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

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

RECEIVED
FEB - 2 2010
NMOCD ARTESIA

Form C-102
Revised October 12, 2005
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 | Pool Name |
|---|---|---|
| 30-015-37589 | | Undesignated Bone Spring |

| Property Code | Property Name | Well Number |
|---|---|---|
| 38036 | ELK WALLOW 11 STATE | 2H |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 7377 | EOG RESOURCES, INC. | 3059.5' |

## Surface Location

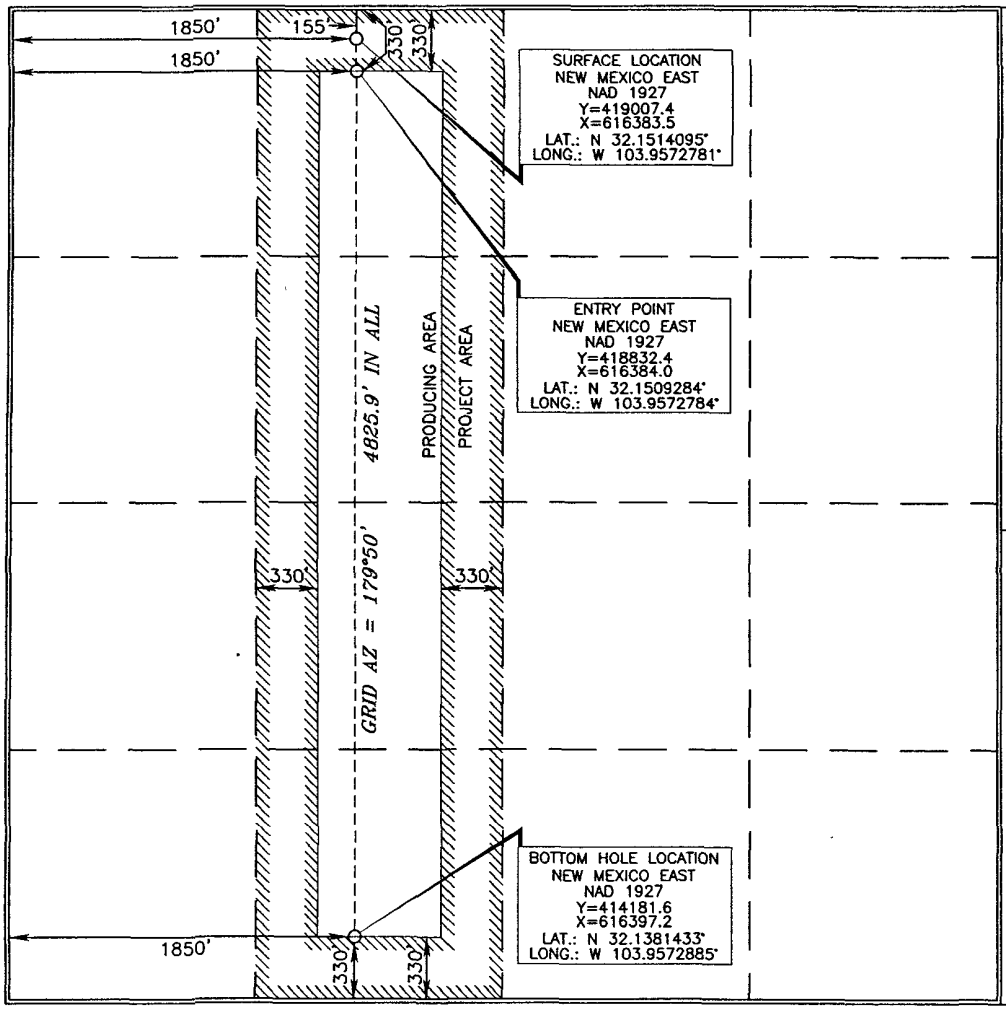
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| C | 11 | 25 SOUTH | 29 EAST, N.M.P.M. | | 155 | NORTH | 1850 | WEST | EDDY |

## 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 |
|---|---|---|---|---|---|---|---|---|---|
| N | 11 | 25 SOUTH | 29 EAST, N.M.P.M. | | 330 | SOUTH | 1850 | WEST | EDDY |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|---|---|---|---|
| 160 | | | |

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.




### OPERATOR CERTIFICATION

*I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location 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 to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

Signature — Date: 2/1/2010

Donny G. Glanton
Printed Name

### SURVEYOR CERTIFICATION

*I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.*

JANUARY 20, 2010
Date of Survey

Signature and Seal of Professional Surveyor:
NEW MEXICO — 15079 — REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate Number 15079 — 1/25/2010

WO# 100120WL-b (KA)

# Elk Wallow 11 State #2H

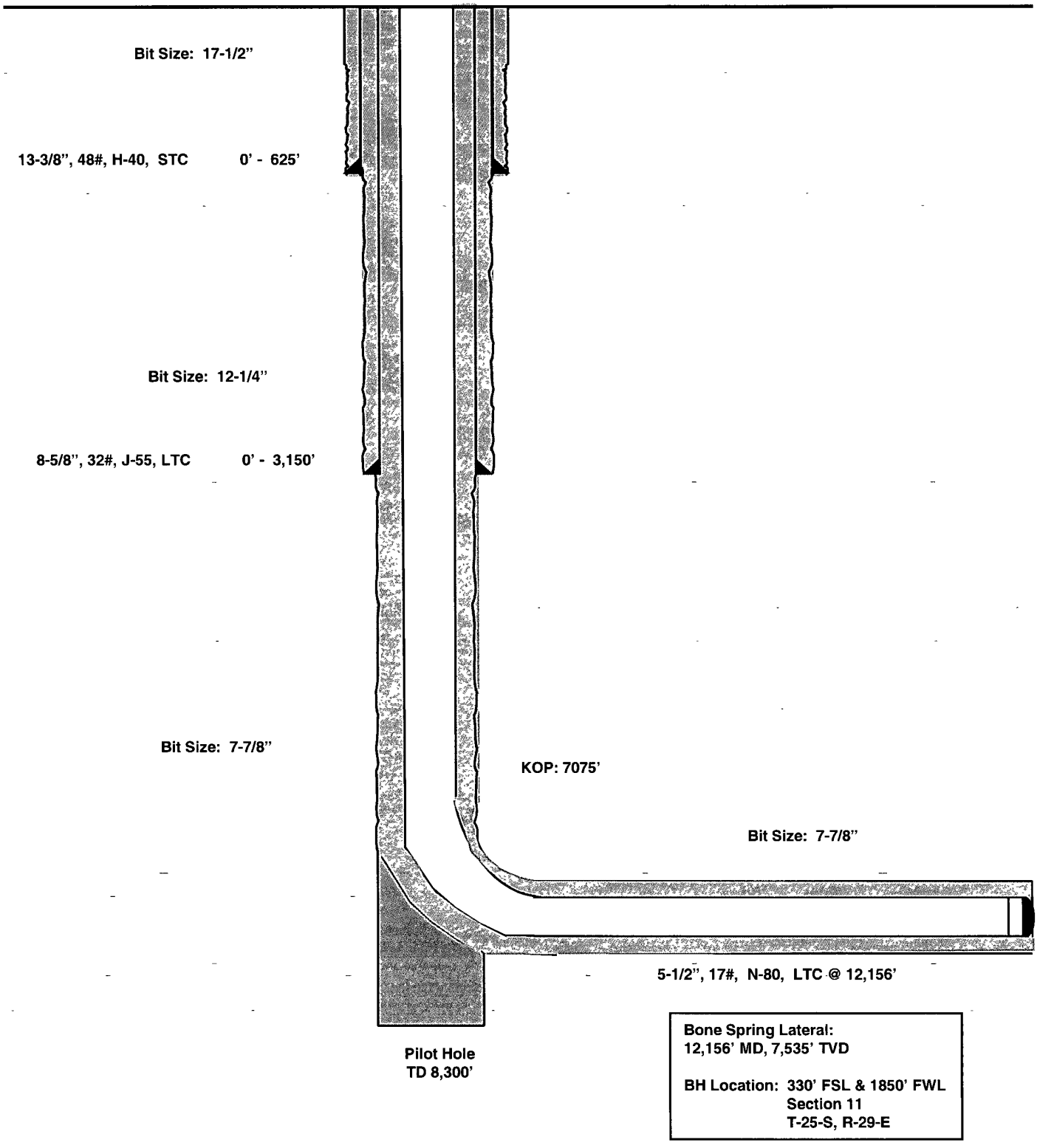
## Eddy County, New Mexico

155' FNL
1850' FWL
Section 11
T-25-S, R-29-E

**Proposed Wellbore**

API: 30-015-******

KB: 3,089.5'
GL: 3,059.5'




Bone Spring Lateral:
12,156' MD, 7,535' TVD

BH Location: 330' FSL & 1850' FWL
Section 11
T-25-S, R-29-E

**Permit Information**:

Well Name: Elk Wallow 11 State No. 2H

Location:

SL: 155' FNL & 1850' FWL, Section 11, T-25-S, R-29-E, Eddy Co., N.M.

BHL: 330' FSL & 1850' FWL, Section 11, T-25-S, R-29-E, Eddy Co., N.M.

**Casing Program**:

| Hole Size | Interval | Csg OD | Weight | Grade | Conn | $DF_{min}$ Collapse | $DF_{min}$ Burst | $DF_{min}$ Tension |
|---|---|---|---|---|---|---|---|---|
| 17.5" | 0 – 625' | 13.375" | 48# | H40 | STC | 1.10 | 1.25 | 1.60 |
| 12.25" | 0-3150' | 8.625" | 32# | J55 | LTC | 1.10 | 1.25 | 1.60 |
| 7.875" | 0'-12,156' | 5.5" | 17# | N80 | LTC | 1.10 | 1.25 | 1.60 |

**Cement Program**:

| Depth | No. Sacks | Wt. ppg | Yld $Ft^3/ft$ | Slurry Description |
|---|---|---|---|---|
| 625' | 500 | 14.8 | 1.32 | Class C + 0.005 pps Static Free + 2% $CaCl_2$ + 0.25 pps CelloFlake + 0.005 gps FP-6L (TOC @ surface) |
| 3,150' | 900 | 12.7 | 2.01 | Class C + 2% SMS + 0.8% R-3 + 0.25 pps CelloFlake + 0.005 pps Static Free (TOC @ surface) |
| | 200 | 14.8 | 1.32 | Tail: Class 'C' + 0.25 lb/sk Cello Flake + 0.005 lb/sk Static Free |
| BH Plug 8300'-8100' | 75 | 18.0 | 0.90 | Class H + 0.005 lbs/sx Static Free + 5% Salt + 1.2% CD31 + 0.005 gps FP-6L |
| KO Plug | 250 | 18.0 | 0.90 | Class H + 0.005 lbs/sx Static Free + 5% Salt + 1.2% CD31 + 0.005 gps FP-6L |
| 12,156' | 1050 | 14.2 | 1.30 | 1st Stage Cmt: 50:50:2 Class 'H' + 0.30% FL-52A + 0.20% CD-32 + 0.35% SMS + 5.00% Salt (2.454 lb/sk) + 0.45% R-3 + 0.005 lb/sk Static Free (Stage tool @ 5000') |
| | 575 | 11.8 | 2.31 | 2nd Stage Lead: 50:50:10 Poz:C:Gel+ 0.005 pps Static Free + 0.25 pps CelloFlake + 0.90% FL-52A + 0.30% ASA-301 + 0.15% SMS (TOC @ 2500') |
| | 100 | 14.2 | 1.30 | 2nd Stage Tail: 50:50:2 Class 'H' + 0.30% FL-52A + 0.20% CD-32 + 0.35% SMS + 5.00% Salt (2.454 lb/sk) + 0.45% R-3 + 0.005 lb/sk Static Free |

**Mud Program**:

| Depth | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|
| 0 – 625' | Fresh - Gel | 8.6-8.8 | 28-34 | N/c |
| 625' – 3,150' | Brine | 10.0-10.2 | 28-34 | N/c |
| 3,150' – 8,300' Pilot hole | Cut Brine | 8.4-9.0 | 28-34 | N/c |
| KOP – 12,156' Lateral | Cut Brine - XCD | 9.0-9.5 | 40-42 | 8-10 |

eog resources

# EOG Resources, Inc.

**Eddy County**
**Elk Wallow 11 State**
**#2H**
**OH**

**Plan: Plan #1**

# Pathfinder X & Y Planning Report

**26 January, 2010**

PATHFINDER

| | | | |
|---|---|---|---|
| **Company:** | EOG Resources, Inc. | **Local Co-ordinate Reference:** | Well #2H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 3089 50ft (Original Well Elev) |
| **Site:** | Elk Wallow 11 State | **MD Reference:** | WELL @ 3089 50ft (Original Well Elev) |
| **Well:** | #2H | **North Reference:** | Grid |
| **Wellbore:** | OH | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | Midland Database |

**Project** Eddy County

| | | | |
|---|---|---|---|
| **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** Elk Wallow 11 State

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 418,830.100 ft | **Latitude:** | 32° 9' 3.367 N |
| **From:** | Map | **Easting:** | 615,001 000 ft | **Longitude:** | 103° 57' 42 290 W |
| **Position Uncertainty:** | 0.00 ft | **Slot Radius:** | " | **Grid Convergence:** | 0 20 ° |

**Well** #2H

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0 00 ft | **Northing:** | 419,007.400 ft | **Latitude:** | 32° 9' 5 074 N |
| | **+E/-W** | 0.00 ft | **Easting:** | 616,383.500 ft | **Longitude:** | 103° 57' 26.201 W |
| **Position Uncertainty** | | 0.00 ft | **Wellhead Elevation:** | ft | **Ground Level:** | 3,059 50 ft |

**Wellbore** OH

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF2010 | 01/26/2010 | 7 92 | 60 08 | 48,669 |

**Design** Plan #1

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.00 |

| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
|---|---|---|---|---|
| | 0 00 | 0 00 | 0 00 | 179 84 |

**Survey Tool Program** **Date** 01/26/2010

| From (ft) | To (ft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.00 | 12,155 87 | Plan #1 (OH) | MWD | MWD - Standard |

| | | | |
|---|---|---|---|
| **Company:** | EOG Resources, Inc. | **Local Co-ordinate Reference:** | Well #2H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Site:** | Elk Wallow 11 State | **MD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Well:** | #2H | **North Reference:** | Grid |
| **Wellbore:** | OH | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | Midland Database |

**Planned Survey**

| MD (ft) | Inc (°) | Azi (°) | TVD (ft) | TVDSS (ft) | N/S (ft) | E/W (ft) | V. Sec (ft) | DLeg (°/100ft) | Northing (ft) | Easting (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0 00 | 0.00 | 0.00 | -3,089.50 | 0 00 | 0.00 | 0 00 | 0.00 | 419,007 40 | 616,383.50 |
| 100.00 | 0.00 | 0 00 | 100.00 | -2,989 50 | 0.00 | 0 00 | 0.00 | 0 00 | 419,007.40 | 616,383 50 |
| 200 00 | 0.00 | 0 00 | 200.00 | -2,889 50 | 0.00 | 0 00 | 0.00 | 0 00 | 419,007.40 | 616,383 50 |
| 300.00 | 0 00 | 0 00 | 300 00 | -2,789.50 | 0 00 | 0.00 | 0 00 | 0 00 | 419,007.40 | 616,383.50 |
| 400.00 | 0 00 | 0.00 | 400 00 | -2,689.50 | 0 00 | 0.00 | 0 00 | 0 00 | 419,007.40 | 616,383.50 |
| 500.00 | 0 00 | 0.00 | 500 00 | -2,589.50 | 0 00 | 0.00 | 0.00 | 0 00 | 419,007 40 | 616,383.50 |
| 600 00 | 0.00 | 0 00 | 600.00 | -2,489.50 | 0 00 | 0.00 | 0.00 | 0.00 | 419,007.40 | 616,383.50 |
| 700.00 | 0 00 | 0.00 | 700 00 | -2,389.50 | 0.00 | 0 00 | 0.00 | 0 00 | 419,007 40 | 616,383.50 |
| 800.00 | 0 00 | 0.00 | 800 00 | -2,289 50 | 0.00 | 0 00 | 0.00 | 0.00 | 419,007 40 | 616,383.50 |
| 900 00 | 0.00 | 0 00 | 900 00 | -2,189.50 | 0.00 | 0.00 | 0 00 | 0.00 | 419,007.40 | 616,383 50 |
| 1,000 00 | 0.00 | 0 00 | 1,000 00 | -2,089.50 | 0 00 | 0.00 | 0 00 | 0 00 | 419,007.40 | 616,383 50 |
| 1,100.00 | 0 00 | 0 00 | 1,100.00 | -1,989 50 | 0 00 | 0.00 | 0.00 | 0 00 | 419,007 40 | 616,383.50 |
| 1,200.00 | 0 00 | 0 00 | 1,200.00 | -1,889 50 | 0 00 | 0.00 | 0.00 | 0 00 | 419,007 40 | 616,383.50 |
| 1,300.00 | 0.00 | 0 00 | 1,300.00 | -1,789.50 | 0 00 | 0.00 | 0 00 | 0 00 | 419,007.40 | 616,383.50 |
| 1,400.00 | 0 00 | 0 00 | 1,400.00 | -1,689.50 | 0 00 | 0.00 | 0.00 | 0 00 | 419,007.40 | 616,383.50 |
| 1,500.00 | 0 00 | 0.00 | 1,500.00 | -1,589 50 | 0 00 | 0 00 | 0 00 | 0.00 | 419,007.40 | 616,383.50 |
| 1,600 00 | 0 00 | 0.00 | 1,600.00 | -1,489 50 | 0.00 | 0 00 | 0 00 | 0.00 | 419,007.40 | 616,383.50 |
| 1,700 00 | 0.00 | 0 00 | 1,700.00 | -1,389 50 | 0.00 | 0.00 | 0 00 | 0 00 | 419,007 40 | 616,383.50 |
| 1,800.00 | 0.00 | 0.00 | 1,800.00 | -1,289.50 | 0.00 | 0.00 | 0.00 | 0 00 | 419,007 40 | 616,383.50 |
| 1,900.00 | 0.00 | 0.00 | 1,900.00 | -1,189.50 | 0.00 | 0 00 | 0.00 | 0.00 | 419,007 40 | 616,383.50 |
| 2,000 00 | 0.00 | 0.00 | 2,000.00 | -1,089.50 | 0.00 | 0.00 | 0.00 | 0 00 | 419,007 40 | 616,383.50 |
| 2,100 00 | 0.00 | 0.00 | 2,100 00 | -989.50 | 0 00 | 0 00 | 0 00 | 0.00 | 419,007.40 | 616,383.50 |
| 2,200 00 | 0.00 | 0.00 | 2,200 00 | -889.50 | 0 00 | 0 00 | 0 00 | 0.00 | 419,007.40 | 616,383.50 |
| 2,300.00 | 0 00 | 0.00 | 2,300 00 | -789.50 | 0 00 | 0.00 | 0 00 | 0 00 | 419,007 40 | 616,383.50 |
| 2,400.00 | 0 00 | 0 00 | 2,400 00 | -689.50 | 0.00 | 0 00 | 0 00 | 0 00 | 419,007.40 | 616,383.50 |
| 2,500 00 | 0 00 | 0.00 | 2,500 00 | -589.50 | 0 00 | 0 00 | 0 00 | 0 00 | 419,007.40 | 616,383.50 |
| 2,600 00 | 0 00 | 0.00 | 2,600 00 | -489.50 | 0.00 | 0 00 | 0 00 | 0.00 | 419,007.40 | 616,383.50 |

| | | | |
|---|---|---|---|
| **Company:** | EOG Resources, Inc. | **Local Co-ordinate Reference:** | Well #2H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Site:** | Elk Wallow 11 State | **MD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Well:** | #2H | **North Reference:** | Grid |
| **Wellbore:** | OH | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | Midland Database |

**Planned Survey**

| MD (ft) | Inc (°) | Azi (°) | TVD (ft) | TVDSS (ft) | N/S (ft) | E/W (ft) | V. Sec (ft) | DLeg (°/100ft) | Northing (ft) | Easting (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2,700.00 | 0 00 | 0.00 | 2,700 00 | -389.50 | 0.00 | 0 00 | 0.00 | 0.00 | 419,007.40 | 616,383 50 |
| 2,800 00 | 0.00 | 0.00 | 2,800.00 | -289 50 | 0.00 | 0.00 | 0 00 | 0 00 | 419,007 40 | 616,383.50 |
| 2,900 00 | 0.00 | 0 00 | 2,900.00 | -189 50 | 0 00 | 0.00 | 0.00 | 0 00 | 419,007 40 | 616,383.50 |
| 3,000.00 | 0.00 | 0 00 | 3,000.00 | -89 50 | 0.00 | 0.00 | 0.00 | 0.00 | 419,007 40 | 616,383.50 |
| 3,100.00 | 0 00 | 0 00 | 3,100 00 | 10 50 | 0.00 | 0.00 | 0.00 | 0.00 | 419,007.40 | 616,383.50 |
| 3,200.00 | 0 00 | 0.00 | 3,200 00 | 110 50 | 0.00 | 0 00 | 0.00 | 0.00 | 419,007.40 | 616,383.50 |
| 3,300.00 | 0.00 | 0 00 | 3,300.00 | 210 50 | 0.00 | 0.00 | 0 00 | 0 00 | 419,007 40 | 616,383.50 |
| 3,400 00 | 0 00 | 0.00 | 3,400 00 | 310.50 | 0.00 | 0 00 | 0.00 | 0.00 | 419,007.40 | 616,383 50 |
| 3,500.00 | 0 00 | 0.00 | 3,500 00 | 410.50 | 0.00 | 0.00 | 0.00 | 0.00 | 419,007.40 | 616,383 50 |
| 3,600 00 | 0 00 | 0.00 | 3,600 00 | 510.50 | 0.00 | 0.00 | 0 00 | 0.00 | 419,007 40 | 616,383.50 |
| 3,700 00 | 0.00 | 0 00 | 3,700 00 | 610.50 | 0.00 | 0 00 | 0 00 | 0 00 | 419,007.40 | 616,383.50 |
| 3,800.00 | 0 00 | 0.00 | 3,800 00 | 710.50 | 0.00 | 0.00 | 0.00 | 0.00 | 419,007 40 | 616,383 50 |
| 3,900.00 | 0 00 | 0.00 | 3,900.00 | 810 50 | 0.00 | 0.00 | 0.00 | 0.00 | 419,007.40 | 616,383 50 |
| 4,000.00 | 0.00 | 0 00 | 4,000.00 | 910.50 | 0 00 | 0.00 | 0.00 | 0.00 | 419,007.40 | 616,383.50 |
| 4,100.00 | 0.00 | 0.00 | 4,100.00 | 1,010 50 | 0.00 | 0 00 | 0.00 | 0.00 | 419,007 40 | 616,383 50 |
| 4,200.00 | 0.00 | 0.00 | 4,200 00 | 1,110.50 | 0 00 | 0 00 | 0.00 | 0.00 | 419,007.40 | 616,383.50 |
| 4,300.00 | 0 00 | 0.00 | 4,300 00 | 1,210.50 | 0 00 | 0 00 | 0.00 | 0 00 | 419,007.40 | 616,383.50 |
| 4,400 00 | 0.00 | 0 00 | 4,400 00 | 1,310 50 | 0.00 | 0 00 | 0.00 | 0.00 | 419,007 40 | 616,383 50 |
| 4,500 00 | 0 00 | 0 00 | 4,500.00 | 1,410.50 | 0.00 | 0 00 | 0.00 | 0.00 | 419,007.40 | 616,383.50 |
| 4,600 00 | 0 00 | 0 00 | 4,600.00 | 1,510.50 | 0.00 | 0.00 | 0 00 | 0.00 | 419,007 40 | 616,383.50 |
| 4,700.00 | 0.00 | 0.00 | 4,700.00 | 1,610.50 | 0 00 | 0 00 | 0 00 | 0 00 | 419,007.40 | 616,383.50 |
| 4,800 00 | 0 00 | 0 00 | 4,800 00 | 1,710.50 | 0.00 | 0 00 | 0 00 | 0.00 | 419,007 40 | 616,383.50 |
| 4,900.00 | 0.00 | 0 00 | 4,900.00 | 1,810.50 | 0.00 | 0 00 | 0 00 | 0.00 | 419,007 40 | 616,383.50 |
| 5,000 00 | 0.00 | 0 00 | 5,000.00 | 1,910.50 | 0 00 | 0.00 | 0.00 | 0 00 | 419,007 40 | 616,383 50 |
| 5,100 00 | 0.00 | 0.00 | 5,100.00 | 2,010 50 | 0.00 | 0.00 | 0.00 | 0.00 | 419,007.40 | 616,383.50 |
| 5,200 00 | 0 00 | 0.00 | 5,200 00 | 2,110 50 | 0 00 | 0 00 | 0.00 | 0.00 | 419,007.40 | 616,383.50 |
| 5,300.00 | 0.00 | 0.00 | 5,300 00 | 2,210 50 | 0 00 | 0 00 | 0.00 | 0.00 | 419,007 40 | 616,383 50 |

| | | | |
|---|---|---|---|
| **Company:** | EOG Resources, Inc. | **Local Co-ordinate Reference:** | Well #2H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Site:** | Elk Wallow 11 State | **MD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Well:** | #2H | **North Reference:** | Grid |
| **Wellbore:** | OH | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | Midland Database |

**Planned Survey**

| MD (ft) | Inc (°) | Azi (°) | TVD (ft) | TVDSS (ft) | N/S (ft) | E/W (ft) | V. Sec (ft) | DLeg (°/100ft) | Northing (ft) | Easting (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5,400.00 | 0 00 | 0.00 | 5,400 00 | 2,310 50 | 0.00 | 0.00 | 0.00 | 0 00 | 419,007.40 | 616,383.50 |
| 5,500 00 | 0 00 | 0.00 | 5,500.00 | 2,410 50 | 0 00 | 0 00 | 0 00 | 0 00 | 419,007 40 | 616,383 50 |
| 5,600 00 | 0 00 | 0 00 | 5,600.00 | 2,510.50 | 0 00 | 0 00 | 0.00 | 0 00 | 419,007 40 | 616,383 50 |
| 5,700.00 | 0.00 | 0 00 | 5,700 00 | 2,610 50 | 0.00 | 0.00 | 0.00 | 0.00 | 419,007.40 | 616,383.50 |
| 5,800.00 | 0.00 | 0 00 | 5,800 00 | 2,710 50 | 0.00 | 0.00 | 0.00 | 0 00 | 419,007.40 | 616,383 50 |
| 5,900.00 | 0.00 | 0 00 | 5,900 00 | 2,810.50 | 0.00 | 0 00 | 0 00 | 0 00 | 419,007 40 | 616,383.50 |
| 6,000.00 | 0.00 | 0 00 | 6,000 00 | 2,910 50 | 0.00 | 0.00 | 0.00 | 0 00 | 419,007.40 | 616,383.50 |
| 6,100 00 | 0 00 | 0.00 | 6,100.00 | 3,010 50 | 0 00 | 0 00 | 0 00 | 0 00 | 419,007 40 | 616,383.50 |
| 6,200 00 | 0 00 | 0.00 | 6,200.00 | 3,110 50 | 0 00 | 0 00 | 0 00 | 0 00 | 419,007 40 | 616,383.50 |
| 6,300 00 | 0.00 | 0 00 | 6,300 00 | 3,210.50 | 0.00 | 0.00 | 0.00 | 0.00 | 419,007 40 | 616,383.50 |
| 6,400 00 | 0.00 | 0 00 | 6,400.00 | 3,310.50 | 0 00 | 0 00 | 0.00 | 0.00 | 419,007 40 | 616,383.50 |
| 6,500.00 | 0.00 | 0.00 | 6,500.00 | 3,410.50 | 0.00 | 0.00 | 0.00 | 0.00 | 419,007.40 | 616,383.50 |
| 6,600.00 | 0.00 | 0.00 | 6,600.00 | 3,510.50 | 0.00 | 0.00 | 0 00 | 0.00 | 419,007.40 | 616,383.50 |
| 6,700.00 | 0.00 | 0 00 | 6,700.00 | 3,610.50 | 0 00 | 0 00 | 0 00 | 0.00 | 419,007 40 | 616,383.50 |
| 6,800.00 | 0.00 | 0 00 | 6,800 00 | 3,710.50 | 0 00 | 0 00 | 0.00 | 0.00 | 419,007 40 | 616,383.50 |
| 6,900.00 | 0 00 | 0.00 | 6,900.00 | 3,810 50 | 0 00 | 0.00 | 0.00 | 0 00 | 419,007.40 | 616,383.50 |
| 7,000.00 | 0 00 | 0 00 | 7,000.00 | 3,910 50 | 0 00 | 0.00 | 0.00 | 0.00 | 419,007 40 | 616,383.50 |
| 7,057 50 | 0.00 | 0 00 | 7,057 50 | 3,968.00 | 0.00 | 0.00 | 0.00 | 0 00 | 419,007 40 | 616,383.50 |
| 7,075 00 | 2.10 | 179.84 | 7,075.00 | 3,985.50 | -0 32 | 0.00 | 0.32 | 12.00 | 419,007 08 | 616,383.50 |
| 7,100 00 | 5.10 | 179.84 | 7,099.94 | 4,010.44 | -1 89 | 0.01 | 1.89 | 12.00 | 419,005.51 | 616,383.51 |
| 7,125.00 | 8 10 | 179.84 | 7,124 78 | 4,035 28 | -4.76 | 0.01 | 4 76 | 12 00 | 419,002 64 | 616,383.51 |
| 7,150 00 | 11 10 | 179.84 | 7,149.42 | 4,059.92 | -8.93 | 0.03 | 8.93 | 12 00 | 418,998.47 | 616,383.53 |
| 7,175.00 | 14 10 | 179 84 | 7,173 82 | 4,084.32 | -14 38 | 0 04 | 14.38 | 12 00 | 418,993.02 | 616,383.54 |
| 7,200.00 | 17.10 | 179.84 | 7,197.89 | 4,108 39 | -21.11 | 0 06 | 21 11 | 12 00 | 418,986 29 | 616,383.56 |
| 7,225 00 | 20 10 | 179 84 | 7,221 59 | 4,132 09 | -29 08 | 0 08 | 29 08 | 12.00 | 418,978.32 | 616,383 58 |
| 7,250 00 | 23.10 | 179 84 | 7,244.83 | 4,155 33 | -38.28 | 0.11 | 38 28 | 12.00 | 418,969 12 | 616,383 61 |
| 7,275.00 | 26 10 | 179 84 | 7,267 56 | 4,178 06 | -48.68 | 0 14 | 48 68 | 12.00 | 418,958 72 | 616,383 64 |

| | | | |
|---|---|---|---|
| **Company:** | EOG Resources, Inc. | **Local Co-ordinate Reference:** | Well #2H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Site:** | Elk Wallow 11 State | **MD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Well:** | #2H | **North Reference:** | Grid |
| **Wellbore:** | OH | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | Midland Database |

**Planned Survey**

| MD (ft) | Inc (°) | Azi (°) | TVD (ft) | TVDSS (ft) | N/S (ft) | E/W (ft) | V. Sec (ft) | DLeg (°/100ft) | Northing (ft) | Easting (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 7,300 00 | 29.10 | 179.84 | 7,289.71 | 4,200.21 | -60.26 | 0.17 | 60.27 | 12 00 | 418,947 14 | 616,383.67 |
| 7,325.00 | 32 10 | 179.84 | 7,311 23 | 4,221.73 | -72.99 | 0 21 | 72 99 | 12 00 | 418,934.41 | 616,383.71 |
| 7,350.00 | 35.10 | 179 84 | 7,332 05 | 4,242 55 | -86.82 | 0 25 | 86.82 | 12 00 | 418,920.58 | 616,383.75 |
| 7,375 00 | 38.10 | 179 84 | 7,352 12 | 4,262.62 | -101 72 | 0 29 | 101.72 | 12.00 | 418,905 68 | 616,383.79 |
| 7,400 00 | 41.10 | 179 84 | 7,371.38 | 4,281 88 | -117 66 | 0.33 | 117.66 | 12.00 | 418,889 74 | 616,383.83 |
| 7,425.00 | 44 10 | 179 84 | 7,389.78 | 4,300 28 | -134 58 | 0 38 | 134.58 | 12.00 | 418,872 82 | 616,383.88 |
| 7,450.00 | 47 10 | 179.84 | 7,407.27 | 4,317.77 | -152 43 | 0 43 | 152.43 | 12.00 | 418,854.97 | 616,383 93 |
| 7,475.00 | 50 10 | 179 84 | 7,423.80 | 4,334 30 | -171 18 | 0 49 | 171.18 | 12.00 | 418,836.22 | 616,383.99 |
| 7,500.00 | 53 10 | 179.84 | 7,439 33 | 4,349 83 | -190 77 | 0 54 | 190.77 | 12 00 | 418,816.63 | 616,384.04 |
| 7,525.00 | 56.10 | 179 84 | 7,453.81 | 4,364 31 | -211.15 | 0.60 | 211.15 | 12 00 | 418,796.25 | 616,384 10 |
| 7,550.00 | 59 10 | 179 84 | 7,467 21 | 4,377.71 | -232.25 | 0.66 | 232 25 | 12 00 | 418,775.15 | 616,384 16 |
| 7,575.00 | 62.10 | 179 84 | 7,479 48 | 4,389.98 | -254 03 | 0.72 | 254.03 | 12 00 | 418,753.37 | 616,384.22 |
| 7,600.00 | 65.10 | 179.84 | 7,490 60 | 4,401.10 | -276 42 | 0.78 | 276.42 | 12 00 | 418,730.98 | 616,384.28 |
| 7,625.00 | 68 09 | 179.84 | 7,500 53 | 4,411 03 | -299.36 | 0 85 | 299.36 | 12.00 | 418,708.04 | 616,384.35 |
| 7,650.00 | 71 09 | 179.84 | 7,509 24 | 4,419 74 | -322 79 | 0.91 | 322.79 | 12.00 | 418,684.61 | 616,384.41 |
| 7,675 00 | 74.09 | 179 84 | 7,516.72 | 4,427 22 | -346.64 | 0.98 | 346.64 | 12 00 | 418,660 76 | 616,384.48 |
| 7,700 00 | 77.09 | 179 84 | 7,522.94 | 4,433 44 | -370.85 | 1.05 | 370.85 | 12 00 | 418,636 55 | 616,384.55 |
| 7,725.00 | 80 09 | 179 84 | 7,527 88 | 4,438.38 | -395 35 | 1.12 | 395.36 | 12.00 | 418,612.05 | 616,384 62 |
| 7,750.00 | 83 09 | 179 84 | 7,531 54 | 4,442 04 | -420 08 | 1.19 | 420.08 | 12 00 | 418,587.32 | 616,384.69 |
| 7,775.00 | 86.09 | 179 84 | 7,533.89 | 4,444.39 | -444.97 | 1.26 | 444.97 | 12.00 | 418,562.43 | 616,384.76 |
| 7,800 00 | 89.09 | 179.84 | 7,534 94 | 4,445.44 | -469 94 | 1 33 | 469 95 | 12 00 | 418,537.46 | 616,384 83 |
| 7,807.56 | 90 00 | 179.84 | 7,535 00 | 4,445 50 | -477.50 | 1 35 | 477 50 | 12.00 | 418,529.90 | 616,384.85 |
| 7,900.00 | 90 00 | 179.84 | 7,535 00 | 4,445.50 | -569.94 | 1 62 | 569 94 | 0 00 | 418,437.46 | 616,385.12 |
| 8,000.00 | 90 00 | 179.84 | 7,535 00 | 4,445 50 | -669 94 | 1 90 | 669.94 | 0.00 | 418,337.46 | 616,385.40 |
| 8,100.00 | 90.00 | 179 84 | 7,535.00 | 4,445.50 | -769.94 | 2.18 | 769.94 | 0 00 | 418,237.46 | 616,385.68 |
| 8,200.00 | 90.00 | 179.84 | 7,535.00 | 4,445 50 | -869.94 | 2.47 | 869.94 | 0 00 | 418,137.46 | 616,385.97 |
| 8,300 00 | 90.00 | 179 84 | 7,535.00 | 4,445 50 | -969.94 | 2 75 | 969.94 | 0.00 | 418,037 46 | 616,386.25 |

| | | | |
|---|---|---|---|
| **Company:** | EOG Resources, Inc | **Local Co-ordinate Reference:** | Well #2H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Site:** | Elk Wallow 11 State | **MD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Well:** | #2H | **North Reference:** | Grid |
| **Wellbore:** | OH | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | Midland Database |

**Planned Survey**

| MD (ft) | Inc (°) | Azi (°) | TVD (ft) | TVDSS (ft) | N/S (ft) | E/W (ft) | V. Sec (ft) | DLeg (°/100ft) | Northing (ft) | Easting (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 8,400 00 | 90.00 | 179 84 | 7,535.00 | 4,445.50 | -1,069.94 | 3.03 | 1,069.94 | 0.00 | 417,937 46 | 616,386.53 |
| 8,500.00 | 90.00 | 179.84 | 7,535.00 | 4,445 50 | -1,169.94 | 3.32 | 1,169 94 | 0 00 | 417,837.46 | 616,386.82 |
| 8,600 00 | 90.00 | 179.84 | 7,535 00 | 4,445 50 | -1,269.94 | 3.60 | 1,269 94 | 0.00 | 417,737 46 | 616,387.10 |
| 8,700.00 | 90.00 | 179.84 | 7,535.00 | 4,445.50 | -1,369.94 | 3.88 | 1,369.94 | 0.00 | 417,637.46 | 616,387 38 |
| 8,800.00 | 90.00 | 179.84 | 7,535.00 | 4,445.50 | -1,469.94 | 4.17 | 1,469.94 | 0.00 | 417,537 46 | 616,387 67 |
| 8,900.00 | 90 00 | 179 84 | 7,535.00 | 4,445.50 | -1,569.94 | 4.45 | 1,569 94 | 0.00 | 417,437 46 | 616,387 95 |
| 9,000.00 | 90.00 | 179 84 | 7,535 00 | 4,445.50 | -1,669.94 | 4 73 | 1,669.94 | 0.00 | 417,337 46 | 616,388 23 |
| 9,100 00 | 90 00 | 179.84 | 7,535 00 | 4,445.50 | -1,769 94 | 5 02 | 1,769 94 | 0.00 | 417,237.46 | 616,388.52 |
| 9,200 00 | 90.00 | 179 84 | 7,535 00 | 4,445.50 | -1,869 94 | 5 30 | 1,869 94 | 0.00 | 417,137.46 | 616,388 80 |
| 9,300 00 | 90.00 | 179 84 | 7,535.00 | 4,445.50 | -1,969.94 | 5.58 | 1,969 94 | 0 00 | 417,037.46 | 616,389.08 |
| 9,400 00 | 90.00 | 179 84 | 7,535.00 | 4,445 50 | -2,069.94 | 5.87 | 2,069 94 | 0 00 | 416,937.46 | 616,389.37 |
| 9,500.00 | 90.00 | 179 84 | 7,535.00 | 4,445 50 | -2,169 94 | 6.15 | 2,169.94 | 0.00 | 416,837 46 | 616,389 65 |
| 9,600.00 | 90 00 | 179.84 | 7,535.00 | 4,445.50 | -2,269 94 | 6 43 | 2,269.94 | 0.00 | 416,737 46 | 616,389.93 |
| 9,700 00 | 90.00 | 179 84 | 7,535.00 | 4,445 50 | -2,369.94 | 6 72 | 2,369.94 | 0.00 | 416,637 46 | 616,390 22 |
| 9,800 00 | 90.00 | 179 84 | 7,535.00 | 4,445 50 | -2,469.93 | 7.00 | 2,469 94 | 0.00 | 416,537 47 | 616,390.50 |
| 9,900.00 | 90 00 | 179.84 | 7,535 00 | 4,445 50 | -2,569 93 | 7 28 | 2,569 94 | 0.00 | 416,437.47 | 616,390.78 |
| 10,000.00 | 90 00 | 179 84 | 7,535 00 | 4,445 50 | -2,669.93 | 7 57 | 2,669 94 | 0 00 | 416,337 47 | 616,391.07 |
| 10,100.00 | 90 00 | 179 84 | 7,535 00 | 4,445.50 | -2,769 93 | 7.85 | 2,769 94 | 0.00 | 416,237 47 | 616,391.35 |
| 10,200.00 | 90.00 | 179.84 | 7,535 00 | 4,445 50 | -2,869 93 | 8.13 | 2,869 94 | 0 00 | 416,137 47 | 616,391 63 |
| 10,300.00 | 90.00 | 179 84 | 7,535.00 | 4,445.50 | -2,969.93 | 8.42 | 2,969 94 | 0 00 | 416,037 47 | 616,391 92 |
| 10,400.00 | 90.00 | 179.84 | 7,535 00 | 4,445.50 | -3,069 93 | 8 70 | 3,069.94 | 0.00 | 415,937 47 | 616,392 20 |
| 10,500 00 | 90 00 | 179 84 | 7,535.00 | 4,445.50 | -3,169.93 | 8.98 | 3,169.94 | 0 00 | 415,837 47 | 616,392.48 |
| 10,600 00 | 90.00 | 179.84 | 7,535 00 | 4,445.50 | -3,269.93 | 9 27 | 3,269.94 | 0 00 | 415,737.47 | 616,392.77 |
| 10,700 00 | 90 00 | 179 84 | 7,535 00 | 4,445.50 | -3,369.93 | 9.55 | 3,369.94 | 0.00 | 415,637.47 | 616,393.05 |
| 10,800 00 | 90 00 | 179.84 | 7,535.00 | 4,445 50 | -3,469.93 | 9.83 | 3,469 94 | 0.00 | 415,537.47 | 616,393 33 |
| 10,900.00 | 90.00 | 179 84 | 7,535.00 | 4,445.50 | -3,569.93 | 10 12 | 3,569 94 | 0 00 | 415,437.47 | 616,393 62 |
| 11,000.00 | 90.00 | 179.84 | 7,535.00 | 4,445 50 | -3,669.93 | 10 40 | 3,669.94 | 0 00 | 415,337.47 | 616,393 90 |

| | | | |
|---|---|---|---|
| **Company:** | EOG Resources, Inc | **Local Co-ordinate Reference:** | Well #2H |
| **Project:** | Eddy County | **TVD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Site:** | Elk Wallow 11 State | **MD Reference:** | WELL @ 3089.50ft (Original Well Elev) |
| **Well:** | #2H | **North Reference:** | Grid |
| **Wellbore:** | OH | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan #1 | **Database:** | Midland Database |

**Planned Survey**

| MD (ft) | Inc (°) | Azi (°) | TVD (ft) | TVDSS (ft) | N/S (ft) | E/W (ft) | V. Sec (ft) | DLeg (°/100ft) | Northing (ft) | Easting (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| 11,100 00 | 90 00 | 179.84 | 7,535 00 | 4,445.50 | -3,769 93 | 10 68 | 3,769.94 | 0.00 | 415,237.47 | 616,394.18 |
| 11,200.00 | 90.00 | 179.84 | 7,535 00 | 4,445.50 | -3,869.93 | 10.97 | 3,869 94 | 0 00 | 415,137 47 | 616,394 47 |
| 11,300.00 | 90.00 | 179.84 | 7,535 00 | 4,445.50 | -3,969.93 | 11.25 | 3,969 94 | 0 00 | 415,037 47 | 616,394 75 |
| 11,400.00 | 90 00 | 179.84 | 7,535 00 | 4,445.50 | -4,069.93 | 11.53 | 4,069.94 | 0.00 | 414,937.47 | 616,395.03 |
| 11,500 00 | 90 00 | 179.84 | 7,535.00 | 4,445 50 | -4,169.93 | 11.82 | 4,169.94 | 0.00 | 414,837.47 | 616,395.32 |
| 11,600.00 | 90.00 | 179 84 | 7,535.00 | 4,445.50 | -4,269.93 | 12.10 | 4,269 94 | 0 00 | 414,737 47 | 616,395 60 |
| 11,700 00 | 90.00 | 179.84 | 7,535 00 | 4,445 50 | -4,369.93 | 12.38 | 4,369.94 | 0.00 | 414,637.47 | 616,395.88 |
| 11,800.00 | 90.00 | 179 84 | 7,535.00 | 4,445 50 | -4,469.93 | 12 67 | 4,469 94 | 0 00 | 414,537 47 | 616,396 17 |
| 11,900.00 | 90.00 | 179 84 | 7,535.00 | 4,445 50 | -4,569.93 | 12 95 | 4,569 94 | 0 00 | 414,437 47 | 616,396 45 |
| 12,000 00 | 90.00 | 179 84 | 7,535 00 | 4,445 50 | -4,669.93 | 13.24 | 4,669.94 | 0.00 | 414,337.47 | 616,396.74 |
| 12,100 00 | 90.00 | 179.84 | 7,535 00 | 4,445.50 | -4,769 93 | 13 52 | 4,769.94 | 0 00 | 414,237.47 | 616,397 02 |
| 12,155.87 | 90.00 | 179 84 | 7,535 00 | 4,445.50 | -4,825.80 | 13.68 | 4,825.82 | 0 00 | 414,181 60 | 616,397.18 |

**Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| PBHL(ELK#1) | 0 00 | 0 00 | 7,554.80 | -4,828 50 | -1,369 30 | 414,178 900 | 615,014.200 | 32° 8' 17.337 N | 103° 57' 42.323 W |
| - plan misses target center by 1383 12ft at 12154 66ft MD (7535.00 TVD, -4824.58 N, 13 67 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| PBHL(ELK#2) | 0 00 | 0 00 | 7,535 00 | -4,825.80 | 13.70 | 414,181.600 | 616,397.200 | 32° 8' 17.316 N | 103° 57' 26.238 W |
| - plan hits target center | | | | | | | | | |
| - Point | | | | | | | | | |

Checked By: _____ Approved By: _____ Date: _____

eog resources

**Project:** Eddy County
**Site:** Elk Wallow 11 State
**Well:** #2H
**Wellbore:** OH
**Plan:** Plan #1 (#2H/OH)

T G M

Azimuths to Grid North
True North: -0.20°
Magnetic North: 7.72°

Magnetic Field
Strength: 48668.5snT
Dip Angle 60.08°
Date: 01/26/2010
Model: IGRF2010

PATHFINDER

**WELL DETAILS #2H**

| Ground Elevation | 3059 50 |
|---|---|
| RKB Elevation | WELL @ 3089 50ft (Original Well Elev) |
| Rig Name | Original Well Elev |

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Slot |
|---|---|---|---|---|---|---|
| 0 00 | 0 00 | 419007 400 | 616383 500 | 32° 9' 5 074 N | 103° 57' 26 201 W | |

**PROJECT DETAILS. Eddy County**

| | |
|---|---|
| Geodetic System: | US State Plane 1927 (Exact solution) |
| Datum: | NAD 1927 (NADCON CONUS) |
| Ellipsoid: | Clarke 1866 |
| Zone: | New Mexico East 3001 |
| System Datum: | Mean Sea Level |
| Local North: | Grid |

**SECTION DETAILS**

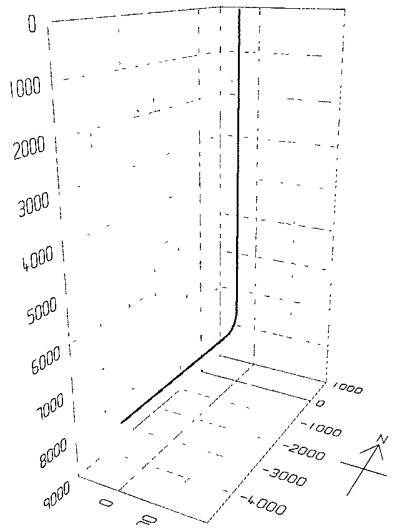
| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | DLeg | TFace | VSec | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0 00 | 0.00 | 0 00 | 0.00 | 0 00 | 0 00 | 0.00 | 0 00 | |
| 2 | 7057 50 | 0.00 | 0 00 | 7057 50 | 0 00 | 0.00 | 0 00 | 0 00 | 0.00 | |
| 3 | 7807.56 | 90 00 | 179.84 | 7535 00 | -477.50 | 1 35 | 12 00 | 179.84 | 477 50 | |
| 4 | 12155 87 | 90.00 | 179 84 | 7535 00 | -4825 80 | 13.68 | 0 00 | 0 00 | 4825.82 | PBHL(ELK#2) |

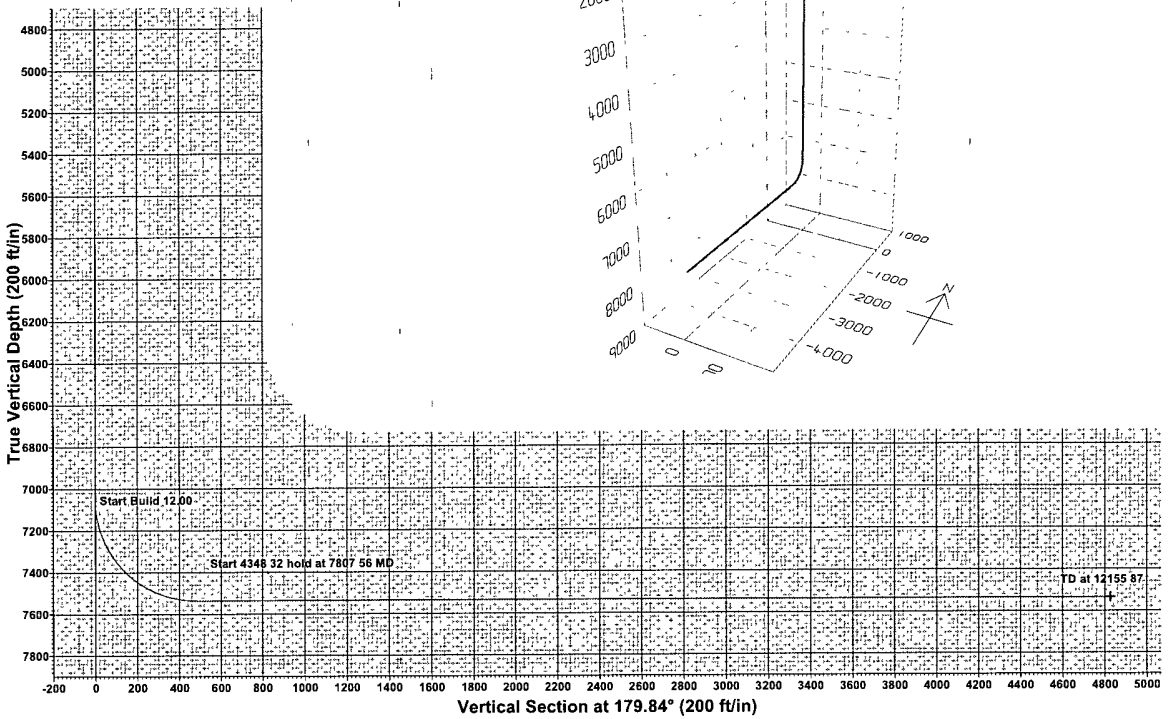
**WELLBORE TARGET DETAILS (MAP CO-ORDINATES)**

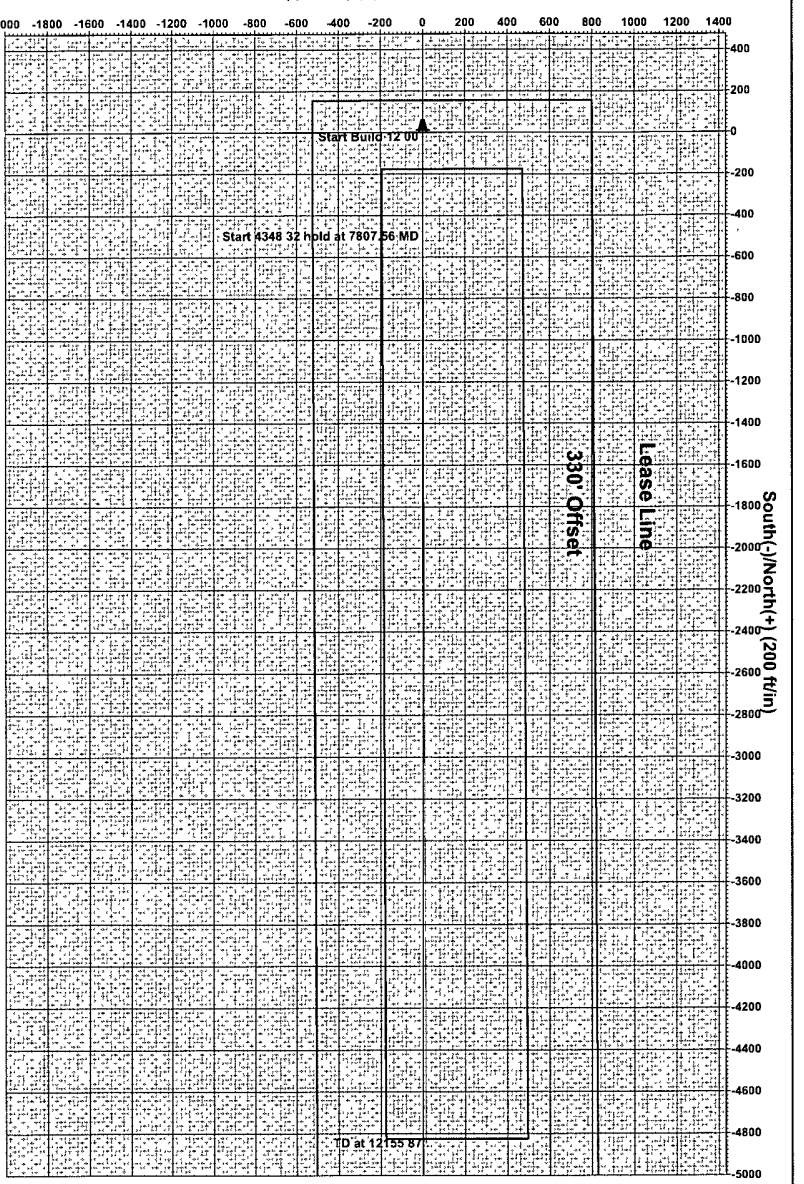
| Name | TVD | +N/-S | +E/-W | Northing | Easting | Shape |
|---|---|---|---|---|---|---|
| PBHL(ELK#2) | 7535 00 | -4825 80 | 13 70 | 414181 600 | 616397 200 | Point |

LEGEND

Plan #1




Plan Plan #1 (#2H/OH)

Created By Nate Bingham Date 13 25, January 26 2010

Checked _____ Date _____

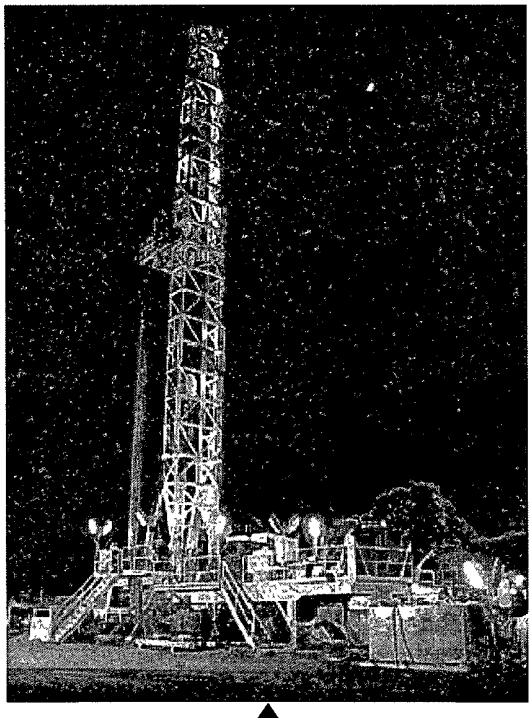
# EOG Resources, Inc.

**Legals:**
**Elk Wallow 11 State #2H**
Eddy Co. New Mexico

**115' FNL & 1850' FWL Surface Location**
**Section 11**
**T-25-S, R-29-E**
**Lat: N 32.1514095**
**Long: W 103.9572781**

**330' FSL & 1850' FWL Bottom Hole Location**
**Section 11**
**T-25-S, R-29-E**
**Lat: N 32.1381433**
**Long: W 103.9572885**

# $H_2S$
# "Contingency Plan"



SAFETY SOLUTIONS, LLC.

**Safety Solutions, LLC** **(432) 686-8555**
**3222 Commercial Dr.** **Midland, TX 79701**

## Table of Contents

## $H_2S$ CONTINGENCY PLAN SECTION

**Scope:**

This contingency plan provides an organized plan of action for alerting and protecting the public within an area of exposure prior to an intentional release, or following the accidental release of a potentially hazardous volume of hydrogen sulfide. The plan establishes guidelines for all personnel whose work activity may involve exposure to Hydrogen Sulfide Gas ($H_2S$).

**Objective:**

Prevent any and all accidents, and prevent the uncontrolled release of $H_2S$ into the atmosphere.

Provide proper evacuation procedures to cope with emergencies.

Provide immediate and adequate medical attention should an injury occur.

**Discussion of Plan:**

**Suspected Problem Zones:**

***Implementation:*** This plan, with all details, is to be fully implemented 1000' before drilling into the first sour zone.

***Emergency Response Procedure:*** This section outlines the conditions and denotes steps to be taken in the event of an emergency.

***Emergency Equipment and 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 1000' before drilling into the first sour zone.

***Emergency call list:*** Included are the telephone numbers of all persons that would need to be contacted, should an $H_2S$ emergency occur.

***Briefing:*** This section deals with the briefing of all persons involved with the drilling of this well.

***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 ensure adherence to the plan.

***General Information:*** A general information section has been included to supply support information.

## EMERGENCY PROCEDURES SECTION

I. In the event of any evidence of $H_2S$ level above 10ppm, take the following steps immediately:

   a. Secure breathing apparatus.

   b. Order non-essential personnel out of the danger zone.

   c. Take steps to determine if the $H_2S$ level can be corrected or suppressed, and if so, proceed with normal operations.

II. If uncontrollable conditions occur, proceed with the following:

   a. Take steps to protect and/or remove any public downwind of the rig, including partial evacuation or isolation. Notify necessary public safety personnel and the New Mexico Oil Conservation Division of the situation.

   b. Remove all personnel to the Safe Briefing Area.

   c. Notify public safety personnel for help with maintaining roadblocks and implementing evacuation.

   d. Determine and proceed with the best possible plan to regain control of the well. Maintain tight security and safety measures.

III. Responsibility:

   a. The Company Approved Supervisor shall be responsible for the total implementation of the plan.

   b. The Company Approved Supervisor shall be in complete command during any emergency.

   c. The Company Approved Supervisor shall designate a back up Supervisor in the event that he/she is not available.

## EMERGENCY PROCEDURE IMPLEMENTATION

### I. Drilling or Tripping

***a.*** *All Personnel*

- **i.** When alarm sounds, don escape unit and report to upwind Safe Briefing Area.
- **ii.** Check status of other personnel (buddy system).
- **iii.** Secure breathing apparatus.
- **iv.** Wait for orders from supervisor.

***b.*** *Drilling Foreman*

- **i.** Report to the upwind Safe Briefing Area.
- **ii.** Don Breathing Apparatus and return to the point of release with the Tool Pusher or Driller (buddy system).
- **iii.** Determine the concentration of $H_2S$.
- **iv.** Assess the situation and take appropriate control measures.

***c.*** *Tool Pusher*

- **i.** Report to the upwind Safe Briefing Area.
- **ii.** Don Breathing Apparatus and return to the point of release with the Drilling Foreman or the Driller (buddy system).
- **iii.** Determine the concentration of $H_2S$.
- **iv.** Assess the situation and take appropriate control measures.

***d.*** *Driller*

- **i.** Check the status of other personnel (in a rescue attempt, always use the buddy system).
- **ii.** Assign the least essential person to notify the Drilling Foreman and Tool Pusher, in the event of their absence.
- **iii.** Assume the responsiblility of the Drilling Foreman and the Tool Pusher until they arrive, in the event of their absence.

*e.* *Derrick Man and Floor Hands*

i. Remain in the upwind Safe Briefing Area until otherwise instructed by a supervisor.

*f.* *Mud Engineer*

i. Report to the upwind Safe Briefing Area.

ii. When instructed, begin check of mud for pH level and $H_2S$ level.

*g.* *Safety Personnel*

i. Don Breathing Apparatus.

ii. Check status of personnel.

iii. Wait for instructions from Drilling Foreman or Tool Pusher.

## II. Taking a Kick

**a.** All Personnel report to the upwind Safe Briefing Area.

**b.** Follow standard BOP procedures.

## III. Open Hole Logging

**a.** All unnecessary personnel should leave the rig floor.

**b.** Drilling Foreman and Safety Personnel should monitor the conditions and make necessary safety equipment recommendations.

## IV. Running Casing or Plugging

**a.** Follow "Drilling or Tripping" procedures.

**b.** Assure that all personnel have access to protective equipment.

**SIMULATED BLOWOUT CONTROL DRILLS**

All drills will be initiated by activating alarm devices (air horn). One long blast, on the air horn, for ACTUAL and SIMULATED Blowout Control Drills. This operation will be performed by the Drilling Foreman or Tool Pusher at least one time per week for each of the following conditions, with each crew:

Drill #1 Bottom Drilling

Drill #2 Tripping Drill Pipe

In each of these drills, the initial reaction time to shutting in the well shall be timed as well as the total time for the crew to complete its entire pit drill assignment. The times must be recorded on the IADC Driller's Log as "Blowout Control Drill".

Drill No.:
Reaction Time to Shut-In: minutes, seconds.
Total Time to Complete Assignment: minutes, seconds.

## I. Drill Overviews

a. Drill No. 1 – Bottom Drilling

i. Sound the alarm immediately.

ii. Stop the rotary and hoist Kelly joint above the rotary table.

iii. Stop the circulatory pump.

iv. Close the drill pipe rams.

v. Record casing and drill pipe shut-in pressures and pit volume increases.

b. Drill No. 2 – Tripping Drill Pipe

i. Sound the alarm immediately.

ii. Position the upper tool joint just above the rotary table and set the slips.

iii. Install a full opening valve or inside blowout preventer tool in order to close the drill pipe.

iv. Close the drill pipe rams.

v. Record the shut-in annular pressure.

## II. Crew Assignments

a. Drill No. 1 – Bottom Drilling

*i. Driller*

1. Stop the rotary and hoist Kelly joint above the rotary table.
2. Stop the circulatory pump.
3. Check Flow.
4. If flowing, sound the alarm immediately
5. Record the shit-in drill pipe pressure
6. Determine the mud weight increase needed or other courses of action.

*ii. Derrickman*

1. Open choke line valve at BOP.
2. Signal Floor Man #1 at accumulator that choke line is open.
3. Close choke and upstream valve after pipe tam have been closed.
4. Read the shut-in annular pressure and report readings to Driller.

*iii. Floor Man #1*

1. Close the pipe rams after receiving the signal from the Derrickman.
2. Report to Driller for further instructions.

*iv. Floor Man #2*

1. Notify the Tool Pusher and Operator representative of the $H_2S$ alarms.
2. Check for open fires and, if safe to do so, extinguish them.
3. Stop all welding operations.
4. Turn-off all non-explosions proof lights and instruments.
5. Report to Driller for further instructions.

*v. Tool Pusher*

1. Report to the rig floor.
2. Have a meeting with all crews.

3. Compile and summarize all information.

4. Calculate the proper kill weight.

5. Ensure that proper well procedures are put into action.

*vi. Operator Representative*

1. Notify the Drilling Superintendent.

2. Determine if an emergency exists and if so, activate the contingency plan.

b. Drill No. 2 – Tripping Pipe

i. Driller

1. Sound the alarm immediately when mud volume increase has been detected.

2. Position the upper tool joint just above the rotary table and set slips.

3. Install a full opening valve or inside blowout preventer tool to close the drill pipe.

4. Check flow.

5. Record all data reported by the crew.

6. Determine the course of action.

ii. Derrickman

1. Come down out of derrick.

2. Notify Tool Pusher and Operator Representative.

3. Check for open fires and, if safe to do so , extinguish them.

4. Stop all welding operations.

5. Report to Driller for further instructions.

iii. Floor Man #1

1. Pick up full opening valve or inside blowout preventer tool and stab into tool joint above rotary table (with Floor Man #2).

2. Tighten valve with back-up tongs.

3. Close pipe rams after signal from Floor Man #2.

4. Read accumulator pressure and check for possible high pressure fluid leaks in valves or piping.

5. Report to Driller for further instructions.

iv. Floor Man #2

1. Pick-up full opening valve or inside blowout preventer tool and stab into tool joint above rotary table (with Floor Man #1).

2. Position back-up tongs on drill pipe.

3. Open choke line valve at BOP.

4. Signal Floor Man #1 at accumulator that choke line is open.

5. Close choke and upstream valve after pipe rams have been closed.

6. Check for leaks on BOP stack and choke manifold.

7. Read annular pressure.

8. Report readings to the Driller.

v. Tool Pusher

1. Report to the rig floor.

2. Have a meeting with all of the crews.

3. Compile and summarize all information.

4. See that proper well kill procedures are put into action.

vi. Operator Representative

1. Notify Drilling Superintendent

2. Determine if an emergency exists, and if so, activate the contingency plan.

# IGNITION PROCEDURES

**Responsibility:**

The decision to ignite the well is the responsibility of the DRILLING FOREMAN in concurrence with the STATE POLICE. In the event the Drilling Foreman is incapacitated, it becomes the responsibility of the RIG TOOL PUSHER. This 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 of controlling the blowout under the prevailing conditions.

If time permits, notify the main office, but do not delay if human life is in danger. Initiate the first phase of the evacuation plan.

Instructions for Igniting the Well:

1. Two people are required for the actual igniting operation. Both men must wear self-contained breathing apparatus and must use a full body harness and attach a retrievable safety line to the D-Ring in the back. One man must monitor the atmosphere for explosive gases with the LEL monitor, while the Drilling Foreman is responsible for igniting the well.

2. The primary method to ignite is a 25mm flare gun with a range of approximately 500 feet.

3. Ignite from upwind and do not approach any closer than is warranted.

4. Select the ignition site best suited for protection and which offers an easy escape route.

5. Before igniting, check for the presence of combustible gases.

6. After igniting, continue emergency actions and procedures as before.

7. All unassigned personnel will limit their actions to those directed by the Drilling Foreman.

Note: After the 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.

## TRAINING PROGRAM

When working in an area where Hydrogen Sulfide ($H_2S$) might be encountered, definite training requirements must be carried out. The Company Supervisor will ensure that all personnel, at the well site, have had adequate training in the following:

1. Hazards and characteristics of Hydrogen Sulfide.
2. Physicals effects of Hydrogen Sulfide on the human body.
3. Toxicity of Hydrogen Sulfide and Sulfur Dioxide.
4. $H_2S$ detection, Emergency alarm and sensor location.
5. Emergency rescue.
6. Resuscitators.
7. First aid and artificial resuscitation.
8. The effects of Hydrogen Sulfide on metals.
9. Location safety.

Service company personnel and visiting personnel must be notified if the zone contains $H_2S$, and each service company must provide adequate training and equipment for their employees before they arrive at the well site.

# EMERGENCY EQUIPMENT REQUIREMENTS

## Lease Entrance Sign:

Should be located at the lease entrance with the following information:

CAUTION – POTENTIAL POISON GAS
HYDROGEN SULFIDE
NO ADMITTANCE WITHOUT AUTHORIZATION

## Respiratory Equipment:

- Fresh air breathing equipment should be placed at the safe briefing areas and should include the following:
- Two SCBA's at each briefing area.
- Enough air line units to operate safely, anytime the $H_2S$ concentration reaches the IDLH level (100 ppm).
- Cascade system with enough breathing air hose and manifolds to reach the rig floor, the derrickman and the other operation areas.

## Windsocks or Wind Streamers:

- A minimum of two 10" windsocks located at strategic locations so that they may be seen from any point on location.
- Wind streamers (if preferred) should be placed at various locations on the well site to ensure wind consciousness at all times. (Corners of location).

## Hydrogen Sulfide Detector and Alarms:

- 1 - Four channel $H_2S$ monitor with alarms.
- Four (4) sensors located as follows: #1 – Rig Floor, #2 – Bell Nipple, #3 – Shale Shaker, #4 – Mud Pits.
- Gastec or Draeger pump with tubes.
- Sensor test gas.

**Well Condition Sign and Flags:**

The Well Condition Sign w/flags should be placed a minimum of 150' before you enter the location. It should have three (3) color coded flags (green, yellow and red) that will be used to denote the following location conditions:

GREEN – Normal Operating Conditions
YELLOW – Potential Danger
RED – Danger, $H_2S$ Gas Present

**Auxiliary Rescue Equipment:**

- Stretcher
- 2 – 100' Rescue lines.
- First Aid Kit properly stocked.

**Mud Inspection Equipment:**

Garret Gas Train or Hach Tester for inspection of Hydrogen Sulfide in the drilling mud system.

**Fire Extinguishers:**

Adequate fire extinguishers shall be located at strategic locations.

**Blowout Preventer:**

- The well shall have hydraulic BOP equipment for the anticipated BHP.
- The BOP should be tested upon installation.
- BOP, Choke Line and Kill Line will be tested as specified by Operator.

**Confined Space Monitor:**

There should be a portable multi-gas monitor with at least 3 sensors ($O_2$, LEL $H_2S$). This instrument should be used to test the atmosphere of any confined space before entering. It should also be used for atmospheric testing for LEL gas before beginning any type of Hot Work. Proper calibration documentation will need to be provided.

**Communication Equipment:**

- Proper communication equipment such as cell phones or 2-way radios should be available at the rig.
- Radio communication shall be available for communication between the company man's trailer, rig floor and the tool pusher's trailer.

- Communication equipment shall be available on the vehicles.

**Special Control Equipment:**

- Hydraulic BOP equipment with remote control on the ground.
- Rotating head at the surface casing point.

**Evacuation Plan:**

- Evacuation routes should be established prior to spudding the well.
- Should be discussed with all rig personnel.

**Designated Areas:**

***Parking and Visitor area:***

- All vehicles are to be parked at a pre-determined safe distance from the wellhead.
- Designated smoking area.

Safe Briefing Areas:

- Two Safe Briefing Areas shall be designated on either side of the location at the maximum allowable distance from the well bore so they offset prevailing winds or they are at a 180 degree angle if wind directions tend to shift in the area.
- Personal protective equipment should be stored at both briefing areas or if a moveable cascade trailer is used, it should be kept upwind of existing winds. When wind is from the prevailing direction, both briefing areas should be accessible.

***Note:***

- Additional equipment will be available at the Safety Solutions, LLC office.
- Additional personal $H_2S$ monitors are available for all employees on location.
- Automatic Flare Igniters are recommended for installation on the rig.

## CHECK LISTS

### Status Check List

Note: Date each item as they are implemented.

1. Sign at location entrance. _____
2. Two (2) wind socks (in required locations). _____
3. Wind Streamers (if required). _____
4. SCBA's on location for all rig personnel and mud loggers. _____
5. Air packs, inspected and ready for use. _____
6. Spare bottles for each air pack (if required). _____
7. Cascade system for refilling air bottles. _____
8. Cascade system and hose line hook up. _____
9. Choke manifold hooked-up and tested. (before drilling out surface casing.) _____
10. Remote Hydraulic BOP control (hooked-up and tested before drilling out surface casing). _____
11. BOP tested (before drilling out surface casing). _____
12. Mud engineer on location with equipment to test mud for $H_2S$. _____
13. Safe Briefing Areas set-up _____
14. Well Condition sign and flags on location and ready. _____
15. Hydrogen Sulfide detection system hooked -up & tested. _____
16. Hydrogen Sulfide alarm system hooked-up & tested. _____
17. Stretcher on location at Safe Briefing Area. _____
18. 2 – 100' Life Lines on location. _____
19. 1 – 20# Fire Extinguisher in safety trailer. _____
20. Confined Space Monitor on location and tested. _____
21. All rig crews and supervisor trained (as required). _____

22. Access restricted for unauthorized personnel. _____

23. Drills on $H_2S$ and well control procedures. _____

24. All outside service contractors advised of potential $H_2S$ on the well. _____

25. NO SMOKNG sign posted. _____

26. $H_2S$ Detector Pump w/tubes on location. _____

27. 25mm Flare Gun on location w/flares. _____

28. Automatic Flare Igniter installed on rig. _____

## Procedural Check List

Perform the following on each tour:

1. Check fire extinguishers to see that they have the proper charge.
2. Check breathing equipment to insure that they have not been tampered with.
3. Check pressure on the supply air bottles to make sure they are capable of recharging.
4. Make sure all of the Hydrogen Sulfide detection systems are operative.

Perform the following each week:

1. Check each piece of breathing equipment to make sure that they are fully charged and operational. This requires that the air cylinder be opened and the mask assembly be put on and tested to make sure that the regulators and masks are properly working. Negative and Positive pressure should be conducted on all masks.
2. BOP skills.
3. Check supply pressure on BOP accumulator stand-by source.
4. Check all breathing air mask assemblies to see that straps are loosened and turned back, ready for use.
5. Check pressure on cascade air cylinders to make sure they are fully charged and ready to use for refill purposes if necessary.
6. Check all cascade system regulators to make sure they work properly.
7. Perform breathing drills with on-site personnel.
8. Check the following supplies for availability:
    - Stretcher
    - Safety Belts and Ropes
    - Spare air Bottles
    - Spare Oxygen Bottles (if resuscitator required)
    - Gas Detector Pump and Tubes
    - Emergency telephone lists
9. Test the Confined Space Monitor to verify the batteries are good

BRIEFING PROCEDURES

The following scheduled briefings will be held to ensure the effective drilling and operation of this project:

Pre-Spud Meeting

Date: Prior to spudding the well.
Attendance: Drilling Supervisor
Drilling Engineer
Drilling Foreman
Rig Tool Pushers
Rig Drillers
Mud Engineer
All Safety Personnel
Key Service Company Personnel

Purpose: Review and discuss the well program, step-by-step, to insure complete understanding of assignments and responsibilities.

# EVACUATION PLAN

## General Plan

The direct lines of action prepared by SAFETY SOLUTIONS, LLC to protect the public from hazardous gas situations are as follows:

1. When the company approved supervisor (Drilling Foreman, Tool Pusher or Driller) determine that Hydrogen Sulfide 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 the area map.

2. Company safety personnel or designee will notify the appropriate local government agency that a hazardous condition exists and evacuation needs to be implemented.

3. Company approved safety personnel that have been trained in the use of the proper emergency equipment will be utilized.

4. Law enforcement personnel (State Police, Local Police Department, Fire Department, and the Sheriff's Department) will be called to aid in setting up and maintaining road blocks. Also, they will aid in evacuation of the public if necessary.

NOTE: 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.

**See Emergency Action Plan**

## Emergency Assistance Telephone List

| PUBLIC SAFETY: | | 911 or |
|---|---|---|
| Eddy County Sheriff's Department | | (575) 887-7551 |
| Kent Waller | | |
| Fire Department: | | |
| Carlsbad | | (575) 885-3125 |
| Artesia | | (575) 746-5050 |
| Hospitals: | | |
| Carlsbad | | (575) 887-4121 |
| Artesia | | (575) 748-3333 |
| Hobbs | | (575) 392-1979 |
| Dept. of Public Safety/Carlsbad | | (575) 748-9718 |
| Highway Department | | (575) 885-3281 |
| New Mexico Oil Conservation | | (575) 476-3440 |
| U.S. Dept. of Labor | | (575) 887-1174 |

### EOG Resources, Inc.

| | | |
|---|---|---|
| EOG / Midland | Office | (432) 686-3600 |
| **Company Drilling Consultants:** | | |
| Danny Kiser | Cell | (281) 833-2749 |
| **Drilling Engineer** | | |
| Steve Munsell | Office | (432) 686-3609 |
| | Cell | (432) 894-1256 |
| **Operations Manager** | | |
| Joel Pettit | Office | (432) 686-3705 |
| | Cell | (432)894-1226 |
| **Drilling Superintendent** | | |
| Barney Thompson | Office | (432) 686-3678 |
| | Cell | (432) 254-9056 |
| **Field Drilling Superintendent** | | |
| Ron Welch | Cell | (432) 386-0592 |
| **McVay Drilling** | | |
| McVay Drilling / Hobbs | Office | (575) 397-3311 |
| McVay Drilling Rig #4 | Rig | (575) 370-5598 |
| **Tool Pusher:** | | |
| Terry Johnson | Cell | (575) 370-5620 |
| **Safety Consultants** | | |
| Safety Solutions, LLC | Office | (432) 686-8555 |
| Cliff Strasner | Cell | (432) 894-9789 |
| Craig Strasner | Cell | (432) 894-0341 |

## MAPS AND PLATS
## (Maps & Plats Attached)

## Affected Notification List

(within a 65' radius of exposure @100ppm)

The geologic zones that will be encountered during drilling are known to contain hazardous quantities of $H_2S$. The accompanying map illustrates the affected areas of the community. The residents within this radius will be notified via a hand delivered written notice describing the activities, potential hazards, conditions of evacuation, evacuation drill siren alarms and other precautionary measures.

Evacuee Description:
Residents: **THERE ARE NO RESIDENTS WITHIN 3000' ROE.**

Notification Process:

A continuous siren audible to all residence will be activated, signaling evacuation of previously notified and informed residents.

Evacuation Plan:
All evacuees will migrate lateral to the wind direction.

The Oil Company will identify all home bound or highly susceptible individuals and make special evacuation preparations, interfacing with the local and emergency medical service as necessary.

## GENERAL INFORMATION

## Toxic Effects of $H_2S$ Poisoning

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 is colorless and transparent. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is 5-6 times more toxic than Carbon Monoxide. Occupational exposure limits for Hydrogen Sulfide and other gases are compared below in Table 1. Toxicity table for $H_2S$ and physical effects are shown in Table 2.

Table 1
Permissible Exposure Limits of Various Gases

| Common Name | Symbol | Sp. Gravity | TLV | STEL | IDLH |
|---|---|---|---|---|---|
| Hydrogen Cyanide | HCN | .94 | 4.7 ppm | C | |
| Hydrogen Sulfide | $H_2S$ | 1.192 | 10 ppm | 15 ppm | 100 ppm |
| Sulfide Dioxide | $SO_2$ | 2.21 | 2 ppm | 5 ppm | |
| Chlorine | CL | 2.45 | .5 ppm | 1 ppm | |
| Carbon Monoxide | CO | .97 | 25 ppm | 200 ppm | |
| Carbon Dioxide | $CO_2$ | 1.52 | 5000 ppm | 30,000 ppm | |
| Methane | $CH_4$ | .55 | 4.7% LEL | 14% UEL | |

## Definitions

A. TLV – Threshold Limit Value is the concentration employees may be exposed based on a TWA (time weighted average) for eight (8) hours in one day for 40 hours in one (1) week. This is set by ACGIH (American Conference of Governmental Hygienists) and regulated by OSHA.

B. STEL – Short Term Exposure Limit is the 15 minute average concentration an employee may be exposed to providing that the highest exposure never exceeds the OEL (Occupational Exposure Limit). The OEL for $H_2S$ is 19 PPM.

C. IDLH – Immediately Dangerous to Life and Health is the concentration that has been determined by the ACGIH to cause serious health problems or death if exposed to this level. The IDLH for $H_2S$ is 100 PPM.

D. TWA – Time Weighted Average is the average concentration of any chemical or gas for an eight (8) hour period. This is the concentration that any employee may be exposed based on an TWA.

**TABLE 2**

Toxicity Table of $H_2S$

| Percent % | PPM | Physical Effects |
|---|---|---|
| .0001 | 1 | Can smell less than 1 ppm. |
| .001 | 10 | TLV for 8 hours of exposure. |
| .0015 | 15 | STEL for 15 minutes of exposure. |
| .01 | 100 | Immediately Dangerous to Life & Health. Kills sense of smell in 3 to 5 minutes. |
| .02 | 200 | Kills sense of smell quickly, may burn eyes and throat. |
| .05 | 500 | Dizziness, cessation of breathing begins **in a few minutes.** |
| .07 | 700 | Unconscious quickly, death will result if not rescued promptly. |
| .10 | 1000 | Death will result unless rescued promptly. Artificial resuscitation may be necessary. |

## PHYSICAL PROPERTIES OF $H_2S$

The properties of all gases are usually described in the context of seven major categories:

COLOR
ODOR
VAPOR DENSITY
EXPLOSIVE LIMITS
FLAMMABILITY
SOLUBILITY (IN WATER)
BOILING POINT

Hydrogen Sulfide is no exception. Information from these categories should be considered in order to provide a fairly complete picture of the properties of the gas.

### *COLOR – TRANSPARENT*

Hydrogen Sulfide is colorless so it is invisible. This fact simply means that you can't rely on your eyes to detect its presence. In fact that makes this gas extremely dangerous to be around.

### *ODOR – ROTTEN EGGS*

Hydrogen Sulfide has a distinctive offensive smell, similar to "rotten eggs". For this reason it earned its common name "sour gas". However, $H_2S$, even in low concentrations, is so toxic that it attacks and quickly impairs a victim's sense of smell, so it could be fatal to rely on your nose as a detection device.

### *VAPOR DENSITY – SPECIFIC GRAVITY OF 1.192*

Hydrogen Sulfide is heavier than air so it tends to settle in low-lying areas like pits, cellars or tanks. If you find yourself in a location where $H_2S$ is known to exist, protect yourself. Whenever possible, work in an area upwind and keep to higher ground.

### *EXPLOSIVE LIMITS – 4.3% TO 46%*

Mixed with the right proportion of air or oxygen, $H_2S$ will ignite and burn or explode, producing another alarming element of danger besides poisoning.

### *FLAMMABILITY*

Hydrogen Sulfide will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide ($SO_2$), another hazardous gas that irritates the eyes and lungs.

### *SOLUBILITY – 4 TO 1 RATIO WITH WATER*

Hydrogen Sulfide can be dissolved in liquids, which means that it can be present in any container or vessel used to carry or hold well fluids including oil, water, emulsion and sludge. The solubility of $H_2S$ is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing $H_2S$ may release the gas into the air.

### *BOILING POINT – (-76 degrees Fahrenheit)*

Liquefied Hydrogen Sulfide boils at a very low temperature, so it is usually found as a gas.

## RESPIRATOR USE

The Occupational Safety and Health Administration (OSHA) regulate the use of respiratory protection to protect the health of employees. OSHA's requirements are written in the Code of Federal Regulations, Title 29, Part 1910, Section 134, Respiratory Protection. This regulation requires that all employees who might be required to wear respirators, shall complete a OSHA mandated medical evaluation questionnaire. The employee then should be fit tested prior to wearing any respirator while being exposed to hazardous gases.

Written procedures shall be prepared covering safe use of respirators in dangerous atmospheric situations, which might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators.

Respirators shall be inspected prior to and after each use to make sure that the respirator has been properly cleaned, disinfected and that the respirator works properly. The unit should be fully charged prior to being used.

Anyone who may use respirators shall be properly trained in how to properly seal the face piece. They shall wear respirators in normal air and then in a test atmosphere. (Note: Such items as facial hair (beard or sideburns) and eyeglass temple pieces will not allow a proper seal.) Anyone that may be expected to wear respirators should have these items removed before entering a toxic atmosphere. A special mask must be obtained for anyone who must wear eyeglasses. Contact lenses should not be allowed.

Respirators shall be worn during the following conditions:

A. Any employee who works near the top or on the top of any tank unless tests reveal less than 20 ppm of $H_2S$.

B. When breaking out any line where $H_2S$ can reasonably be expected.

C. When sampling air in areas where $H_2S$ may be present.

D. When working in areas where the concentration of $H_2S$ exceeds the Threshold Limit Value for $H_2S$ (10 ppm).

E. At any time where there is a doubt as to the $H_2S$ level in the area to be entered.

## EMERGENCY RESCUE PROCEDURES

***DO NOT PANIC!!!***

**Remain Calm – Think**

1. Before attempting any rescue you must first get out of the hazardous area yourself. Go to a safe briefing area.

2. Sound alarm and activate the 911 system.

3. Put on breathing apparatus. At least two persons should do this, when available use the buddy system.

4. Rescue the victim and return them to a safe briefing area.

5. Perform an initial assessment and begin proper First Aid/CPR procedures.

6. Keep victim lying down with a blanket or coat, etc.., under the shoulders to keep airway open. Conserve body heat and do not leave unattended.

7. If the eyes are affected by $H_2S$, wash them thoroughly with potable water. For slight irritation, cold compresses are helpful.

8. In case a person has only minor exposure and does not lose consciousness totally, it's best if he doesn't return to work until the following day.

9. Any personnel overcome by $H_2S$ should always be examined by medical personnel. They should always be transported to a hospital or doctor.