

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

State of New Mexico
Energy Minerals and Natural Resources



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

DEC 4 2007
OCD-ARTESIA

Form C-101
May 27, 2004

Submit to appropriate District Office

☐ AMENDED REPORT

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

¹ Operator Name and Address OGX Resources, LLC POB 2064 Midland, TX 79702		² OGRID Number 217955
³ Property Code		³ API Number 30 - 015 - 35948
⁴ Property Name Vampire Bat		⁵ Well No. 1
⁹ Proposed Pool 1 Black River; Morrow (Gas) 72170		¹⁰ Proposed Pool 2

⁷ Surface Location

UL or lot no. P	Section 4	Township 24S	Range 27E	Lot Idn P	Feet from the 660	North/South line S	Feet from the 660	East/West line E	County Eddy
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⁸ Proposed 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
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Additional Well Information

¹¹ Work Type Code New Well	¹² Well Type Code Gas	¹³ Cable/Rotary	¹⁴ Lease Type Code State	¹⁵ Ground Level Elevation 3140'
¹⁶ Multiple N	¹⁷ Proposed Depth 13,000	¹⁸ Formation Morrow	¹⁹ Contractor	²⁰ Spud Date 2-1-2008
Depth to Groundwater 50'		Distance from nearest fresh water well >1000		Distance from nearest surface water >1000
Pit: Liner: Synthetic <input checked="" type="checkbox"/> 12 mils thick Clay <input type="checkbox"/> Pit Volume: 28000 bbls Drilling Method: Closed-Loop System <input type="checkbox"/> Fresh Water <input checked="" type="checkbox"/> Brine <input type="checkbox"/> Diesel/Oil-based <input type="checkbox"/> Gas/Air <input type="checkbox"/>				

²¹ Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17 1/2	13 3/8	54.5	530'	700	0
12 1/4	9 5/8	36	2100'	800	0
8 1/2	7	26	9400'	1050	0
6 1/8	4 1/2	11.6	13000'	485	9100'

²² Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

13 3/8" casing, J55, 54.5 ppf, set depth is 530', mud wt.: 8.6-8.8, vis. 36-38, FL-N/C, pH 9.0-10.0, cement 1st lead slurry: 200 sks Premium Plus cmt. + 1% CaCl + 10 lbm/sk Gilsonite + 0.25 lbm/sk Poly-E-Flake. 2nd lead slurry: 300 sks Light Premium Plus cmt. + 1% CaCl + 0.25 lbm/sk Poly-E-Flake. Tail slurry: 200 sks Premium Plus cmt. + 1% CaCl. 9 5/8" casing, J 55, 35 ppf, set depth is 2100', mud wt.: 10.0-10.1, vis. 29-30, FL-N/C, pH 9.0-10.0, Cement lead slurry: 600 sks 50/50 Poz Premium Plus + 10% Bentonite + 5% Salt + 5 lbm/sk Gilsonite + 0.25% D-AIR 3000. Tail slurry: 200 sks Premium Plus cmt. + 1% CaCl. 7" casing, P110, 26 ppf, set depth is 9400', mud wt.: 8.4-10.0, vis. 28-29, FL-N/C, pH 9.0-10.0, cement lead slurry: 850 sks 50/50 Poz Premium cmt. + 10% Bentonite + 0.3% Halad-9 + 5% Salt + 0.125 lbm/sk Poly-E-Flake. Tail slurry: 200 sks Premium cmt. + 0.5% Halad-9. 4 1/2" casing, P110, 11.6 ppf, set depth is 13,000', From 9400'-10,500' mud wt.: 10.0-10.1, vis 29-30, FL-N/C, at 10,500' mud up to: 10.1-13.5, vis. 38-45, FL-10-6cc, pH 9-10. Liner will be ran at 9100' and cemented with 485 sks Premium Cmt. + 0.5% LAP-1 + 0.4% CFR-3 + 0.25% D-AIR 3000 + 0.2% HR-5.

Operator to set surface casing above the Salado.

²³ I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that the drilling pit will be constructed according to NMOCD guidelines ☒, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.

Signature: Angela Lightner
Printed name: Angela Lightner

Title: Consultant

E-mail Address: angela@rkford.com

Date: 11/30/2007

Phone: 432-682-0440

OIL CONSERVATION DIVISION

Approved by:

BRYAN G. ARRAST

Title:

DISTRICT II GEOLOGIST

Approval Date: DEC 06 2007

Expiration Date: DEC 06 2008

Conditions of Approval Attached ☐

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

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1301 W. Grand Avenue, Artesia, NM 88210

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1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised October 12, 2005

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code 72170	Pool Name Black River; Morrow (Gas)
Property Code 36876	Property Name VAMPIRE BAT	Well Number 1
OGRID No. 217955	Operator Name OGX RESOURCES, L.L.C.	Elevation 3140'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	4	24 S	27 E		660	SOUTH	660	EAST	EDDY

Bottom Hole Location If Different From Surface

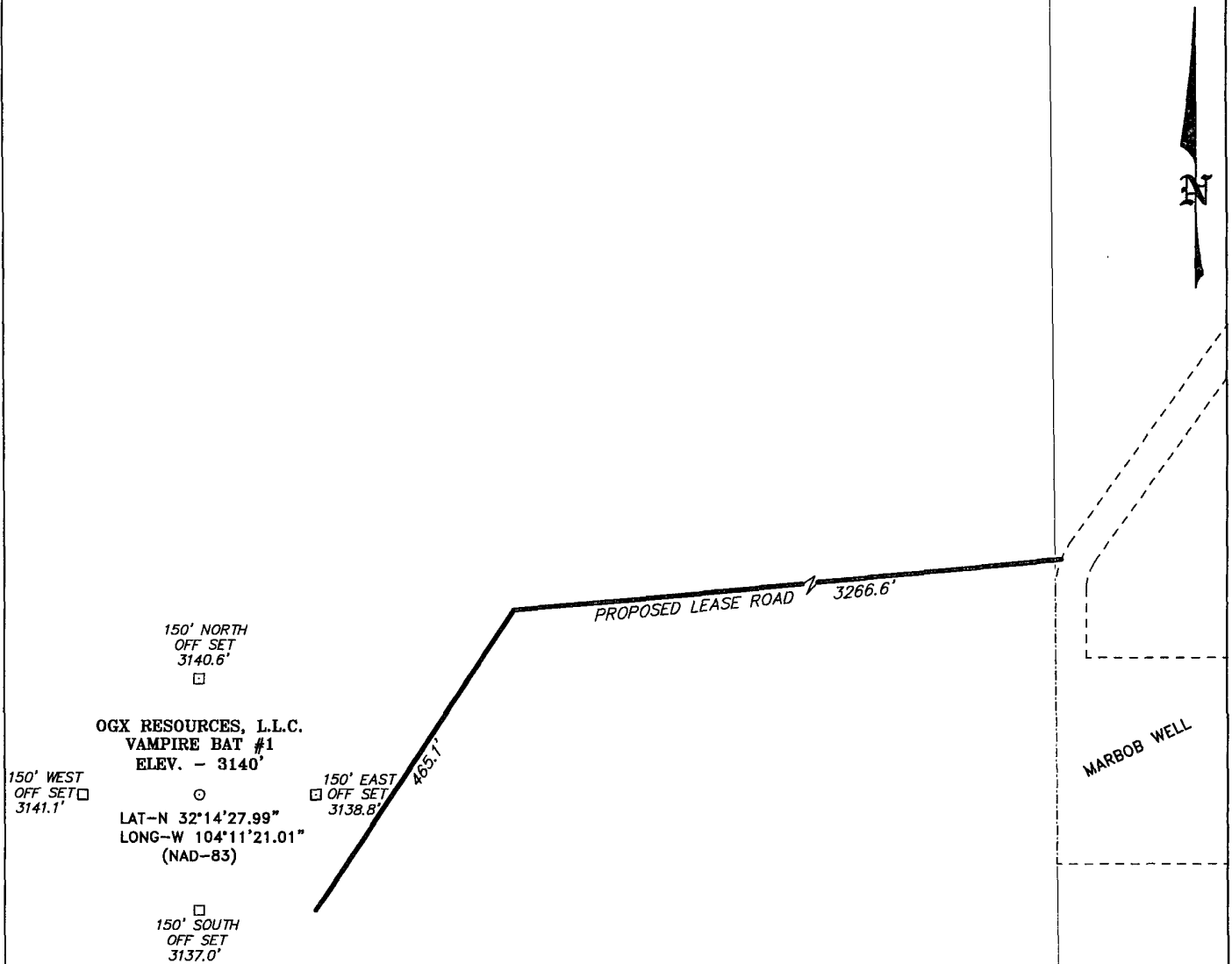
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres 320	Joint or Infill	Consolidation Code	Order No.
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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

<p>LAT- N.: 32°14'27.99" LONG- W.: 104°11'21.01" SPC- N.: 451478.545 E.: 585908.949 (NAD-83)</p> <p>660'</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><u>Angela Lightner 11-13-07</u> Signature Date</p> <p><u>Angela Lightner</u> Printed Name</p>
	<p>SURVEYOR CERTIFICATION</p> <p>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.</p> <p>NOVEMBER 9, 2007</p> <p>Date Surveyed</p> <p>Signature & Seal Professional Surveyor</p> <p><u>GARY L. JONES</u> Professional Surveyor</p> <p>7977</p> <p>W. 1/4 Sec. 34 T. 24 S. R. 27 E.</p> <p>Certificate No. Gary L. Jones 7977</p> <p>BASIN SURVEYS</p>

SECTION 4, TOWNSHIP 24 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



DIRECTIONS TO LOCATION:

FROM LOVING GO SOUTH ON US 285 FOR ±0.6 MILES TO A CURVE; THENCE SOUTH ON CO. RD. FOR ±0.3 MILES TO CO. RD. 763 (BOUNDS RD.); THENCE WEST ON BOUNDS RD. FOR 3.0 MILES TO LEASE ROAD SOUTH; THENCE SOUTH AND SOUTHWEST 0.8 MILES TO "Y" IN LEASE ROAD; THENCE WEST AND SOUTHWEST ALONG LEASE ROAD 1.4 MILES TO FLAGGED ROAD GOING WEST; THENCE FOLLOW FLAGGED ROAD 0.7 MILES TO PROPOSED LOCATION.



SCALE: 1" = 200'

OGX RESOURCES, L.L.C.

REF: VAMPIRE BAT #1 / Well Pad Topo

THE VAMPIRE BAT #1 LOCATED 660' FROM
THE SOUTH LINE AND 660' FROM THE EAST LINE OF
SECTION 4, TOWNSHIP 24 SOUTH, RANGE 27 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

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

W.O. Number: 18764

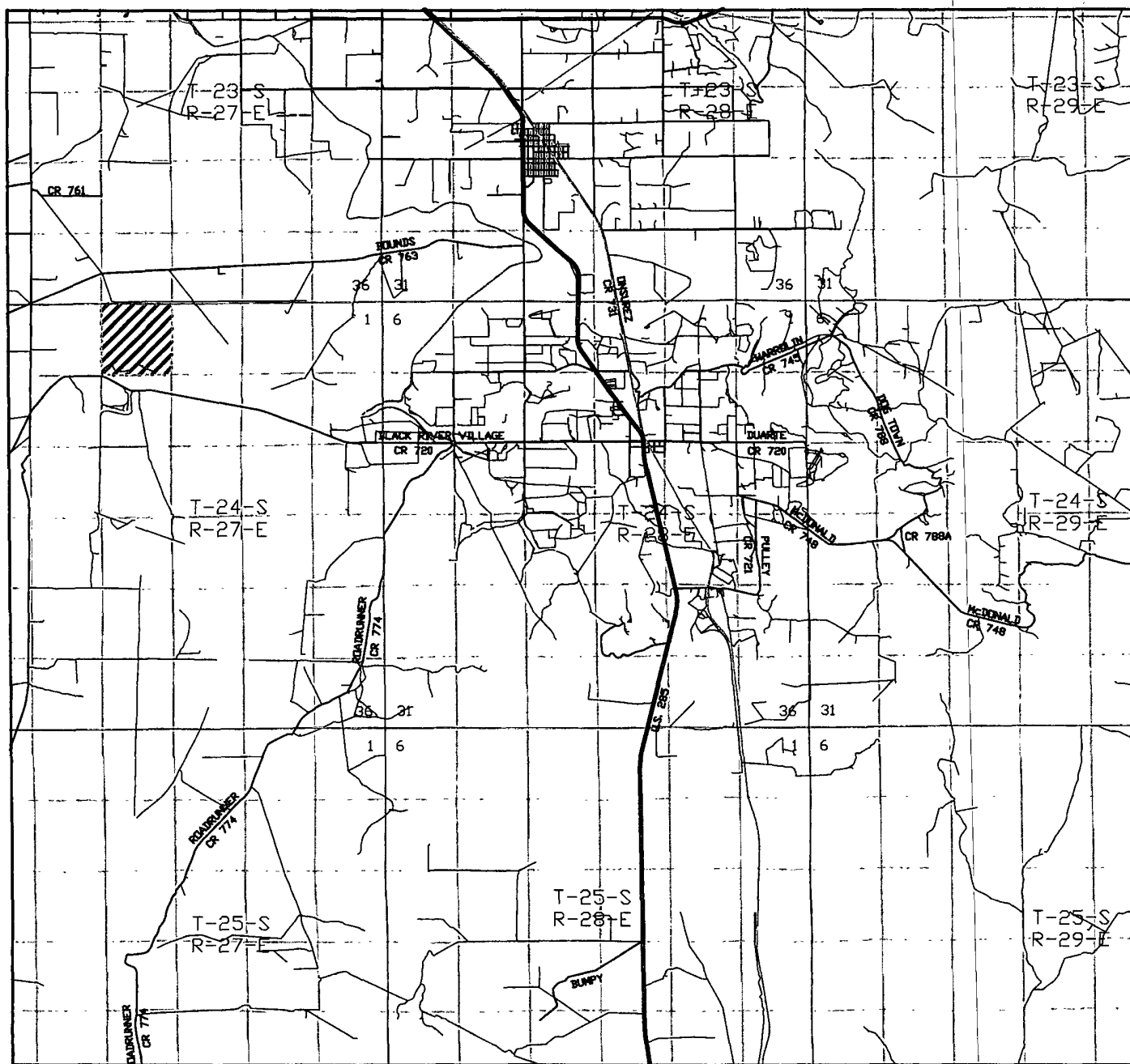
Drawn By: K. GOAD

Date: 11-09-2007

Disk: KJG - 18764T.DWG

Survey Date: 11-08-2009

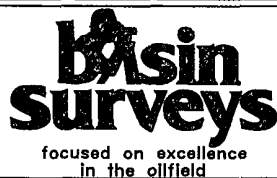
Sheet 1 of 1 Sheets



VAMPIRE BAT #1

Located at 660' FSL and 660 FEL

Section 4, Township 24 South, Range 27 East,
N.M.P.M., Eddy County, New Mexico.



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

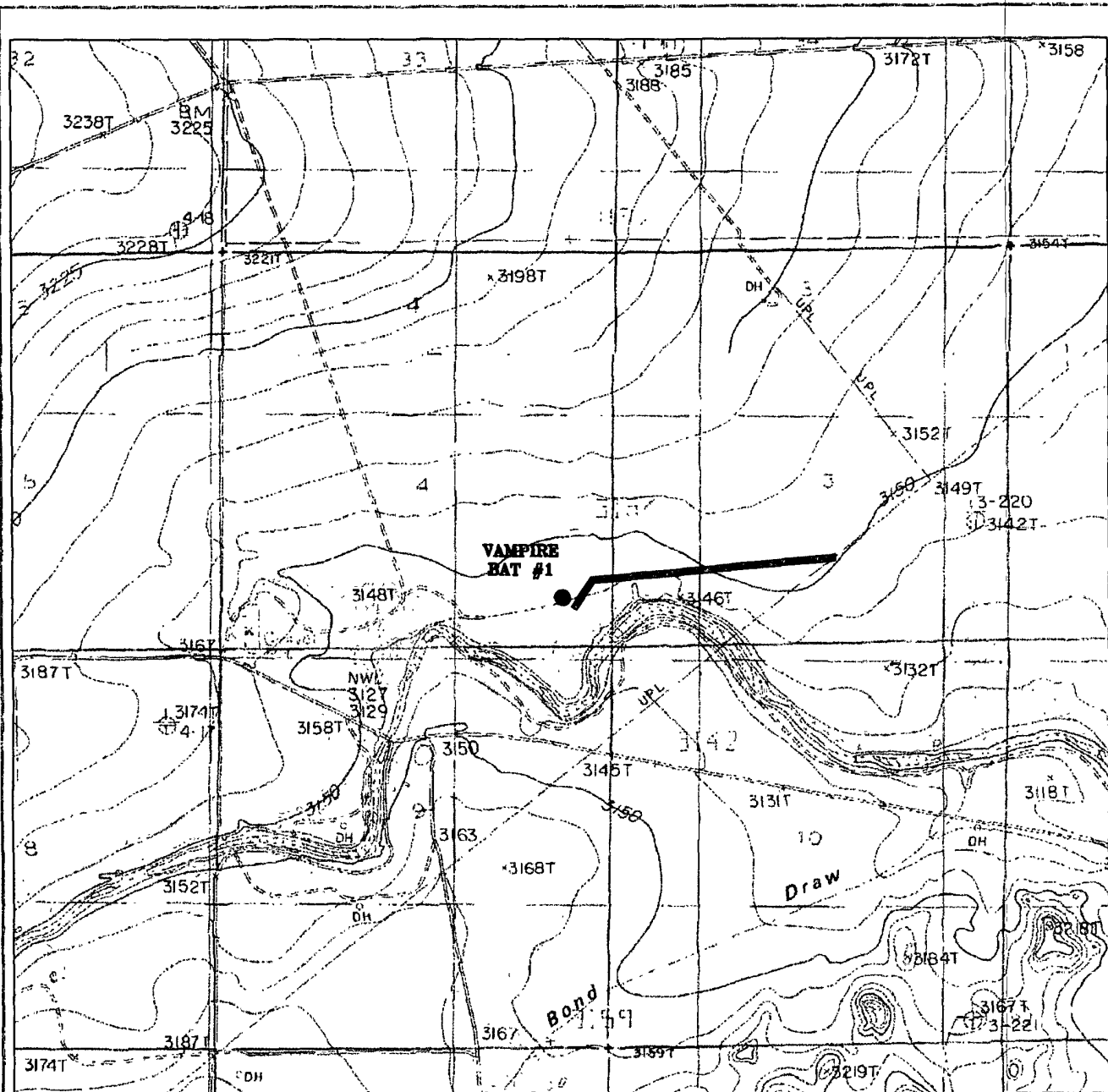
W.O. Number: KJG - 18764TR.DWG

Survey Date: 11-08-2007

Scale: 1" = 2 MILES

Date: 11-09-2007

OGX
RESOURCES,
L.L.C.



VAMPIRE BAT #1

Located at 660' FSL and 660 FEL
 Section 4, Township 24 South, Range 27 East,
 N.M.P.M., Eddy County, New Mexico.

basin
surveys

focused on excellence
 in the oilfield

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

W.O. Number: 18764T

Survey Date: 11-08-2007

Scale: 1" = 2000'

Date: 11-09-2007

OGX
RESOURCES,
L.L.C.

**OGX Resources
Well Prognosis
Vampire Bat #1**

Surface Location: 660' FSL & 660' FEL
Sec. 4, T24S, R27E
Eddy County, New Mexico

Proposed Bottom Hole Location: Same as Surface

Planned AFE Total Depth: 13,000 TVD / 13,000' MD

Contractor: Permian Drilling Rig 3

Prepared By: Randell Ford, R. K. Ford & Associates

Proposed Drilling and Completion Summary

The Vampire Bat #001 well is planned as a 13,000' TVD / 13,000' MD. The Morrow is the primary objective.

This project is located approximately 6 miles Southwest of Loving, Eddy County, New Mexico. Casing includes 20" structural/conductor, 13 3/8" surface, 9 5/8" intermediate, 7" intermediate, and 4 1/2" production liner. The well is planned to be drilled as a vertical well to TD. Formation evaluation will be performed using open-hole logging tools. A well completion procedure will be prepared by engineering after the well is evaluated. Production tubing will be 2 3/8" to handle anticipated production rates.

DIRECTIONS

From Loving New Mexico go south on US 285 for ± 0.6 miles to a curve, then south on Co. Rd. for ± 0.3 miles to Co. Rd. 763 (Bounds Rd.), then west on Bounds Rd. for 3.0 miles to lease road south, then south & southwest 0.8 miles to "Y" in lease road, then west & southwest along lease road 1.4 miles to location road. Follow location road 0.7 miles to well.

ESTIMATED RIG ELEVATION: 3,163' K.B. 3140' G.L.

ESTIMATED FORMATION TOPS: (These Tops Are Only ESTIMATED)

<u>Formation</u>	<u>TVD</u>	<u>Subsea</u>
Lamar Lime	2,150'	
Delaware Sand	2,250'	
Cherry Canyon	2,900'	
Brushy Canyon	4,800'	
Bone Spring	5,600'	
1 st Bone Spring Sd	6,600'	
2 nd Bone Spring Sd	7,140'	
3 rd Bone Spring Sd	8,550'	
Wolfcamp	8,910'	
Middle Wolfcamp	9,750'	
Strawn	10,930'	
Atoka	11,210'	
Morrow	11,500'	
Morrow Chert	11,690'	
Middle Morrow	11,900'	
Lower Morrow	12,200'	

CASING PROGRAM:

<u>SIZE</u>	<u>WEIGHT</u>	<u>GRADE</u>	<u>COUPLING</u>	<u>(MD-RKB)</u>	<u>TORQUE</u>
20"	Structural Pipe	LP		0-40'	
13 3/8"	54.5 ppf	J-55	ST&C	0-530'	
9 5/8"	36.0 ppf	J-55	LT&C	0-2,100'	
7"	26.0 ppf	P-110	LT&C	0-9,400'	
4 1/2"	11.6 ppf	P-110	STL	9,400 – 13,000'	

LOGGING PROGRAM:

8 3/4" Hole, 2,100' – 9,400', Gamma Ray, Dual Lateralog, Micro Lateralog, Photo Density, Comp/Neutron only back to surface.

6 1/8" Hole, Gamma Ray, Dual Laterolog, Micro Lateralog, Photo Density, Comp/Neutron logged from TD – casing at 9,400' (Tie-in to previous run).

MUD PROGRAM:

<u>DEPTH</u>	<u>MW</u>	<u>Viscosity</u>	<u>WL</u>	<u>Synopsis</u>
0' - 530'	8.6-8.8	36-38 vis	NC	Spud mud, paper
530' - 2,100'	10.0-10.1	29-30 vis	NC	Brine, paper sweeps
2,100' – 9400'	8.4-10.0	28-29 vis	NC	Fresh, gel sweeps
9,400'-13,000'	10.0-13.5	29-45 vis	10-6	Fresh, brine, gel, dynazan

See attached mud program for additional specifications.

MUD LOGGING:

Mud logging unit is rigged up and logging at 1900'. Collect 10' samples from 2,100' to TD. **Note: Mud logger to pick 7" casing points.**

DRILLSTEM TESTS/ CORES:

None planned

DRILLING PROCEDURE

I. LOCATION PRE-SPUD

1. Set 40' of 20" conductor prior to rig up.
2. Review State Permit, offset well data, procedure, formation depths and BOP/casing testing requirements. Hold pre-spud meeting with vendors and operator. Rig up Permian Rig 3, prepare to spud well. Visually inspect rig's 13 5/8" 5M BOP's (replace and repair as required). Record and report fuel on location at spud.

II. SURFACE HOLE INTERVAL 40'- 530'

1. Spud with a 17-1/2" rental mill tooth bit and BHA with sufficient 8" drill collars to supply necessary bit weights. Stabilizers as needed to ensure a straight hole. (Record time and date of spud on morning report.) Pump sweeps as needed and before and after any trips. Survey as required to monitor deviation.
2. Surface hole to be drilled with a fresh water gel/soda ash spud mud with following properties: MW 8.6-8.8, VISC 36-38, API-FL N/C. Pump a paper sweep to aid in a hole clean prior to running casing. Strap DP and DCs out of hole.
3. Rig up casing tools and run casing as follows:

13-3/8" Texas Pattern Guide Shoe
1 Joint 13-3/8", 54.5 ppf, J-55, STC Casing
13-3/8" Float Collar
+/- 500' 13-3/8", 54.5 ppf, J-55, STC Casing

4. Centralize with (6) centralizers placed as follows: middle of shoe jt., top of 2nd jt., top of 4th jt., then every third jt. Thread lock all float equipment (top & bottom).
5. Pump capacity of casing prior to commencing any cementing operations. Tag and land casing on bottom. Hold running weight tension while WOC. Cement per prognosis (volumes based on 100% excess of calculated volume for gauge hole). WOC total of 2 - 4 hours or until tail slurry has attained 500 psi compressive strength (use location water sample to get lab results).
6. Cut off 13-3/8" to weld on 13-3/8" SOW casinghead x 13 5/8" 3M wellhead and test to 70% of collapse. Ensure wellhead height matches production requirements and BOPs heights.

III. INTERMEDIATE HOLE SECTION INTERVAL 530' – 2,100'

1. Nipple up 13-5/8" 5M BOP equipment. Test BOP and choke manifold to 500 psi. Check gauge on choke panel for accurate pressures, replace it if required. RIH with 12 1/4" insert bit and BHA with sufficient 8" drill collars to supply necessary bit weights. Stabilizers as needed to ensure a straight hole. Test 13-3/8" casing to 500 psi.
2. Drill float collar, cement, and float shoe. If first 20' of float shoe joint drills with wet cement, WOC prior to drilling remainder of joint and notify office.
3. Drill and survey a straight hole. Survey every 300' or more often as required to monitor deviation. Circulation rates as needed to ensure good hole cleaning.
4. This interval to be drilled with brine water having the following properties: MW 10.0-10.1, VISC 28-30, API-FL N/C, circulating the inside reserve pit. Sweep hole every 500 feet drilled to aid in cuttings removal. If lost circulation is encountered, refer to procedures in mud program.
5. When \pm 2,100', casing point is reached, circulate and condition hole in preparation to run casing. Sweep the hole clean with 100 bbl 90 visc fresh gel sweep prior to running casing.
6. Rig up casing tools and run casing as follows:
 - 9-5/8" Float Shoe
 - (1) Joint 9-5/8", 36.0 ppf, J-55, ST&C Casing
 - 9-5/8" Float Collar
 - +/- 2,050', 9-5/8", 36.0 ppf, J-55, ST&C Casing

7. Centralize with (5) centralizers placed as follows: middle of shoe jt., top of 2nd jt., top of 4th jt., then every fourth jt. Thread lock all float equipment (top & bottom).
8. Cement per cement prognosis. Pump capacity of casing prior to commencing any cementing operations. Tag and land casing on bottom, hold running weight tension while WOC. Cement per prognosis (volumes based on fluid caliper results). WOC total of 24 hours or until tail slurry has attained 500 psi compressive strength (use location water sample to get lab results).
9. Cut off 9-5/8" and set in 13-3/8" casing head bowl. Nipple up 13 5/8" 3M x 11" 5M casing spool (Test casing to 70% of collapse) and BOP equipment. Test BOP and choke manifold to 5,000 psi or full working pressure. Check gauge on choke panel for accurate pressures, replace it if required. Ensure wellhead height matches production requirements and BOPs heights. Install dual super chokes, PVT and flow sensors, mud-gas separator and bar bins.

IV. INTERMEDIATE HOLE SECTION INTERVAL 2,100' – 9,400' TD

1. RIH with 8 3/4" insert button bit and BHA with sufficient 6 1/2" drill collars to supply necessary bit weights. Stabilizers as needed to ensure a straight hole. Test 9-5/8" casing to 1500 psi.
2. Drill float collar, cement, and float shoe. If first 20' of float shoe joint drills with wet cement, WOC prior to drilling remainder of joint and notify office.
3. Drill and survey a straight hole to ± 9,400 T.D. Survey every 500' or more often as required to monitor deviation. Circulation rates as needed to ensure good hole cleaning.
4. Drill out casing with fresh water having the following properties: MW 8.4-10.0, VISC 28-29, API-FL N/C, circulating through the outside reserve pit. Pump sweeps every 500 feet drilled to aid in cuttings removal. If lost circulation is encountered, refer to procedures in mud program.
5. At total depth circulate and condition hole, short trip, circulate and condition, POH (strapping DP and DCs). Rig up loggers and run wireline logs as proposed or as dictated by the office.
6. Trip in hole. Circulate and condition hole in preparation to run casing.
7. Trip out of hole. Lay down DP and DC's.

8. Rig up casing tools and run 7" casing as follows:

7" Float Shoe

(1) Joint 7" 26.0 ppf, P-110, LT&C

7" Float,

±9,350', 7" 26.0 ppf, P-110, LT&C

PDC Drillable Float Equipment & Plug Required on 7" Casing

Note: When cleaning and drifting 7" check drift to insure that it is a full 6.125" due to possible PDC bit being run in this section of hole.

9. Pump capacity of casing prior to commencing any cementing operations.

V. FINAL HOLE SECTION INTERVAL 9,400' – 13,000' TD

1. RIH with 6-1/8" insert button bit and BHA with sufficient drill collars to supply necessary bit weights. Test 7" casing to 2,000 psi.
2. Drill float collar, cement, and float shoe. If first 20' of float shoe joint drills with wet cement, WOC prior to drilling remainder of joint and notify office.
3. Drill and survey a straight hole to ±13,000' T.D. Survey every 500' or more often as required to monitor deviation. Circulation rates as needed to ensure good hole cleaning. Record slow pump rates everyday and every time mud properties change.
4. Drill out casing with brine water, circulating through the working pits. Pump sweeps as needed to ensure good hole cleaning. If lost circulation is encountered, refer to procedures in mud program. Mud up at 10,500' with Dynazan, add Calcium Carbonate as needed to stabilize hole and provide safe conditions for trips.
5. At total depth, circulate and condition mud and hole, short trip, circulate and condition, POH (strapping DP and DCs). Rig up loggers and run wire line logs as proposed or as dictated by the office.
6. Trip in hole. Circulate and condition mud and hole in preparation to run production liner.
7. Trip out of hole with drill pipe. Prepare to run liner.

8. Rig up casing tools and run 4 1/2" liner as follows:
 - 4 1/2" Dual Valve Float Shoe
 - (1) Joint 4 1/2" 11.6 ppf, P-110, STL Liner
 - 4 1/2" Landing Collar
 - ± 3,500' 4 1/2" 11.6 ppf, P-110, STL liner
 - 7" x 4 1/2" liner hanger assembly
 - 8,000# liner top packer & tieback
9. Check and record liner weight before tripping in the hole. Trip in hole with liner under full hydromatic. Fill drill string every 10 stands while tripping in the hole with liner. Pick up manifold and wash liner to bottom. Circulate liner for 15 minutes. Hang liner off. Rotate out of liner. Pickup drill string and check weight to make sure liner is hung off. Pump capacity of liner and drill string prior to commencing any cementing operations.
10. Cement per cement prognosis. Displace liner with fresh water and drill string with drilling mud. Do not over displace. Pickup drill string approx. 12' set back down and set liner top packer with 30,000# or more. Pull 10 stands of drill pipe. Pickup Kelly. Circulate annulus 150% and rotate drill string while circulating. TOOH with liner stinger and lay down.
11. TIH with 6-1/8" bit and drilling assembly to 6,000' and circulate. Drill cement off liner top after total cement time of 18 hours. Circulate hole clean. Test liner top or displace hole with fresh water or KCL water.
12. Lay down drill string. Nipple down BOP's. Nipple up wellhead. Clean pits. Release drilling rig and all rental equipment. Record and report fuel on location at rig release.
13. Refer to completion procedure.



DRILLING FLUIDS PROGRAM

PREPARED FOR:

Vampire Bat #1

*Section 4, T-24-S, R-27-E
Eddy County, New Mexico*

SUBMITTED TO:

Mr. Kip Agar

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

PREPARED BY:

Mike Davis



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Vampire Bat #1

Section 4, T-24-S, R-27-E
Eddy County, New Mexico

PROGRAM HIGHLIGHTS:

TOTAL DEPTH	:	12,800'
CASING REQUIREMENTS	:	Interval 1: 17-1/2" hole to 530', set 13-3/8" casing. Interval 2: 12-1/4" hole to 2,100', set 9-5/8" casing. Interval 3: 8-3/4" hole to 9,400', set 7" casing. Interval 3: 6-1/8" hole to 12,800', set 4-1/2" casing.
MUD WEIGHT REQUIREMENTS	:	8.6 – 8.8 ppg @ 530' 10.0 – 10.1 ppg @ 2,100' 8.4 – 10.1 ppg @ 9,400' 10.1 – 13.5 ppg @ 12,800'
DAYS TO REACH TD	:	38 – 42
COST ESTIMATE	:	\$230,000.00 to \$240,000.00
WAREHOUSE	:	Midland, Texas (800) 592-4627 David Volz, Distribution Manager
PERMIAN BASIN PERSONNEL	:	Midland, Texas (800) 592-4627 Joe Henderson, Permian Basin Business Unit Manager Al Boudreaux, Sales Manager Doug Thomas, Sales Ken Anthony, Engineering Manager Mike Davis, Technical Manager

MUD PROPERTIES SUMMARY:

Depth (feet)	Weight (ppg)	Viscosity (sec/1000cc)	Fluid Loss (cc/30min)	PV (cps)	YP (lb/100ft ²)	Mud Type
0' – 530' Set 13-3/8" Casing	8.6 – 8.8	36 – 38	N/C	6 – 10	6 – 20	Spud Mud
530' – 2,100' Set 9-5/8" Casing	10.0 – 10.1	29 – 30	N/C	0 – 1	0 – 1	Brine
2,100' – 9,400' Set 7" Liner	8.4 – 10.0	28 – 29	N/C	0 – 1	0 – 1	Fresh Water to Brine
9,400' – 10,500' -	10.0 – 10.1	29 – 30	N/C	0 – 1	0 – 1	Brine
10,500' – 12,800' Set 5-1/2"	10.1 – 13.5	38 – 45	10 – 6 cc	6 – 30	8 – 24	Dynazan / Starch *Calcium Carbonate

Note: The mud weight schedule is intended as a guideline only. Actual mud weights used should be determined by hole conditions and drilling parameters.

*Calcium Carbonate will be used as the weighting agent in all pipe slugs, and mud weight increases.

ABOSULTLEY NO BARITE WILL BE USED. If weights are needed above 12.0 ppg, Barite will only be used after a thorough discussion with the operator.



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Vampire Bat #1

Section 4, T-24-S, R-27-E

Eddy County, New Mexico

PROGRAM HIGHLIGHTS (CONT'D):

HOLE & CASING DESIGN:

INTERVAL	DEPTH (feet)	BIT SIZE	CASING (OD)	ANTICIPATED MUD WT. (ppg)
INTERVAL 1	530'	17-1/2"	13-3/8"	8.6 – 8.8
INTERVAL 2	2,100'	12-1/4"	9-5/8"	10.0 – 10.1
INTERVAL 3	9,400'	8-3/4"	7"	8.4 – 10.1
INTERVAL 4	12,800'	6-1/8"	4-1/2"	10.1 – 13.5

SOLIDS CONTROL:

INTERVAL	RECOMMENDED SOLIDS CONTROL EQUIPMENT
INTERVAL 1	Two linear motion shale shakers and one desander.
INTERVAL 2	Reserve.
INTERVAL 3	Reserve.
INTERVAL 4	Reserve.
INTERVAL 5	Two linear motion shale shakers, and centrifuges.

ESTIMATED FORMATION TOPS:

FORMATION	DEPTH
Delaware Sand	2,350
Bone Spring	5,949'
Wolfcamp	9,230'
Strawn	10,710'
Atoka	10,955'
Morrow	11,440'
Lower Morrow	12,020'
Barnett	12,170'
Total Depth	12,800'



Newpark Drilling Fluids, LLC



OGX Resources, LLC

Vampire Bat #1

Section 4, T-24-S, R-27-E

Eddy County, New Mexico

Interval 1: 17-1/2" Hole

Interval: 0' – 530'

Casing: 13-3/8

Days: 2

Drilling Fluid Properties:

Depth	Weight	Viscosity	PV	YP	pH	Fluid Loss	LG Solids
(feet)	(ppg)	(sec/1000cc)	(cps)	(lb/100ft ²)	(value)	(cc/30min)	(%)
0' – 530'	8.6 – 8.8	36 – 38	6-10	6-20	9.0-10.0	No Control	<6

Drilling Fluid Recommendations:

A non-dispersed **NewGel** system is recommended for this interval, with pre-hydrated **NewGel** and **Soda Ash** as the primary system components for rheological control. Utilize **Paper** sweeps to aid in seepage control. If losses occur batch treat with 12-15 ppb **Fiber Seal** in a 50 bbl premix with 36-38 sec/1000cc viscosity.

At total depth, sweep the hole with 100-barrels of fresh water and **New Gel** for a 80-90 sec/1000cc viscosity and 0.25-ppb **Super Sweep**. Circulate hole clean prior to running casing.

Materials Consumption

175	sx	New Gel
10	sx	Soda Ash
10	sx	Paper
1	bx	Super Sweep



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Vampire Bat #1

Section 4, T-24-S, R-27-E
Eddy County, New Mexico

Maintenance Procedure: Interval 1

Fluid Loss - Fluid loss control is unnecessary through this interval.

Mud Weight - Run water and premixes as needed to maintain volume and weight as specified.

Rheology - Solids content is the primary factor that will affect rheology. Maintain viscosity as needed for this interval.

Alkalinity - Maintain pH in the 9.0-10.0 range with **Soda Ash**.

Hole Cleaning - Optimum hydraulics and rheological properties should be maintained to provide maximum hole cleaning and minimize washout of the well bore.

Solids Control - Maintain low gravity solids at <6% by volume. The shakers should be equipped with the finest mesh screens that will handle the circulating volume.



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Vampire Bat #1

Section 4, T-24-S, R-27-E
Eddy County, New Mexico

Interval 2: 12-1/4" Hole
Interval: 530' – 2,100'
Casing: 9-5/8"
Days: 5

Drilling Fluid Properties:

Depth	Weight	Viscosity	PV	YP	pH	Fluid Loss	LG Solids
(feet)	(ppg)	(sec/1000cc)	(cps)	(lb/100ft ²)	(value)	(cc/30min)	(%)
530' – 2,100'	10.0 – 10.1	29 – 30	0-1	0-1	9.0-10.0	No Control	<6

Drilling Fluid Recommendations:

Drill out from the 13-3/8" casing with brine water circulating a controlled portion of the reserve pit for gravitational solids control. Utilize **Paper** sweeps to aid in seepage control. The pH should be maintained at 9.0-10.0 with additions of **Caustic Soda**. Utilize **New-55** sweeps (2-3 quarts per connection) to aid in cuttings removal. Sweep the hole with 100 barrels of fresh water and **New Gel** for a 80-90 sec/1000cc viscosity and 0.25-lbs of **Super Sweep** every 500 feet drilled to aid in cuttings removal. If losses occur batch treat with 12-15 ppb **Fiber Seal** in a 50 bbl premix with 36-40 sec/1000cc viscosity.

At total depth, sweep the hole with 100-barrels of fresh water and **New Gel** for a 80-90 sec/1000cc viscosity and 0.25-ppb **Super Sweep**. Circulate hole clean prior to running casing.

Materials Consumption

150 sx New Gel
30 sx Paper
20 sx Caustic Soda
4 pl New-55
2 bx Super Sweep



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Vampire Bat #1

Section 4, T-24-S, R-27-E

Eddy County, New Mexico

Maintenance Procedure: Interval 2

Fluid Loss - Fluid loss control is unnecessary through this interval.

Mud Weight - Maintain minimum fluid densities.

Alkalinity - Maintain pH in the 9.0-10.0 range with **Caustic**.

Hole Cleaning - Optimum hydraulics and rheological properties should be maintained to provide maximum hole cleaning and minimize washout of the well bore. Sweeping the hole with fresh water mud pills made of fresh water, **New Gel** for a 80-90 sec/1000cc viscosity and 0.25 ppb of **Super Sweep** every 500' will provide additional hole cleaning.

Mud Losses Down hole - Loss of circulation is a possibility through this interval. Use **Fiber Plug** and **Fiber Seal**. Keep the hole full at all times, and avoid excessive swabbing and/or surge actions when tripping pipe. Bring pumps on the hole gradually anytime circulation has been interrupted, increasing pump strokes only after full returns are established.

Solids Control - Maintain low gravity solids at <6% by volume. Circulating the reserve will provide gravitational solids control.



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Vampire Bat #1

Section 4, T-24-S, R-27-E

Eddy County, New Mexico

Interval 3: 8-3/4" Hole
Interval: 2,100' – 9,400'
Casing: 7"
Days: 16

Drilling Fluid Properties:

Depth	Weight	Viscosity	PV	YP	pH	Fluid Loss	LG Solids
(feet)	(ppg)	(sec/1000cc)	(cps)	(lb/100ft ²)	(value)	(cc/30min)	(%)
2,100' – 9,400'	8.4 – 10.0	28 – 29	0 – 1	0 – 1	9.0-10.0	N/C	<6

Drilling Fluid Recommendations:

Drill out from the 9-5/8" casing with Fresh water circulating the remaining portion of the reserve. The pH should be maintained at 9.0-10.0 with additions of **Caustic Soda**. Sweep the hole with 100 barrels of fresh water and **New Gel** for a 80-90 sec/1000cc viscosity and 0.25-lbs of **Super Sweep** every 500 feet drilled to aid in cuttings removal. If losses occur batch treat with 12-15 ppb **Fiber Seal** in a 50 bbl premix with 36-40 sec/1000cc viscosity.

Maintain sufficient brine on location to raise the mud weight in the event of abnormal pressure in the Bone Springs. At total depth fill premix pit with 100 barrels of fresh water and **New Gel** for a 80-90 sec/1000cc viscosity and 0.25-lbs of **Super Sweep**. Sweep prior to casing operations.

*Calcium Carbonate will be used as the weighting agent in all pipe slugs, and mud weight increases. **ABOSULTLEY NO BARITE WILL BE USED**. If weights are needed above 12.0 ppg, Barite will only be used after a thorough discussion with the operator.

Materials Consumption

200 sx New Gel
60 sx Paper
40 sx Caustic Soda
2 bx Super Sweep



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Vampire Bat #1

Section 4, T-24-S, R-27-E
Eddy County, New Mexico

Maintenance Procedure: Interval 3

Fluid Loss - Fluid loss control is unnecessary through this interval.

Mud Weight - Run water and premixes as needed to maintain volume and weight as specified. Drilling with a minimum amount of overbalance will reduce the possibility of losing returns and/or of differentially sticking the drill string.

Alkalinity - Maintain pH in the 9.0-10.0 range with **Caustic**.

Hole Cleaning - Optimum hydraulics and rheological properties should be maintained to provide maximum hole cleaning and minimize washout of the well bore. Sweeping the hole with fresh water mud pills made of fresh water, **New Gel** for a 80-90 sec/1000cc viscosity and 0.25 ppb of **Super Sweep** every 500' will provide additional hole cleaning.

Mud Losses Down hole - Loss of circulation is a possibility through this interval. Use **Fiber Plug** and **Fiber Seal**. Keep the hole full at all times, and avoid excessive swabbing and/or surge actions when tripping pipe. Bring pumps on the hole gradually anytime circulation has been interrupted, increasing pump strokes only after full returns are established.

Solids Control - Maintain low gravity solids at <6% by volume. Circulating the reserve will provide gravitational solids control.



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Vampire Bat #1

Section 4, T-24-S, R-27-E

Eddy County, New Mexico

Interval 4: 6-1/8" Hole
Interval: 9,400' – 10,500'
Casing: -
Days: 5

Drilling Fluid Properties:

Depth	Weight	Viscosity	PV	YP	HPHT Fluid Loss	pH	LG Solids
(feet)	(ppg)	(sec/1000cc)	(cps)	(lb/100ft ²)	(cc/30min)	(value)	(%)
9,400' – 10,500'	10.0 – 10.1	29 – 30	0 – 1	0 – 1	N/C	9 – 10	<6

Drilling Fluid Recommendations:

Drill out from the 7" casing with Brine water continue circulating the remaining portion of the reserve. The pH should be maintained at 9.0-10.0 with additions of **Caustic Soda**. Sweep the hole with 100 barrels of fresh water and **New Gel** for a 80-90 sec/1000cc viscosity and 0.25-lbs of **Super Sweep** every 500 feet drilled to aid in cuttings removal. If losses occur batch treat with 12-15 ppb **Fiber Seal** in a 50 bbl premix with 36-40 sec/1000cc viscosity

*Calcium Carbonate will be used as the weighting agent in all pipe slugs, and mud weight increases. **ABOSULTLEY NO BARITE WILL BE USED**. If weights are needed above 12.0 ppg, Barite will only be used after a thorough discussion with the operator.

Materials Consumption

300 sx NewGel
30 sx Paper
15 sx Caustic Soda
1 bx Super Sweep



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Vampire Bat #1

Section 4, T-24-S, R-27-E
Eddy County, New Mexico

Maintenance Procedure: Interval 4

Fluid Loss - Fluid loss control is unnecessary through this interval.

Mud Weight - Maintain minimum fluid densities. Run water and premixes as needed to maintain volume and weight as specified. Drilling with a minimum amount of overbalance will reduce the possibility of losing returns and/or of differentially sticking the drill string.

Alkalinity - Maintain pH in the 9.0-10.0 range with **Caustic**.

Hole Cleaning - Optimum hydraulics and rheological properties should be maintained to provide maximum hole cleaning and minimize washout of the well bore. Sweeping the hole with fresh water mud pills made of fresh water, **New Gel** for a 80-90 sec/1000cc viscosity and 0.25 ppb of **Super Sweep** every 500' will provide additional hole cleaning.

Mud Losses Down hole - Loss of circulation is a possibility through this interval. Use **Fiber Plug** and **Fiber Seal**. Keep the hole full at all times, and avoid excessive swabbing and/or surge actions when tripping pipe. Bring pumps on the hole gradually anytime circulation has been interrupted, increasing pump strokes only after full returns are established.

Solids Control - Maintain low gravity solids at <6% by volume. Circulating the reserve will provide gravitational solids control.



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Vampire Bat #1

Section 4, T-24-S, R-27-E
Eddy County, New Mexico

Interval 5: 6-1/8" Hole
Interval: 10,500' – 12,800'
Casing: 4-1/2"
Days: 10

Drilling Fluid Properties:

Depth	Weight	Viscosity	PV	YP	HPHT Fluid Loss	pH	LG Solids
(feet)	(ppg)	(sec/1000cc)	(cps)	(lb/100ft ²)	(cc/30min)	(value)	(%)
10,500' – 12,800'	10.1 – 13.5	38 – 45	6 – 20	8 – 30	10 – 6 cc	9 – 10	<6

Drilling Fluid Recommendations:

At 10,500' confine circulation to steel pits. Treat the system with **Newcide** to prevent bacterial degradation of organic materials. Adjust and maintain pH with **Caustic Soda**. Add **Starch** (White) to control API filtrate at <10cc. Mix **Dynazan** to increase the viscosity to 38-40 sec/1000cc. Use **S-10 Defoamer** to reduce foaming. Mix ***Calcium Carbonate** to increase fluid density to balance formation pressures up to 12.0 ppg.

At 11,400', prior to drilling Morrow, reduce API filtrate to <6cc with **Starch** (White). If abnormal pressures are encountered mix **Calcium Carbonate** to increase mud weight. Raise viscosity to 45+ sec/1000cc with **Dynazan**.

***Calcium Carbonate will be used as the weighting agent in all pipe slugs, and mud weight increases. ABSOLUTELY NO BARITE WILL BE USED. If weights are needed above 12.0 ppg, Barite will only be used after a thorough discussion with the operator.**

Materials Consumption:

185 tn Calcium Carbonate (bulk)
150 sx White Starch
100 tn Barite (bulk)
100 sx Dyna Fiber
80 sx Dynazan
40 sx Caustic Soda
30 cn S-10 Defoamer
25 cn Newcide



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Vampire Bat #1

Section 4, T-24-S, R-27-E
Eddy County, New Mexico

Maintenance Procedure: Interval 5

Fluid Loss - Fluid loss control should be maintained with **Starch** (White)

Mud Weight - Maintain minimum fluid densities. Run water and premixes as needed to maintain volume and weight as specified. Drilling with a minimum amount of overbalance will reduce the possibility of losing returns and/or of differentially sticking the drill string.

Alkalinity - Maintain pH in the 9.0-10.0 range with **Caustic**.

Hole Cleaning - Optimum hydraulics and rheological properties should be maintained to provide maximum hole cleaning and minimize washout of the well bore. Sweeping the hole with fresh water mud pills made of fresh water, **New Gel** for a 80-90 sec/1000cc viscosity and 0.25 ppb of **Super Sweep** every 500' will provide additional hole cleaning.

Mud Losses Down hole - Loss of circulation is a possibility through this interval. Use **Fiber Plug** and **Fiber Seal**. Keep the hole full at all times, and avoid excessive swabbing and/or surge actions when tripping pipe. Bring pumps on the hole gradually anytime circulation has been interrupted, increasing pump strokes only after full returns are established.

Solids Control - Maintain low gravity solids at <6% by volume. Circulating the reserve will provide gravitational solids control.



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Vampire Bat #1

Section 4, T-24-S, R-27-E

Eddy County, New Mexico

ENGINEER / WAREHOUSE INFORMATION

WELL NAME: Vampire Bat #1

LOCATION: Section 4, T-24-S, R-27-E

Eddy County, New Mexico

MUD ENGINEER: Wally Pearson Artesia, New Mexico

Lynn Pearson Carlsbad, New Mexico

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

WAREHOUSE: Artesia & Lovington, New Mexico

Oil Base Mud Plant Monahans, Texas

Water Base Mud Plant Monahans, Texas

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



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Vampire Bat #1

Section 4, T-24-S, R-27-E
Eddy County, New Mexico

Lost Circulation Procedures

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

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



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Vampire Bat #1

Section 4, T-24-S, R-27-E

Eddy County, New Mexico

Severe Losses:

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

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

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



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Vampire Bat #1

Section 4, T-24-S, R-27-E
Eddy County, New Mexico

Solids Control

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

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

Shale Shaker

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

Mud Cleaner

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



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Vampire Bat #1

Section 4, T-24-S, R-27-E

Eddy County, New Mexico

Hydraulics

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

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

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

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

PV = Plastic Viscosity

YP = Yield Point

M = Mud Weight (ppg)

Dh = Diameter of hole (inches)

Dp = Diameter of pipe (inches)

τ_c = Critical Velocity in feet per second.



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Vampire Bat #1

Section 4, T-24-S, R-27-E
Eddy County, New Mexico

Filtration Control & Filter Cake Quality:

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

The primary objectives of filtration are:

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

These objectives are achieved by focusing on important design factors:

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

Filtration Control Mechanisms:

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

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



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Vampire Bat #1

Section 4, T-24-S, R-27-E

Eddy County, New Mexico

Hydration, Flocculation, and Deflocculation

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

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

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

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

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

HALLIBURTON

OGX Resources LLC
PO Box 11148
Midland, Texas 79702

Vampire Bat 1

Eddy County, New Mexico
United States of America
S:4 T:24S R:27E

Cementing Recommendation

Prepared for: Randy Ford
November 14, 2007
Version: 1

Submitted by:
Dennis Page

Halliburton
4000 N. Big Spring, Ste. 200
Midland, Texas 79705
432.683.0210

HALLIBURTON

HALLIBURTON

*Halliburton appreciates the opportunity to present
this proposal and looks forward to being of service to you.*

Foreword

Halliburton Energy Services is pleased to have this opportunity to present this proposal for your consideration. We earnestly request the service work to be performed on this well.

These Service Coordinators can be reached in our District, at the following phone numbers:

MIDLAND SALES OFFICE

1-800-844-8451

ODESSA DISTRICT

1-800-417-5096

CEMENTING:

Scott Kerby / Joe Briseno
BJ Wheeler

STIMULATION:

Mel Holt / Larry Staples
Basil Hacker

LOGGING & PERFORATING

Allen Avera / Keith Drake
Mike Rehl

COILED TUBING & NITROGEN

Michael Ybaben

TOOLS & TESTING, PROD. SVCS., TCP, COMPL. PRODUCTS

Steve Engleman

BAROID

Fernando Arizpe

PREPARED BY: Bruce Day

HOBBS DISTRICT

1-800-416-6081

CEMENTING

Pete Garza / Ronald Arnold
Jaime Gonzales

STIMULATION:

Freddy Casillas / Jerry Thurman
Travis Laman

LOGGING & PERFORATING

Darrell Merrell / Vernon Reeve

TOOLS & TESTING, PROD. SVCS., TCP, COMPL. PRODUCTS

Mike McWilliams

BAROID

Freddy Redmon

We look forward to working with you to provide the very best quality services available in the Permian Basin.

Dennis Page, Sr. Technical Advisor

Cementing Best Practices

1. **Cement quality and weight:** You must choose cement slurry that is designed to solve the problems specific to each string of pipe.
2. **Waiting time:** You must hold the cement slurry in place and under pressure until it hardens. A cement slurry is a time-dependent liquid and must be allowed to undergo a hydration reaction to produce a competent cement sheath. A fresh cement slurry can be worked (thickening or pump time) as long as it is plastic, and the initial set of cement occurs during the rapid reaction stage. If the cement is not allowed to hydrate; it will be subject to changes in density, dilution, settling, water separation, and gas cutting that can lead to lack of zonal isolation with resultant bridging in the annulus.
3. **Pipe movement:** Pipe movement may be one of the single most influential factors in mud removal. Reciprocation and/or rotation mechanically breaks up gelled mud and constantly changes the flow patterns in the annulus for better cement bonding.
4. **Mud properties:** Plastic viscosity (PV) should be less than 15 centipoise (cp), and less than 10 cp, if possible, yield point (YP) should be less than 10 pound/100-square feet (lb/100ft²) decreasing down to about 5 lb/100 ft².
5. **Mud gel strength:** A nonthixotropic mud is desirable for good mud removal. Mud left in the hole prior to running casing should have 10-second/10-minute/30-minute gel strength such that the 10-minute is less than double the 10-second and the 30-minute is less than 20 lb/100 ft²). Sufficient shear strength may not be achieved on a primary cement job to remove mud left in the hole should the mud develop more than 25 lb/100 ft².
6. **Mud fluid loss:** Decreasing the filtrate loss into a permeable zone enhances the creation of a thin filter cake. This increases the fluid mud in the hole, which is more easily removed. Generally, an API fluid loss of 7 or 8 milliliter (ml) is sufficient with high-temperature/high-pressure fluid loss (HTHP) no more than double this amount.
7. **Circulation:** Circulate bottoms up twice, or until well conditioned mud is being returned to the surface. There should be no cutting in the mud returns. An annular velocity of 260 feet per minute is optimum (SPE/IADC 18617), if possible.
8. **Flow rate:** Turbulent flow is more desirable flow regime for mud removal. If turbulence cannot be achieved, better mud removal is found when maximum flow energy is used. The maximum pump rate should be determined to obtain the best flow regime.
9. **Hole size:** The optimum hole size recommended for good mud removal is 1.5 to 2 inches larger than the casing or liner size. Hole sizes larger than 2 inches annular space can be dealt with, but those that are smaller than 1.5 inches present difficult problems.
10. **Pipe Centralization:** This helps to create a uniform flow area perpendicular to flow direction. Cement will take the path of least resistance so that centralization is important in keeping the pipe off the walls of the hole. At least a 70 percent standoff should be achieved for centralization.
11. **Rat hole:** When applicable, a weighted viscous pill in the rat hole prevents cement from swapping with lighter weight mud when displacement stops.
12. **Shoe joint:** A shoe joint is recommended on all primary casings and liners. The length of the shoe joint will vary, although the absolute minimum length is one joint of pipe. If conditions exist, such as not running a bottom plug, two joints should be the minimum length.

Job Information**Surface Casing**

Vampire Bat	1
17-1/2" Hole	0 - 520 ft (MD)
Inner Diameter	17.500 in
Surface Casing	0 - 520 ft (MD)
Outer Diameter	13.375 in

Job Recommendation

Install floating equipment, run casing to bottom, and circulate a minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Fluid 1: Precede cement with 20 bbl
Fresh Water

Fluid Volume: 20 bbl

Fluid 2: 1st Lead Cement - 200 sks
Premium Plus Cement

94 lbm/sk	Premium Plus Cement (Cement)
1 %	Calcium Chloride (Accelerator)
10 lbm/sk	Gilsonite (Lost Circulation Additive)
0.25 lbm/sk	Poly-E-Flake (Lost Circulation Additive)

Fluid Weight	14.60 lbm/gal
Slurry Yield:	1.39 ft ³ /sk
Total Mixing Fluid:	5.62 Gal/sk
Volume:	49.59 bbl
Proposed Sacks:	200 sks

Fluid 3: 2nd Lead Cement - 300 sks

Halliburton Light Premium Plus

1 %	Calcium Chloride (Accelerator)
0.25 lbm/sk	Poly-E-Flake (Lost Circulation Additive)

Fluid Weight	12.70 lbm/gal
Slurry Yield:	1.88 ft ³ /sk
Total Mixing Fluid:	10.27 Gal/sk
Volume:	100.61 bbl
Proposed Sacks:	300 sks

Fluid 4: Tail Cement - 200 sks

Premium Plus Cement

94 lbm/sk	Premium Plus Cement (Cement)
1 %	Calcium Chloride (Accelerator)

Fluid Weight	14.80 lbm/gal
Slurry Yield:	1.34 ft ³ /sk
Total Mixing Fluid:	6.36 Gal/sk
Volume:	47.59 bbl
Proposed Sacks:	200 sks

Job Information**1st Intermediate Casing**

Vampire Bat	1
Surface Casing	0 - 520 ft (MD)
Outer Diameter	13.375 in
12-1/4" Hole	520 - 2100 ft (MD)
Inner Diameter	12.250 in
1st Intermediate Casing	0 - 2100 ft (MD)
Outer Diameter	9.625 in
Inner Diameter	8.921 in
Linear Weight	36 lbm/ft
Thread	LTC
Casing Grade	J-55

Job Recommendation

Install floating equipment, run casing to bottom, and circulate a minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Fluid 1: Precede cement with 20 bbl
Fresh Water

Fluid Volume: 20 bbl

Fluid 2: Lead with 600 sks

50/50 Poz Premium Plus

10 % total Bentonite (Light Weight Additive)
5 % Salt (Salt)
5 lbm/sk Gilsonite (Lost Circulation Additive)
0.25 % D-AIR 3000 (Defoamer)

Fluid Weight 11.80 lbm/gal
Slurry Yield: 2.50 ft³/sk
Total Mixing Fluid: 14.04 Gal/sk
Volume: 266.84 bbl
Proposed Sacks: 600 sks

Fluid 3: Tail-in with 200 sks

Premium Plus Cement

94 lbm/sk Premium Plus Cement (Cement)
1 % Calcium Chloride (Accelerator)

Fluid Weight 14.80 lbm/gal
Slurry Yield: 1.34 ft³/sk
Total Mixing Fluid: 6.36 Gal/sk
Volume: 47.59 bbl
Proposed Sacks: 200 sks

Job Information**2nd Intermediate Casing**

Vampire Bat	1
1st Intermediate Casing	0 - 2100 ft (MD)
Outer Diameter	9.625 in
Inner Diameter	8.921 in
Linear Weight	36 lbm/ft
Thread	LTC
Casing Grade	J-55
8-3/4" Hole	2100 - 9400 ft (MD)
Inner Diameter	8.750 in
2nd Intermediate Casing	0 - 9400 ft (MD)
Outer Diameter	7.000 in
Inner Diameter	6.276 in
Linear Weight	26 lbm/ft
Thread	LTC
Casing Grade	P-110

Job Recommendation

Install floating equipment, run casing to bottom, and circulate a minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Fluid 1: Precede cement with 1000 gallons
SUPER FLUSH 102

Fluid Volume: 23.80 bbl

Fluid 2: Lead with 850 sks
50/50 Poz Premium

10 % Bentonite (Light Weight Additive)
0.3 % Halad®-9 (Low Fluid Loss Control)
5 % Salt (Salt)
0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)

Fluid Weight 11.80 lbm/gal
Slurry Yield: 2.50 ft³/sk
Total Mixing Fluid: 14.60 Gal/sk
Volume: 378.17 bbl
Proposed Sacks: 850 sks

Fluid 3: Tail-in with 200 sks
Premium Cement

94 lbm/sk Premium Cement (Cement)
0.5 % Halad®-9 (Low Fluid Loss Control)

Fluid Weight 15.60 lbm/gal
Slurry Yield: 1.19 ft³/sk
Total Mixing Fluid: 5.35 Gal/sk
Volume: 42.46 bbl
Proposed Sacks: 200 sks

Job Information**Production Liner**

Vampire Bat	1
2nd Intermediate Casing	0 - 9400 ft (MD)
Outer Diameter	7.000 in
Inner Diameter	6.276 in
Linear Weight	26 lbm/ft
Thread	LTC
Casing Grade	P-110
6-1/8" Hole	9400 - 12800 ft (MD)
Inner Diameter	6.125 in
Production Liner	9100 - 12800 ft (MD)
Outer Diameter	4.500 in
Inner Diameter	4.052 in
Linear Weight	10.50 lbm/ft
Casing Grade	N-80
Drill Pipe	0 - 9100 ft (MD)
Top of Cement	8800 ft (MD)
Top of Liner	9100 ft (MD)
Lap	300 ft (MD)
Cap	300 ft (MD)
Mud Type	Water Based Mud
Mud Weight	11 lbm/gal
BHST	210 degF

Job Recommendation

Production Liner

Install floating equipment, run casing to bottom, and circulate a minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Fluid 1: Pump 24 bbl
10# Brine Water

Fluid Volume: 24 bbl

Fluid 2: Mix and pump 485 sks

Premium Cement

94 lbm/sk	Premium Cement (Cement)
0.5 %	LAP-1 (Low Fluid Loss Control)
0.4 %	CFR-3 (Dispersant)
0.25 %	D-AIR 3000 (Defoamer)
0.2 %	HR-5 (Retarder)

Fluid Weight	15.60 lbm/gal
Slurry Yield:	1.20 ft ³ /sk
Total Mixing Fluid:	5.33 Gal/sk
Volume:	103.40 bbl
Proposed Sacks:	485 sks

Conditions

NOTE

The cost in this analysis is good for the materials and/or services outlined within and shall be valid for 30 days from the date of this proposal. In order to meet your needs under this proposal with a high quality of service and responsive timing, Halliburton will be allocating limited resources and committing valuable equipment and materials to your area of operations. Accordingly, the discounts reflected in this proposal are available only for materials and services awarded on a first-call basis. Alternate pricing may apply in the event that Halliburton is awarded work on any basis other than as a first-call provider.

The unit prices stated in the proposal are based on our current published prices. The projected equipment, personnel, and material needs are only estimates based on information about the work presently available to us. At the time the work is actually performed, conditions then existing may require an increase or decrease in the equipment, personnel, and/or material needs. Charges will be based upon unit prices in effect at the time the work is performed and the amount of equipment, personnel, and/or material actually utilized in the work. Taxes, if any, are not included. Applicable taxes, if any, will be added to the actual invoice.

It is understood and agreed between the parties that with the exception of the subject discounts, all services performed and equipment and materials sold are provided subject to Halliburton's General Terms and Conditions contained in our current price list, (which include LIMITATION OF LIABILITY and WARRANTY provisions), and pursuant to the applicable Halliburton Work Order Contract (whether or not executed by you), unless a Master Service and/or Sales Contract applicable to the services, equipment, or materials supplied exists between your company and Halliburton, in which case the negotiated Master Contract shall govern the relationship between the parties. A copy of the latest version of our General Terms and Conditions is available from your Halliburton representative or at:

http://www.halliburton.com/hes/general_terms_conditions.pdf for your convenient review, and we would appreciate receiving any questions you may have about them. Should your company be interested in negotiating a Master Contract with Halliburton, our Law Department would be pleased to work with you to finalize a mutually agreeable contract. In this connection, it is also understood and agreed that Customer will continue to execute Halliburton usual field work orders and/or tickets customarily required by Halliburton in connection with the furnishing of said services, equipment, and materials.

Any terms and conditions contained in purchase orders or other documents issued by the customer shall be of no effect except to confirm the type and quantity of services, equipment, and materials to be supplied to the customer.

If customer does not have an approved open account with Halliburton or a mutually executed written contract with Halliburton, which dictates payment terms different than those set forth in this clause, all sums due are payable in cash at the time of performance of services or delivery of equipment, products, or materials. If customer has an approved open account, invoices are payable on the twentieth day after date of invoice.

Customer agrees to pay interest on any unpaid balance from the date payable until paid at the highest lawful contract rate applicable, but never to exceed 18% per annum. In the event Halliburton employs an attorney for collection of any account, customer agrees to pay attorney fees of 20% of the unpaid account, plus all collection and court costs.

CONTINGENCY PLAN

OGX Resources, LLC

Vampire Bat #1

660' FEL & 660' FSL
Section 29: T-17-S R-28-R
Eddy County, New Mexico

Prepared For:
Date Prepared:

OGX Resources, LLC
November 30, 2007

Prepared By:

INDIAN
Fire & Safety, Inc.

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HYDROGEN SULFIDE CONTINGENCY PLAN

SCOPE

THIS CONTINGENCY PLAN ESTABLISHES GUIDELINES FOR THE PUBLIC, ALL COMPANY EMPLOYEES WHO'S WORK ACTIVITIES MAY INVOLVE EXPOSURE TO HYDROGEN SULFIDE (H₂S) GAS.

OBJECTIVE

1. PREVENT ANY AND ALL ACCIDENTS. AND PREVENT THE UNCONTROLLED RELEASE OF HYDROGEN SULFIDE INTO THE ATMOSPHERE.
2. PROVIDE PROPER EVACUATION PROCEDURES TO COPE WITH EMERGENCIES.
3. PROVIDE IMMEDIATE AND ADEQUATE MEDICAL ATTENTION SHOULD AN INJURY OCCUR.

H2S CONTINGENCY PLAN

DISCUSSION

GEOLOGICAL PROGNOSIS

IMPLEMENTATION:	THIS PLAN WITH ALL DETAILS IS TO BE FULLY IMPLEMENTED BEFORE DRILLING TO <u>PRODUCTION CASING POINT</u>
EMERGENCY RESPONSE PROCEDURE:	THIS SECTION OUTLINES THE CONDITIONS AND DENOTES STEPS TO BE TAKEN IN THE EVENT OF AN EMERGENCY.
EMERGENCY EQUIPMENT PROCEDURE:	THIS SECTION OUTLINES THE SAFETY AND EMERGENCY EQUIPMENT THAT WILL BE REQUIRED FOR THE DRILLING OF THIS WELL.
TRAINING PROVISIONS:	THIS SECTION OUTLINES THE TRAINING PROVISIONS THAT MUST BE ADHERED TO PRIOR TO DRILLING TO <u>PRODUCTION CASING POINT</u> .
DRILLING EMERGENCY CALL LISTS:	INCLUDED ARE THE TELEPHONE NUMBERS OF ALL PERSONS TO BE CONTACTED SHOULD AN EMERGENCY EXIST.
BRIEFING:	THIS SECTION DEALS WITH THE BRIEFING OF ALL PEOPLE INVOLVED IN THE DRILLING OPERATION.
PUBLIC SAFETY:	PUBLIC SAFETY PERSONNEL WILL BE MADE AWARE OF THE DRILLING OF THIS WELL.
CHECK LISTS:	STATUS CHECK LISTS AND PROCEDURAL CHECK LISTS HAVE BEEN INCLUDED TO INSURE ADHERENCE TO THE PLAN.
GENERAL INFORMATION:	A GENERAL INFORMATION SECTION HAS BEEN INCLUDED TO SUPPLY SUPPORT INFORMATION.

H2S CONTINGENCY PLAN

EMERGENCY PROCEDURES

- A. IN THE EVENT OF ANY EVIDENCE OF H2S LEVEL ABOVE 10 PPM, TAKE THE FOLLOWING STEPS:
 - 1. SECURE BREATHING EQUIPMENT.
 - 2. ORDER NON-ESSENTIAL PERSONNEL OUT OF DANGER ZONE.
 - 3. TAKE STEPS TO DETERMINE IF THE H2S LEVEL CAN BE CORRECTED OR SUPPRESSED AND, IF SO, PROCEED IN NORMAL OPERATION.
- B. IF UNCONTROLLABLE CONDITIONS OCCUR:
 - 1. TAKE STEPS TO PROTECT AND/OR REMOVE ANY PUBLIC IN THE DOWN-WIND AREA FROM THE RIG - PARTIAL EVACUATION AND ISOLATION. NOTIFY NECESSARY PUBLIC SAFETY PERSONNEL AND THE BUREAU OF LAND MANAGEMENT OF THE SITUATION.
 - 2. REMOVE ALL PERSONNEL TO SAFE BREATHING AREA.
 - 3. NOTIFY PUBLIC SAFETY PERSONNEL TO SAFE BREATHING AREA.
 - 4. PROCEED WITH BEST PLAN (AT THE TIME) TO REGAIN CONTROL OF THE WELL. MAINTAIN TIGHT SECURITY AND SAFETY PROCEDURES.
- C. RESPONSIBILITY:
 - 1. DESIGNATED PERSONNEL.
 - a. SHALL BE RESPONSIBLE FOR THE TOTAL IMPLEMENTATION OF THIS PLAN.
 - b. SHALL BE IN COMPLETE COMMAND DURING ANY EMERGENCY.
 - c. SHALL DESIGNATE A BACK-UP

EMERGENCY PROCEDURES

*(Procedures are the same for both Drilling and Tripping)

- | | |
|-------------------|---|
| ALL PERSONNEL: | <ol style="list-style-type: none">1. ON ALARM. DON ESCAPE UNIT AND REPORT IN UP WIND BRIEFING AREA.2. CHECK STATUS OF PERSONNEL (BUDDY SYSTEM).3. SECURE BREATHING EQUIPMENT.4. AWAIT ORDERS FROM SUPERVISOR. |
| DRILLING FOREMAN: | <ol style="list-style-type: none">1. REPORT TO UP WIND BRIEFING AREA.2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH TOOL PUSHER OR DRILLER (BUDDY SYSTEM).3. DETERMINE H₂S CONCENTRATIONS.4. ASSESS SITUATION AND TAKE CONTROL MEASURES. |
| TOOL PUSHER | <ol style="list-style-type: none">1. REPORT TO UP WIND BRIEFING AREA.2. DON BREATHING EQUIPMENT AND RETURN TO POINT OF RELEASE WITH DRILLING FOREMAN OR DRILLER (BUDDY SYSTEM).3. DETERMINE H₂S CONCENTRATION.4. ASSESS SITUATION AND TAKE CONTROL MEASURES. |
| DRILLER: | <ol style="list-style-type: none">1. DON ESCAPE UNIT.2. CHECK MONITOR FOR POINT OF RELEASE.3. REPORT TO BRIEFING AREA.4. CHECK STATUS OF PERSONNEL (IN AN ATTEMPT TO RESCUE. USE THE BUDDY SYSTEM).5. ASSIGNS LEAST ESSENTIAL PERSON TO NOTIFY DRILLING FOREMAN AND TOOL PUSHER BY QUICKEST MEANS IN CASE OF THEIR ABSENCE.6. ASSUMES THE RESPONSIBILITIES OF THE DRILLING FORMAN AND TOOL PUSHER UNTIL THEY ARRIVE SHOULD THEY BE ABSENT. |

EMERGENCY PROCEDURES

- | | |
|---|---|
| DERRICK MAN
FLOOR MAN #1
FLOOR MAN #2 | 1. WILL REMAIN IN BRIEFING AREA UNTIL INSTRUCTED BY SUPERVISOR. |
| MUD ENGINEER: | 1. REPORT TO BRIEFING AREA.
2. WHEN INSTRUCTED, BEGIN CHECK OF MUD FOR PH AND H ₂ S LEVEL. (GARETT GAS TRAIN.) |
| SAFETY PERSONNEL: | 1. MASK UP AND CHECK STATUS OF ALL PERSONNEL AND SECURE OPERATIONS AS INSTRUCTED BY DRILLING FOREMAN AND REPORT TO BRIEFING AREA. |

TAKING A KICK

WHEN TAKING A KICK DURING AN H₂S EMERGENCY, ALL PERSONNEL WILL FOLLOW STANDARD BOP PROCEDURES AFTER REPORTING TO BRIEFING AREA AND MASKING UP.

OPEN-HOLE LOGGING

ALL UNNECESSARY PERSONNEL OFF FLOOR. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD MONITOR CONDITION. ADVISE STATUS AND DETERMINE NEED FOR USE OF AID EQUIPMENT.

RUNNING CASING OR PLUGGING

FOLLOWING THE SAME "TRIPPING" PROCEDURE AS ABOVE. DRILLING FOREMAN AND SAFETY PERSONNEL SHOULD DETERMINE IF ALL PERSONNEL HAVE ACCESS TO PROTECTIVE EQUIPMENT.

H2S CONTINGENCY PLAN

IGNITION PROCEDURES

THE DECISION TO IGNITE THE WELL IS THE RESPONSIBILITY OF COMPANY FOREMAN. IN THE EVENT HE IS INCAPACITATED, IT BECOMES THE RESPONSIBILITY OF THE CONTRACT RIG TOOL PUSHER. THE DECISION SHOULD BE MADE ONLY AS A LAST RESORT AND IN A SITUATION WHERE IT IS CLEAR THAT:

1. HUMAN LIFE AND PROPERTY ARE ENDANGERED.
2. THERE IS NO HOPE CONTROLLING THE BLOWOUT UNDER THE PREVAILING CONDITIONS AT THE WELL.

NOTIFY THE DISTRICT OFFICE IF TIME PERMITS. BUT DO NOT DELAY IF HUMAN LIFE IS IN DANGER.

INITIATE FIRST PHASE OF EVACUATION PLAN.

IGNITION PROCEDURES

INSTRUCTIONS FOR IGNITING THE WELL

1. TWO PEOPLE ARE REQUIRED FOR THE ACTUAL IGNITING OPERATION. THEY MUST WEAR SELF-CONTAINED BREATHING UNITS AND HAVE SAFETY ROPE ATTACHED. ONE MAN (TOOL PUSHER OR SAFETY ENGINEER) WILL CHECK THE ATMOSPHERE FOR EXPLOSIVE GASES WITH THE EXPLOSIMETER. THE OTHER MAN (DRILLING FOREMAN) IS RESPONSIBLE FOR IGNITING THE WELL.
2. PRIMARY METHOD TO IGNITE: 25 MM FLARE GUN WITH RANGE OF APPROXIMATELY 500 FEET.
3. IGNITE UP WIND AND DO NOT APPROACH ANY CLOSER THAN IS WARRANTED.
4. SELECT THE IGNITION SITE BEST FOR PROTECTION, AND WHICH OFFERS AN EASY ESCAPE ROUTE
5. BEFORE FIRING, CHECK FOR PRESENCE OF COMBUSTIBLE GAS.
6. AFTER LIGHTING, CONTINUE EMERGENCY ACTION AND PROCEDURE AS BEFORE.
7. ALL UNASSIGNED PERSONNEL WILL LIMIT THEIR ACTIONS TO THOSE DIRECTED BY THE DRILLING FOREMAN.

REMEMBER: AFTER WELL IS IGNITED, BURNING HYDROGEN SULFIDE WILL CONVERT TO SULFUR DIOXIDE, WHICH IS ALSO HIGHLY TOXIC. DO NOT ASSUME THE AREA IS SAFE AFTER THE WELL IS IGNITED.

H2S CONTINGENCY PLAN

TRAINING REQUIREMENTS

WHEN WORKING IN AN AREA WHERE HYDROGEN SULFIDE GAS (H2S) MIGHT BE ENCOUNTERED, DEFINITE TRAINING REQUIREMENTS MUST BE CARRIED OUT. ALL COMPANIES WILL INSURE THAT ALL PERSONNEL AT THE WELL SITE WILL HAVE HAD ADEQUATE TRAINING IN THE FOLLOWING:

1. HAZARDS AND CHARACTERISTICS OF H2S.
2. PHYSICAL EFFECTS OF HYDROGEN SULFIDE ON THE HUMAN BODY.
3. TOXICITY OF HYDROGEN SULFIDE AND SULFUR DIOXIDE.
4. H2S DETECTION
5. EMERGENCY RESCUE.
6. RESUSCITATORS.
7. FIRST AID AND ARTIFICIAL RESPIRATION.
8. EFFECTS OF H2S ON METALS.
9. LOCATION SAFETY.

SERVICE COMPANY AND VISITING PERSONNEL

- A. EACH SERVICE COMPANY THAT WILL BE ON THIS WELL WILL BE NOTIFIED IF THE ZONE CONTAINS H2S.
- B. EACH SERVICE COMPANY MUST PROVIDE FOR THE TRAINING AND EQUIPMENT OF THEIR EMPLOYEES BEFORE THEY ARRIVE AT THE WELL SITE.
- C. EACH SERVICE COMPANY WILL BE EXPECTED TO ATTEND A WELL SITE BRIEFING.

H2S CONTINGENCY PLAN

EMERGENCY EQUIPMENT REQUIREMENTS

1. SIGNS

- A. ONE SIGN LOCATED AT LOCATION ENTRANCE WITH THE FOLLOWING LANGUAGE:

(LEASE)
CAUTION – POTENTIAL POISON GAS
HYDROGEN SULFIDE
NO ADMITTANCE WITHOUT AUTHORIZATION

2. WIND SOCK – WIND STREAMERS

- A. ONE 36" (IN LENGTH) WIND SOCK LOCATED AT PROTECTION CENTER, AT HEIGHT VISIBLE FROM RIG FLOOR.
B. ONE 36" (IN LENGTH) WIND SOCK LOCATED AT HEIGHT VISIBLE FROM PIT AREAS.

3. HYDROGEN SULFIDE DETECTOR AND ALARMS

- A. H2S MONITORS WITH ALARMS WILL BE LOCATED ON THE RIG FLOOR, AT THE BELL NIPPLE, AND AT THE FLOW LINE. THESE MONITORS WILL BE SET TO ALARM AT 10 PPM WITH RED LIGHT, AND TO ALARM AT 15 PPM WITH RED LIGHT AND AUDIBLE ALARM.
B. HAND OPERATED DETECTORS WITH TUBES
C. H2S MONITOR TESTER.

4. CONDITION FLAGS

- A. ONE EACH OF ORANGE, YELLOW, AND RED CONDITION FLAGS TO BE DISPLAYED TO DENOTE CONDITIONS.

GREEN – NORMAL CONDITIONS
YELLOW – POTENTIAL DANGER
RED – DANGER, H2S PRESENT

- B. CONDITION FLAG SHALL BE POSTED AT LOCATION SIGN ENTRANCE.

H2S CONTINGENCY PLAN

EMERGENCY EQUIPMENT REQUIREMENTS

5. AUXILIARY RESCUE EQUIPMENT

- A. STRETCHER
- B. 100' LENGTH OF 5/8" NYLON ROPE.

6. MUD INSPECTION DEVICES

GARRETT GAS TRAIN OR HACH TESTER FOR INSPECTION OF SULFIDE CONCENTRATION IN MUD SYSTEM.

7. FIRE EXTINGUISHER

ADEQUATE FIRE EXTINGUISHERS SHALL BE LOCATED AT STRATEGIC LOCATIONS.

8. BLOW OUT PREVENTION EQUIPMENT

THE WELL SHALL HAVE HYDRAULIC BOP EQUIPMENT FOR THE ANTICIPATED BHP OF 1500 PSI. EQUIPMENT IS TO BE TESTED ON INSTALLATION.

9. COMBUSTIBLE GAS DETECTOR

THERE SHALL BE ONE COMBUSTIBLE GAS DETECTOR ON LOCATION AT ALL TIMES.

10. BOP TESTING

BOP AND CHOKF LINE AND KILL LINE WILL BE TESTED.

11. AUDIO SYSTEM

RADIO COMMUNICATION WILL BE AVAILABLE AT THE RIG.

- A. RIG FLOOR OR TRAILER
- B. VEHICLE

12. SPECIAL CONTROL EQUIPMENT

- A. HYDRAULIC BOP EQUIPMENT WITH REMOTE CONTROL ON GROUND.
- B. ROTATING HEAD

H2S CONTINGENCY PLAN

EMERGENCY EQUIPMENT REQUIREMENTS

13. EVACUATION PLAN

EVACUATION ROUTES SHOULD BE ESTABLISHED PRIOR TO SPUDDING EACH WELL AND DISCUSSED WITH ALL RIG PERSONNEL.

14. DESIGNATED AREA

- A. PARKING AND VISITOR AREA: ALL VEHICLES ARE TO BE PARKED AT A PREDETERMINED SAFE DISTANCE FROM THE WELLHEAD. THIS WILL BE THE DESIGNATED SMOKING AREA.
- B. TWO BRIEFING AREAS ON EITHER SIDE OF THE LOCATION AT THE MAXIMUM ALLOWABLE DISTANCE FROM THE WELL BORE SO THEY OFFSET PREVAILING WINDS PERPENDICULARLY, OR AT A 45-DEGREE ANGLE IF WIND DIRECTION TENDS TO SHIFT IN THE AREA.
- C. PROTECTION CENTERS OR IF A MOVABLE TRAILER IS USED, IT SHOULD BE DEPT UPWIND OF EXISTING WINDS. WHEN WIND IS FROM THE PREVAILING DIRECTIONS, BOTH PROTECTION CENTERS SHOULD BE ACCESSIBLE.

H2S CONTINGENCY PLAN

STATUS CHECK LIST

NOTE: ALL ITEMS ON THIS LIST MUST BE COMPLETED BEFORE DRILLING TO PRODUCTION CASING POINT.

1. SIGN AT LOCATION ENTRANCE.
2. TWO (2) WIND SOCKS LOCATED AS REQUIRED.
3. TWO (2) 30-MINUTE PRESSURE DEMAND AIR PACKS ON LOCATION FOR ALL RIG PERSONNEL AND MUD LOGGERS
4. AIR PACK INSPECTED FOR READY USE.
5. CASCADE SYSTEM AND HOSE LINE HOOK-UP.
6. CASCADE SYSTEM FOR REFILLING AIR BOTTLES.
7. SAFE BREATHING AREAS SET UP
8. CONDITION FLAG ON LOCATION AND READY FOR USE.
9. H2S DETECTION SYSTEM HOOKED UP.
10. H2S ALARM SYSTEM HOOKED UP AND READY.
11. OXYGEN RESUSCITATOR ON LOCATION AND TESTED FOR USE.
12. STRETCHER ON LOCATION AT SAFETY TRAILER.
13. 1 - 100' LENGTH OF NYLON ROPE ON LOCATION.
14. ALL RIG CREW AND SUPERVISORS TRAINED AS REQUIRED.
15. ALL OUTSIDE SERVICE CONTRACTORS ADVISED OF POTENTIAL H2S HAZARD ON WELL.
16. NO SMOKING SIGN POSTED.
17. HAND OPERATED H2S DETECTOR WITH TUBES ON LOCATION.

CHECKED BY: _____ DATE: _____

H2S CONTINGENCY PLAN

PROCEDURAL CHECK LIST

PERFORM EACH TOUR:

1. CHECK FIRE EXTINGUISHERS TO SEE THAT THEY HAVE THE PROPER CHARGE.
2. CHECK BREATHING EQUIPMENT TO ENSURE THAT IT HAS NOT BEEN TAMPERED WITH
3. MAKE SURE ALL THE H2S DETECTION SYSTEM IS OPERATIVE.

PERFORM EACH WEEK:

1. CHECK EACH PIECE OF BREATHING EQUIPMENT TO MAKE SURE THAT DEMAND REGULATOR IS WORKING. THIS REQUIRES THAT THE BOTTLE BE OPENED AND THE MASK ASSEMBLY BE PUT ON TIGHT ENOUGH SO THAT WHEN YOU INHALE YOU RECEIVE AIR.
2. BLOW OUT PREVENTER SKILLS.
3. CHECK SUPPLY PRESSURE ON BOP ACCUMULATOR STAND BY SOURCE.
4. CHECK ALL SKA-PAC UNITS FOR OPERATION. DEMAND REGULATOR. ESCAPE BOTTLE AIR VOLUMES. SUPPLY BOTTLE OF AIR VOLUME
5. CHECK BREATHING EQUIPMENT MASK ASSEMBLY TO SEE THAT STRAPS ARE LOOSENED AND TURNED BACK, READY TO PUT ON.
6. CHECK PRESSURE ON BREATHING EQUIPMENT AIR BOTTLES TO MAKE SURE THEY ARE CHARGED TO FULL VOLUME.
7. CONFIRM PRESSURE ON ALL SUPPLY AIR BOTTLES.
8. PERFORM BREATHING EQUIPMENT DRILLS WITH ON-SITE PERSONNEL.
9. CHECK THE FOLLOWING SUPPLIES FOR AVAILABILITY.
 - A. EMERGENCY TELEPHONE LIST.
 - B. HAND OPERATED H2S DETECTORS AND TUBES

H2S CONTINGENCY PLAN

GENERAL EVACUATION PLAN

THE DIRECT LINES OF ACTION PREPARED BY INDIAN FIRE & SAFETY, INC. TO PROTECT THE PUBLIC FROM HAZARDOUS GAS SITUATIONS ARE AS FOLLOWS:

1. WHEN THE COMPANY APPROVED SUPERVISOR (DRILLING FOREMAN, CONSULTANT, RIG PUSHER, OR DRILLER) DETERMINES THE H2S GAS CANNOT BE LIMITED TO THE WELL LOCATION AND THE PUBLIC WILL BE INVOLVED, HE WILL ACTIVATE THE EVACUATION PLAN. ESCAPE ROUTES ARE NOTED ON AREA MAP.
2. "COMPANY MAN" OR DESIGNEE WILL NOTIFY LOCAL GOVERNMENT AGENCY THAT A HAZARDOUS CONDITION EXISTS AND EVACUATION NEEDS TO BE IMPLEMENTED.
3. COMPANY SAFETY PERSONNEL THAT HAVE BEEN TRAINED IN THE USE OF H2S DETECTION EQUIPMENT AND SELF-CONTAINED BREATHING EQUIPMENT WILL MONITOR H2S CONCENTRATIONS, WIND DIRECTIONS, AND AREA OF EXPOSURE. THEY WILL DELINEATE THE OUTER PERIMETER OF THE HAZARDOUS GAS AREA. EXTENSION TO THE EVACUATION AREA WILL BE DETERMINED FROM INFORMATION GATHERED.
4. LAW ENFORCEMENT PERSONNEL (STATE POLICE, POLICE DEPT., FIRE DEPT., AND SHERIFF'S DEPT.) WILL BE CALLED TO AID IN SETTING UP AND MAINTAINING ROAD BLOCKS. ALSO, THEY WILL AID IN EVACUATION OF THE PUBLIC IF NECESSARY.

IMPORTANT: LAW ENFORCEMENT PERSONNEL WILL NOT BE ASKED TO COME INTO A CONTAMINATED AREA. THEIR ASSISTANCE WILL BE LIMITED TO UNCONTAMINATED AREAS. CONSTANT RADIO CONTACT WILL BE MAINTAINED WITH THEM.

5. AFTER THE DISCHARGE OF GAS HAS BEEN CONTROLLED, COMPANY SAFETY PERSONNEL WILL DETERMINE WHEN THE AREA IS SAFE FOR RE-ENTRY.

H2S CONTINGENCY PLAN

EMERGENCY ACTIONS

WELL BLOWOUT - IF EMERGENCY

1. EVACUATE ALL PERSONNEL IF POSSIBLE.
2. IF SOUR GAS - EVACUATE RIG PERSONNEL.
3. IF SOUR GAS - EVACUATE PUBLIC WITHIN 3000 FT RADIUS OF EXPOSURE.
4. DON SCBA AND RESCUE.
5. CALL 911 FOR EMERGENCY HELP (FIRE DEPT AND AMBULANCE) AND NOTIFY SR. DRILLING FOREMAN AND DISTRICT FOREMAN.
6. GIVE FIRST AID.

PERSON DOWN LOCATION/FACILITY

1. IF IMMEDIATELY POSSIBLE, CONTACT 911. GIVE LOCATION AND WAIT FOR CONFIRMATION.
2. DON SCBA AND RESCUE.

EMERGENCY PHONE LIST **GOVERNMENTAL AGENCIES**

<u>Eddy County Sheriff's Office</u>	911
Non emergency	505-746-9888
<u>Fire Departments</u>	911
Artesia - Non-emergency	505-746-5050
Atoka - Non-emergency.	505-746-5050
Carlsbad - Non-emergency.....	505-885-2111
<u>BLM</u>	
Carlsbad	505-361-2822
<u>State Police Department</u>	911
Non-emergency	505-437-1313
<u>City of Carlsbad</u>	
.....	505-885-2111
<u>Ambulance</u>	911
Artesia - Non Emergency.....	505-746-5050
Atoka - Non-Emergency.....	505-746-5050
Carlsbad - Non Emergency.....	505-885-2111
<u>Hospitals</u>	
Artesia	505-748-3333
<u>AEROCARE</u>	806-747-8925

Emergency Contact List

OGX Resources

Jim Auld - Consultant on Location: 432-209-2431

Randy Ford - R.K. Ford & Associates, Inc.: 432-682-0440

Steven Douglas - OGX Company Man: 432-934-6800 (cell)

Kip Agar - OGX President: 432-685-1287 (office) 432-631-1736 (cell)

Permian Drilling

R.C. Castillo: Supt

Cell: 505-631-2919

Walt Evans: Asst. Supt

Cell: 505-441-3700

Rig 3: 505-390-0901

Indian Fire & Safety, Inc.
3317 W. County Road
505-393-3093 - office
800-530-8693 - toll free
505-392-6274 - fax

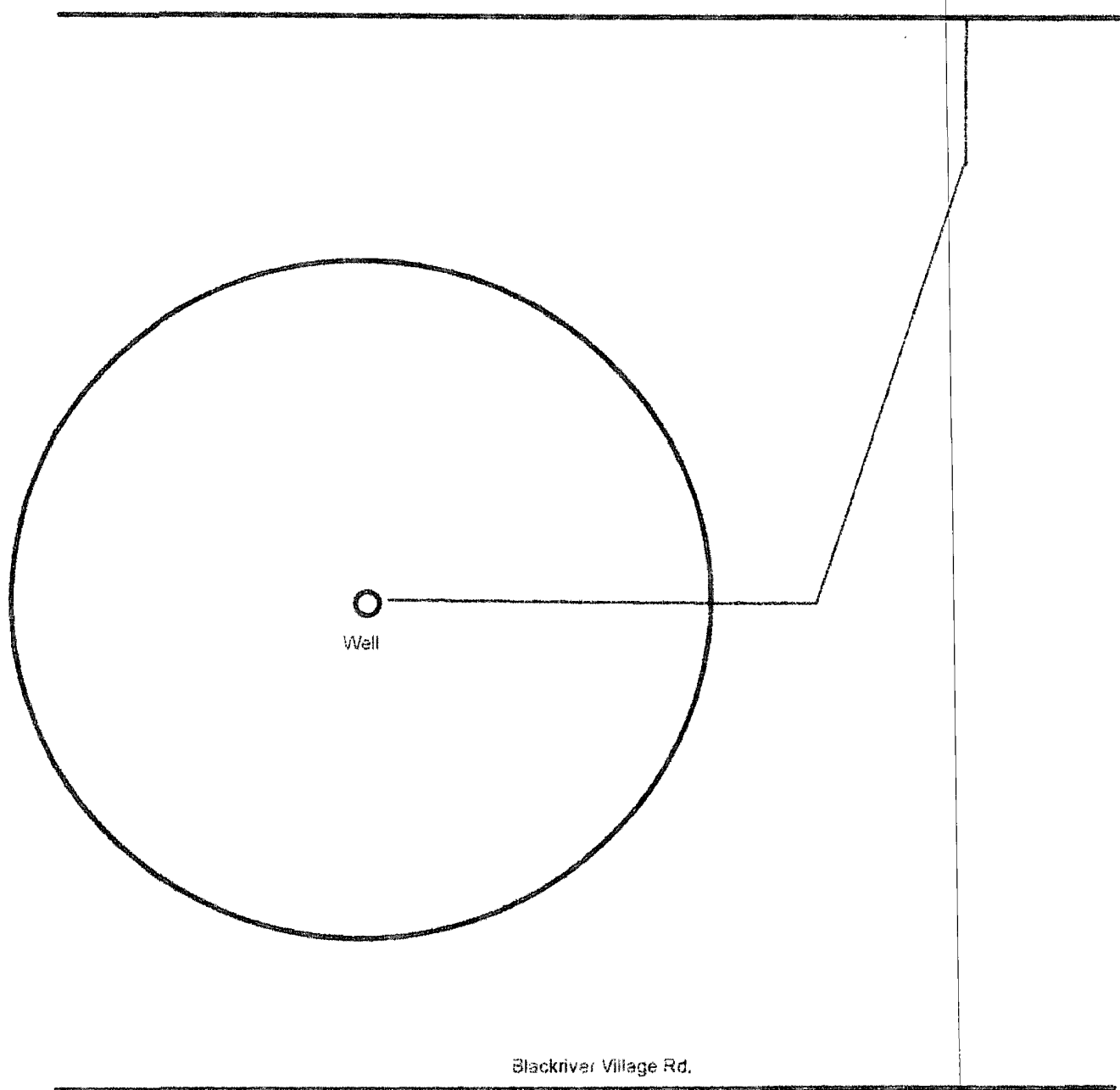
Personnel Contact List

	Cell Phone	Home Phone
Lanny Taylor	631-9755	392-6161
James Spurgeon	390-8582	492-9354
Scott Dudenhoefter	631-9753	392-4833
Sam Abney	631-9712	393-5427
Curtis Newton	631-1255	393-3762
Chris Spurgeon	806-215-1087	806-592-0079

OGX RESOURCES, LLC
Vampire Bat # 1
Sec.4, T-24-S, R-27-E
Eddy County, NM

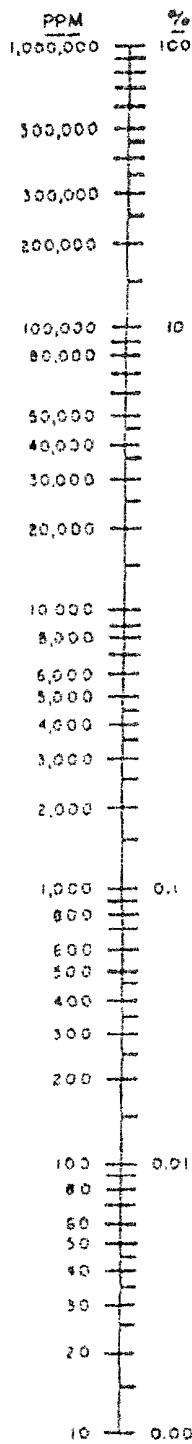


Bounds Rd.



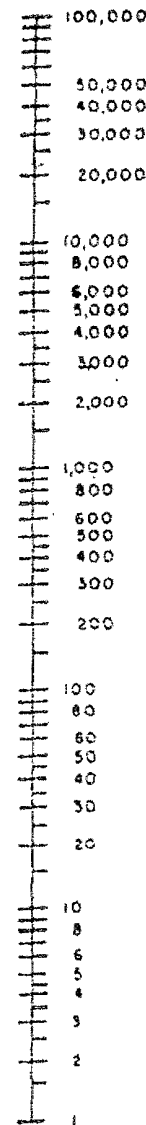
Well

Blackriver Village Rd.



HYDROGEN SULFIDE 100 PPM EXPOSURE RADIUS

Feet



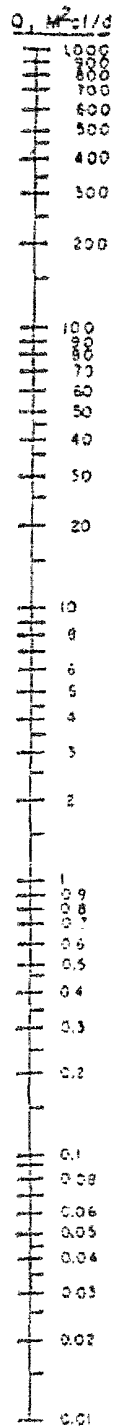
At X = 3000 Ft.
Q = 226,547
PPM

At X = 50 Ft.
Q = 326.4
PPM

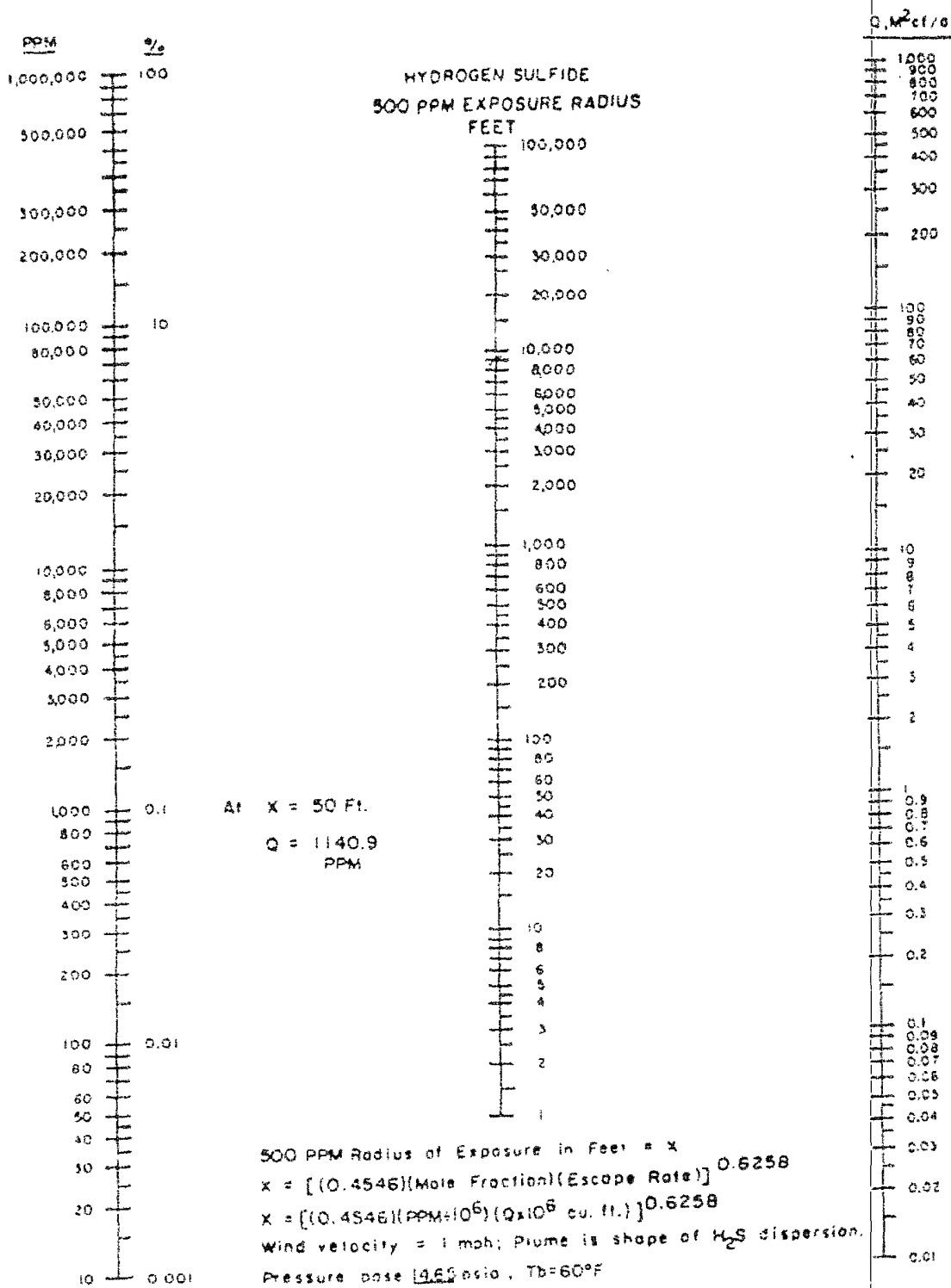
Below 100 PPM
Rule 35 N.A.

$$100 \text{ PPM Radius of Exposure in Feet} = X$$

$$X = \frac{[(1.589)(\text{Mole Fraction})(\text{Escape Rate})]^{0.6258}}{[(1.589)(\text{PPM})(Q \text{ in } M^2/d)]^{0.6258}}$$



P₁₄ 53 Basic T 50 °F



H2S CONTINGENCY PLAN

TOXIC EFFECTS OF HYDROGEN SULFIDE

HYDROGEN SULFIDE IS EXTREMELY TOXIC. THE ACCEPTABLE CEILING CONCENTRATION FOR EIGHT-HOUR EXPOSURE IS 10 PPM, WHICH IS .001% BY VOLUME. HYDROGEN SULFIDE IS HEAVIER THAN AIR (SPECIFIC GRAVITY - 1.192) AND COLORLESS. IT FORMS AN EXPLOSIVE MIXTURE WITH AIR BETWEEN 4.3 AND 46.0 PERCENT BY VOLUME. HYDROGEN SULFIDE IS ALMOST AS TOXIC AS HYDROGEN CYANIDE AND IS BETWEEN FIVE AND SIX TIMES MORE TOXIC THAN CARBON MONOXIDE. TOXICITY DATA FOR HYDROGEN SULFIDE AND VARIOUS OTHER GASES ARE COMPARED IN TABLE I. PHYSICAL EFFECTS AT VARIOUS HYDROGEN SULFIDE EXPOSURE LEVELS ARE SHOWN IN TABLE II.

TABLE I
TOXICITY OF VARIOUS GASES

COMMON NAME	CHEMICAL FORMULA	SPECIFIC GRAVITY (SC=1)	THRESHOLD LIMIT (1)	HAZARDOUS LIMIT (2)	LETHAL CONCENTRATION (3)
HYDROGEN CYANIDE	HCN	0.94	10 PPM	150 PPM/HR	300 PPM
HYDROGEN SULFIDE	H ₂ S	1.18	10 PPM	250 PPM/HR	600 PPM
SULFUR DIOXIDE	SO ₂	2.21	5 PPM	-	1000 PPM
CHLORINE	CL ₂	2.45	1 PPM	4 PPM/HR	1000 PPM
CARBON MONOXIDE	CO	0.97	50 PPM	400 PPM/HR	1000 PPM
CARBON DIOXIDE	CO ₂	1.52	5000 PPM	5%	10%
METHANE	CH ₄	0.55	90,000 PPM	COMBUSTIBLE ABOVE 5% IN AIR	

- 1) THRESHOLD LIMIT - CONCENTRATION AT WHICH IT IS BELIEVED THAT ALL WORKERS MAY BE REPEATEDLY EXPOSED DAY AFTER DAY WITHOUT ADVERSE EFFECTS.
- 2) HAZARDOUS LIMIT - CONCENTRATION THAT WILL CAUSE DEATH WITH SHORT-TERM EXPOSURE.
- 3) LETHAL CONCENTRATION - CONCENTRATION THAT WILL CAUSE DEATH WITH SHORT-TERM EXPOSURE.

H2S CONTINGENCY PLAN

TOXIC EFFECTS OF HYDROGEN SULFIDE

TABLE II
PHYSICAL EFFECTS OF HYDROGEN SULFIDE

<u>PERCENT (%)</u>	<u>PPM</u>	<u>CONCENTRATION</u> <u>GRAINS</u> <u>100 STD. FT³*</u>	<u>PHYSICAL EFFECTS</u>
0.001	<10	00.63	Obvious and unpleasant odor
0.002	10	01.30	Safe for 8 hours of exposure.
0.010	100	06.48	Kill smell in 3 - 15 minutes. May sting eyes and throat
0.020	200	12.96	Kills smell shortly; Stings eyes and throat.
0.050	500	32.96	Dizziness; Breathing ceases in a few minutes; Needs prompt artificial respiration
0.070	700	45.36	Unconscious quickly; Death will result if not rescued promptly.
0.100	1000	64.30	Unconscious at once; Followed by death within minutes.

*AT 15.00 PSIA AND 60°F.

H2S CONTINGENCY PLAN

USE OF SELF-CONTAINED BREATHING EQUIPMENT

1. WRITTEN PROCEDURES SHALL BE PREPARED COVERING SAFE USE OF SCBA'S IN DANGEROUS ATMOSPHERE WHICH MIGHT BE ENCOUNTERED IN NORMAL OPERATIONS OR IN EMERGENCIES. PERSONNEL SHALL BE FAMILIAR WITH THESE PROCEDURES AND THE AVAILABLE SCBA.
2. SCBA'S SHALL BE INSPECTED FREQUENTLY AT RANDOM TO INSURE THAT THEY ARE PROPERLY USED, CLEANED, AND MAINTAINED.
3. ANYONE WHO MAY USE THE SCBA'S SHALL BE TRAINED IN HOW TO INSURE PROPER FACE-PIECE TO FACE SEAL. THEY SHALL WEAR SCBA'S IN NORMAL AIR AND THEN WEAR THEM IN A TEST ATMOSPHERE. (NOTE: SUCH ITEMS AS FACIAL HAIR (BEARD OR SIDEBURNS) AND EYEGLASSES WILL NOT ALLOW PROPER SEAL.) ANYONE THAT MAY BE REASONABLY EXPECTED TO WEAR SCBA'S SHOULD HAVE THESE ITEMS REMOVED BEFORE ENTERING A TOXIC ATMOSPHERE. A SPECIAL MASK MUST BE OBTAINED FOR ANYONE WHO MUST WEAR EYEGLASSES OR CONTACT LENSES.
4. MAINTENANCE AND CARE OF SCBA'S:
 - A. A PROGRAM FOR MAINTENANCE AND CARE OF SCBA'S SHALL INCLUDE THE FOLLOWING.
 1. INSPECTION FOR DEFECTS, INCLUDING LEAK CHECKS.
 2. CLEANING AND DISINFECTING.
 3. REPAIR.
 4. STORAGE.
 - B. INSPECTION: SELF-CONTAINED BREATHING APPARATUS FOR EMERGENCY USE SHALL BE INSPECTED MONTHLY FOR THE FOLLOWING PERMANENT RECORDS KEPT OF THESE INSPECTIONS.
 1. FULLY CHARGED CYLINDERS.
 2. REGULATOR AND WARNING DEVICE OPERATION.
 3. CONDITION OF FACE PIECE AND CONNECTIONS
 4. ELASTOMER OR RUBBER PARTS SHALL BE STRETCHED OR MASSAGED TO KEEP THEM PLIABLE AND PREVENT DETERIORATION.
 - C. ROUTINELY USED SCBA'S SHALL BE COLLECTED, CLEANED AND DISINFECTED AS FREQUENTLY AS NECESSARY TO INSURE PROPER PROTECTION IS PROVIDED.

H2S CONTINGENCY PLAN

USE OF SELF-CONTAINED BREATHING EQUIPMENT

5. PERSONS ASSIGNED TASKS THAT REQUIRES USE OF SELF-CONTAINED BREATHING EQUIPMENT SHALL BE CERTIFIED PHYSICALLY FIT FOR BREATHING EQUIPMENT USAGE BY THE LOCAL COMPANY PHYSICIAN AT LEAST ANNUALLY.
6. SCBA'S SHOULD BE WORN WHEN:
 - A. ANY EMPLOYEE WORKS NEAR THE TOP OR ON TOP OF ANY TANK UNLESS TEST REVEALS LESS THAN 10 PPM OF H2S.
 - B. WHEN BREAKING OUT ANY LINE WHERE H2S CAN REASONABLY BE EXPECTED.
 - C. WHEN SAMPLING AIR IN AREAS TO DETERMINE IF TOXIC CONCENTRATIONS OF H2S EXISTS.
 - D. WHEN WORKING IN AREAS WHERE OVER 10 PPM H2S HAS BEEN DETECTED.
 - E. AT ANY TIME THERE IS A DOUBT AS TO THE H2S LEVEL IN THE AREA TO BE ENTERED.

H2S CONTINGENCY PLAN

RESCUE FIRST AID FOR H2S POISONING

DO NOT PANIC!

REMAIN CALM -- THINK!

1. HOLD YOUR BREATH. (DO NOT INHALE FIRST; STOP BREATHING.)
2. PUT ON BREATHING APPARATUS.
3. REMOVE VICTIM(S) TO FRESH AIR AS QUICKLY AS POSSIBLE. (GO UP-WIND FROM SOURCE OR AT RIGHT ANGLE TO THE WIND. NOT DOWN WIND.)
4. BRIEFLY APPLY CHEST PRESSURE -- ARM LIFT METHOD OF ARTIFICIAL RESPIRATION TO CLEAN THE VICTIM'S LUNGS AND TO AVOID INHALING ANY TOXIC GAS DIRECTLY FROM THE VICTIM'S LUNGS.
5. PROVIDE FOR PROMPT TRANSPORTATION TO THE HOSPITAL, AND CONTINUE GIVING ARTIFICIAL RESPIRATION IF NEEDED.
6. HOSPITAL(S) OR MEDICAL FACILITIES NEED TO BE INFORMED, BEFORE-HAND, OF THE POSSIBILITY OF H2S GAS POISONING -- NO MATTER HOW REMOTE THE POSSIBILITY IS.
7. NOTIFY EMERGENCY ROOM PERSONNEL THAT THE VICTIM(S) HAS BEEN EXPOSED TO H2S GAS.

BESIDES BASIC FIRST AID, EVERYONE ON LOCATION SHOULD HAVE A GOOD WORKING KNOWLEDGE OF ARTIFICIAL RESPIRATION, AS WELL AS FIRST AID FOR EYES AND SKIN CONTACT WITH LIQUID H2S. EVERYONE NEEDS TO MASTER THESE NECESSARY SKILLS.