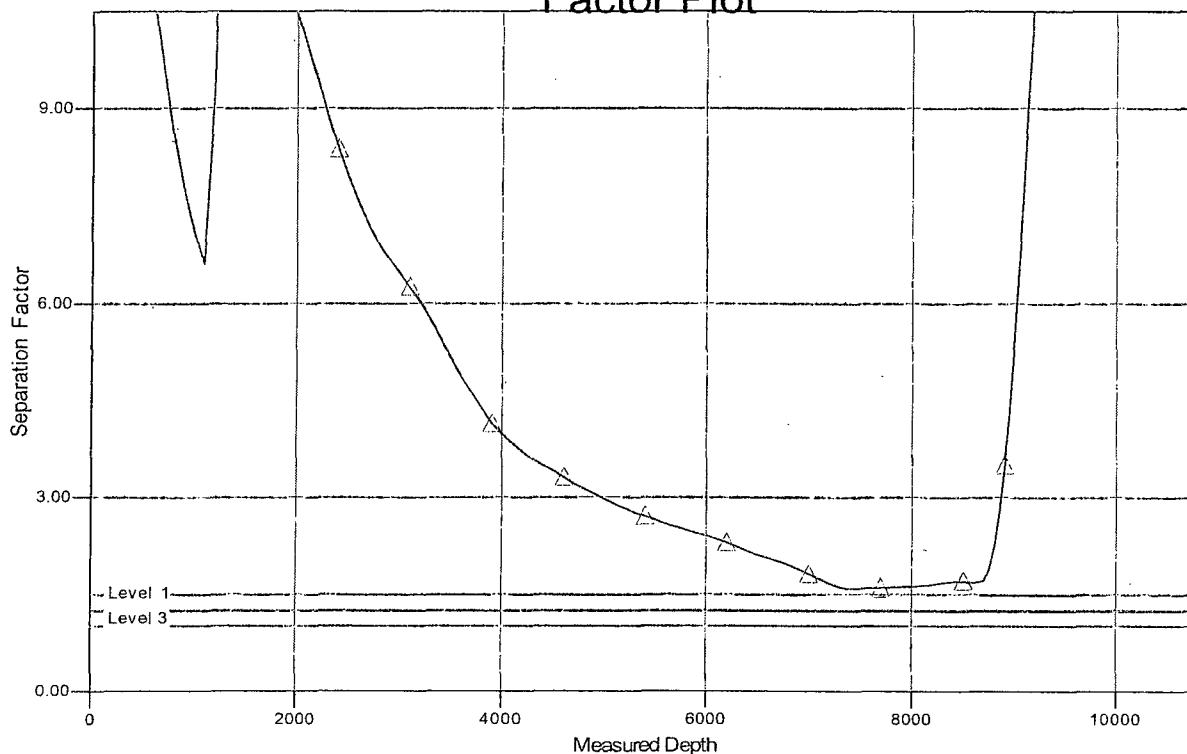
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: PLU Big Sinks 24-25-30 USA #1Y

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Grid Convergence at Surface is: 0.26°

Separation Factor Plot



LEGEND

25-30 USA 1H, Original Hole, Original Hole V0 —●— PLU Big Sinks 24-25-30 USA 1H, Original Hole, Original Hole V0

**PECOS DISTRICT
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	BOPCO, L.P.
LEASE NO.:	NMLC-063079A
WELL NAME & NO.:	PLU Big Sinks 24-25-30 USA 1Y
SURFACE HOLE FOOTAGE:	0085' FSL & 0740' FWL
BOTTOM HOLE FOOTAGE	0070' FSL & 0660' FWL Sec. 24, T. 25 S., R 30 E.
LOCATION:	Section 13, T. 25 S., R 30 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- ☐ **General Provisions**
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- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
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 - Unit Well Sign Specs
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 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
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 - Electric Lines
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- ☐ **Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

Commercial Well Determination

A commercial well determination shall be submitted after production has been established for at least six months.

Unit Wells

The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For

examples of enclosure fencing design, refer to BLM's Oil and Gas Gold Book, Enclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning

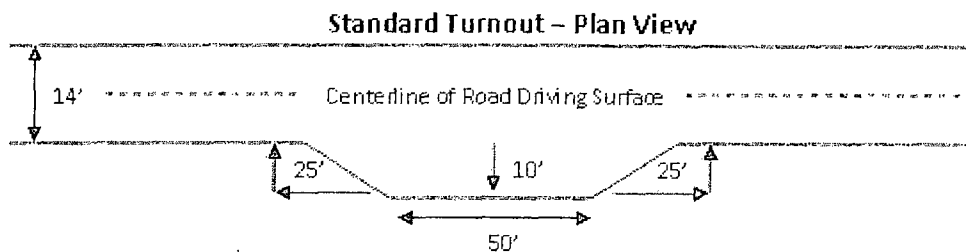
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

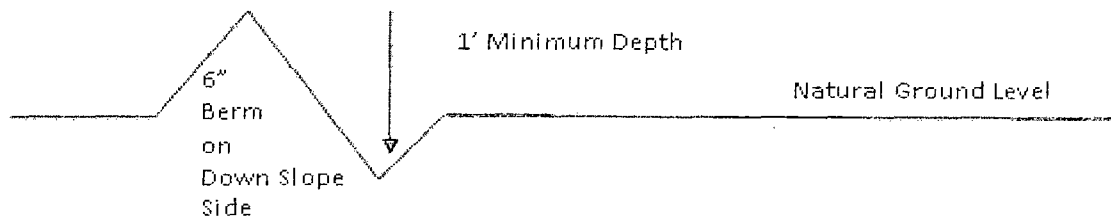


Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Culvert Installations

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

Fence Requirement

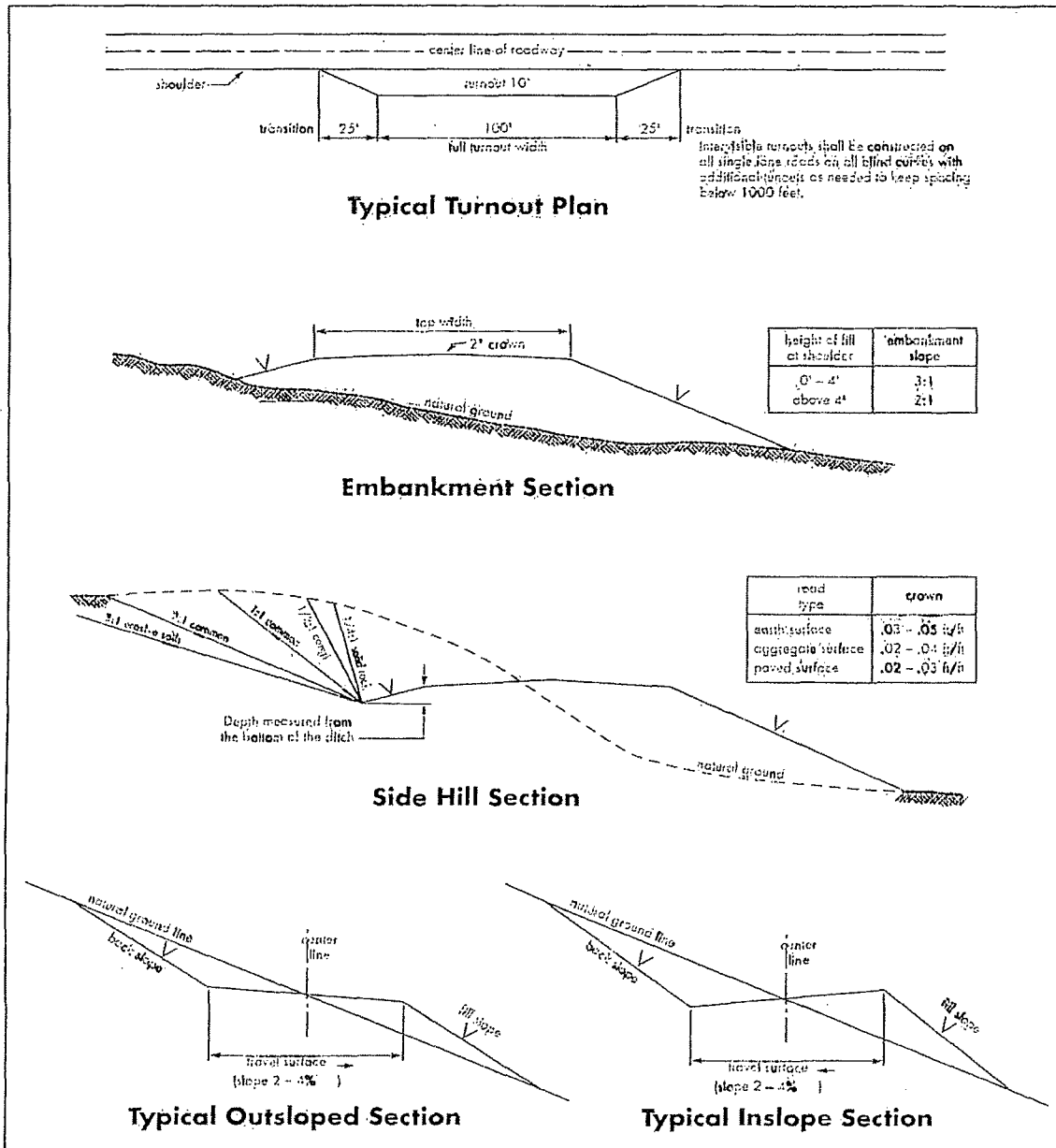
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822

1. **Hydrogen Sulfide (H₂S) monitors shall be installed prior to drilling out the surface shoe. If H₂S is encountered in quantities greater than 10 PPM the well shall be shut in and H₂S equipment shall be installed and flare line must be extended pursuant to Onshore Oil and Gas Order #6. After detection, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Medium Cave/Karst

Possibility of water flows in the Castile, Salado, and Delaware.

Possibility of lost circulation in the Delaware.

1. The **13-3/8 inch surface casing shall be set at approximately 1229 feet (in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt) and cemented to the surface.**
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

- d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is:
- ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

Operator has proposed DV tool at depth of 5000', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

- a. First stage to DV tool:

- ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve approved top of cement on the next stage.

- b. Second stage above DV tool:

- ☒ Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification.

NOTE: All perforations shall be a minimum of 330' FSL.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).
3. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi.**
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including

lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.
- c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock.
- d. The results of the test shall be reported to the appropriate BLM office.
- e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

JAM 082813

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.)

Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

- a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
- b. Activities of other parties including, but not limited to:
 - (1) Land clearing.

- (2) Earth-disturbing and earth-moving work.
- (3) Blasting.
- (4) Vandalism and sabotage.

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of 20 feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline must be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline must be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity will be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline will be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

16. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

17. Surface pipelines must be less than or equal to 4 inches and a working pressure below 125 psi.

C. ELECTRIC LINES

The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed in accordance to standards outlined in "Suggested Practices for Raptor Protection on Power lines, " Raptor Research Foundation, Inc., 1981. The holder shall assume the burden and expense of proving that pole designs not shown in the above publication are "raptor safe." Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the

passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:

- For reclamation remove poles, lines, transformer, etc. and dispose of properly.
- Fill in any holes with native soil from the removed poles.

IX. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or

complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

X. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

<u>Species</u>	<u>lb/acre</u>
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sand love grass (<i>Eragrostis trichodes</i>)	1.0
Plains bristlegrass (<i>Setaria macrostachya</i>)	2.0

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed