OCD Artesia

IS-794

# SECRETARY'S POTASH

NM OIL CONSERVATION
ARTESIA DISTRICT
MAR 08 2016
RECEIVED

Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

## APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM-113962 BHL: NMNM-114973

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No. 316024
SALT FORK 3-4 FEDERAL COM 1H

2. Name of Operator APACHE CORPORATION

9. API Well No.
30-015- 43665

3a. Address 303 VETERANS AIRPARK LN #1000
MIDLAND, TX 79705

3b. Phone No. *(include area code)*
432-818-1167

10. Field and Pool, or Exploratory
LEO;BONE SPRING,SOUTH <37920>

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 2364' FSL & 2258' FWL NMNM-113962
At proposed prod. zone 1980' FSL & 330' FWL NMNM-114973

UNORTHODOX LOCATION

11. Sec., T. R. M. or Blk. and Survey or Area
SEC: 3 T19S R30E

14. Distance in miles and direction from nearest town or post office*
19 MILES SOUTH LOCO HILLS, NM

12. County or Parish
EDDY

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) 330'

16. No. of acres in lease
841.14 ACRES

17. Spacing Unit dedicated to this well
240 ACRES

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 60'

19. Proposed Depth
TVD: 8343' Landing: 8462'
MD: 15535'

20. BLM/BIA Bond No. on file
BLM-C0-1463 NATIONWIDE / NMB000736

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
GL: 3410'

22. Approximate date work will start*
As Soon As Approved

23. Estimated duration
~20 DAYS

## 24. Attachments

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

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

25. Signature Serena L Flores
Name *(Printed/Typed)* SORINA L. FLORES
Date 4/22/15

Title
SUPV OF DRILLING SERVICES

Approved by *(Signature)* /s/George MacDonell
Name *(Printed/Typed)*
Date FEB 29 2016

Title FIELD MANAGER
Office BLM-CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

KDD 3/9/2016

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

Witness Surface & Intermediate Casing

Capitan Controlled Water Basin

**UNITED STATES DEPARTMENT OF THE INTERIOR**
**BUREAU OF LAND MANAGEMENT**
**CARLSBAD FIELD OFFICE**
**620 E. GREENE STREET**
**CARLSBAD, NM 88220**

**OPERATOR CERTIFICATION**

I HEARBY CERTIFY THAT I, OR SOMEONE UNDER MY DIRECT SUPERVISION, HAVE INSPECTED THE DRILL SITE AND ACCESS ROUTE PROPOSED HEREIN; THAT I AM FAMILIAR WITH THE CONDITIONS WHICH CURRENTLY EXIST; THAT I HAVE FULL KNOWLEDGE OF STATE AND FEDERAL laws applicable to this operation; that the statements made in the APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 22 day of June 2015

**Well:** SALT FORK 3-4 FEDERAL COM #1H

**Operator Name:** APACHE CORPORATION

**Signature:** _____ **Printed Name:** TIM ORSAK

**Title:** Drilling Engineer Date: 6/22/15

**Email (optional):** tim.orsak@apachecorp.com

**Street or Box:** 303 Veterans Airpark Ln., Ste. 1000

**City, State, Zip Code:** Midland, TX 79705

**Telephone:** 432-818-1630

**Field Representative (if not above signatory):** _____

**Address (if different from above):** _____

**Telephone (if different from above):** _____

**Email (optional):** _____

Agents not directly employed by the operator must submit a letter from the operator authorizing that the agent to act or file this application on their behalf.

# UNITED STATES DEPARTMENT OF THE INTERIOR
# BUREAU OF LAND MANAGEMENT
# CARLSBAD FIELD OFFICE
# 620 E. GREENE STREET
# CARLSBAD, NM 88220

## STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS

Operator Name: APACHE CORPORATION

Street or Box: 303 VETERANS AIRPARK LANE, STE. 1000

City, State: Midland, TX

Zip Code: 79705

The undersigned accepts all applicable terms, conditions, stipulations, and restrictions concerning operations conducted on the leased land or portion thereof, as described below:

Lease No: SALT FORK 3-4 FEDERAL COM 1H

Legal Description of Land: SHL: 2364' FSL & 2258' FWL BHL: 1980' FSL & 330' FWL

Section: 3 Township: 19S Range: 30E

County: EDDY State: NM

Bond Coverage: $150,000

Statewide Oil and Gas Surety Bond, APACHE CORPORATION.

BLM Bond File No.: BLM-CO-1463 NATIONWIDE / NMB-000736

Signature: Bobby L Smith Printed Name: BOBBY L. SMITH

Title: DRILLING MANAGER, PERMIAN REGION

Date: 6/22/15

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| 1 API Number | 2 Pool Code | 3 Pool Name |
|---|---|---|
| 30-015-43665 | 37920 | Leo; BoneSpring, South |

| 4 Property Code | 5 Property Name | 6 Well Number |
|---|---|---|
| 316024 | SALT FORK 3-4 FEDERAL COM | 1H |

| 7 OGRID NO. | 8 Operator Name | 9 Elevation |
|---|---|---|
| 873 | APACHE CORPORATION | 3410' |

## 10 Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet From the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| K | 3 | 19S | 30E | | 2364 | SOUTH | 2258 | WEST | EDDY |

## 11 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 |
|---|---|---|---|---|---|---|---|---|---|
| L | 4 | 19S | 30E | | 1980 | SOUTH | 330 | WEST | EDDY |

| 12 Dedicated Acres | 13 Joint or Infill | 14 Consolidation Code | 15 Order No. |
|---|---|---|---|
| 240 | | | |

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

16

GEODETIC DATA
NAD 27 GRID – NM EAST

SURFACE LOCATION
N: 614393.4 – E: 614689.5

LAT: 32.68851245° N
LONG: 103.96054938° W

BOTTOM LOCATION
N: 613988.5 – E: 607484.9

CORNER DATA
NAD 27 GRID – NM EAST

A: FOUND BRASS CAP BROKEN
N: 612008.2 – E: 607161.1

B: FOUND BRASS CAP BROKEN
N: 614646.9 – E: 607152.9

C: FOUND BRASS CAP "1916"
N: 617304.8 – E: 607145.8

D: FOUND BRASS CAP "1916"
N: 617309.7 – E: 609782.7

E: FOUND BRASS CAP "1916"
N: 617314.6 – E: 612423.5

F: FOUND BRASS CAP "1916"
N: 617319.8 – E: 615062.9

G: FOUND BRASS CAP "1916"
N: 617325.6 – E: 617701.6

H: FOUND BRASS CAP "1916"
N: 614675.4 – E: 617710.9

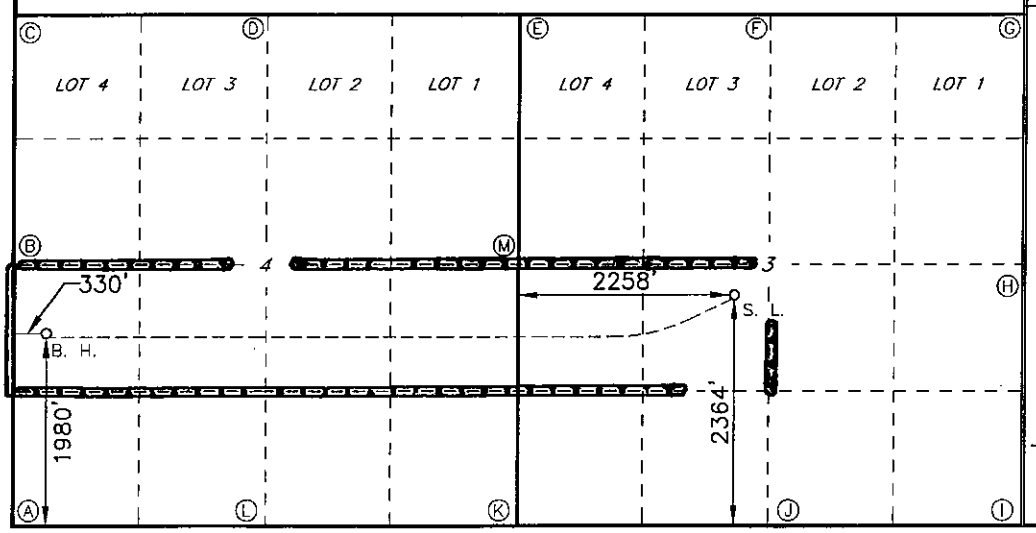
I: FOUND BRASS CAP "1916"
N: 612036.7 – E: 617719.7

J: FOUND ALUM CAP "1916"
N: 612030.8 – E: 615079.2

K: FOUND BRASS CAP "1916"
N: 612024.6 – E: 612439.3

L: FOUND BRASS CAP BROKEN
N: 612018.7 – E: 609798.2

M: FOUND BRASS CAP "1916"
N: 614664.6 – E: 612431.4




## 17 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.*

Sorina L Flores 6/22/15
Signature Date

Sorina L. Flores
Printed Name

Sorina.Flores@apachecorp.com
E-mail Address

## 18 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.*

4-2-2015
Date of Survey

Signature and Seal of Professional Surveyor: Robert M. Howett

ROBERT M. HOWETT
NEW MEXICO
19680
PROFESSIONAL SURVEYOR

19680
Certificate Number

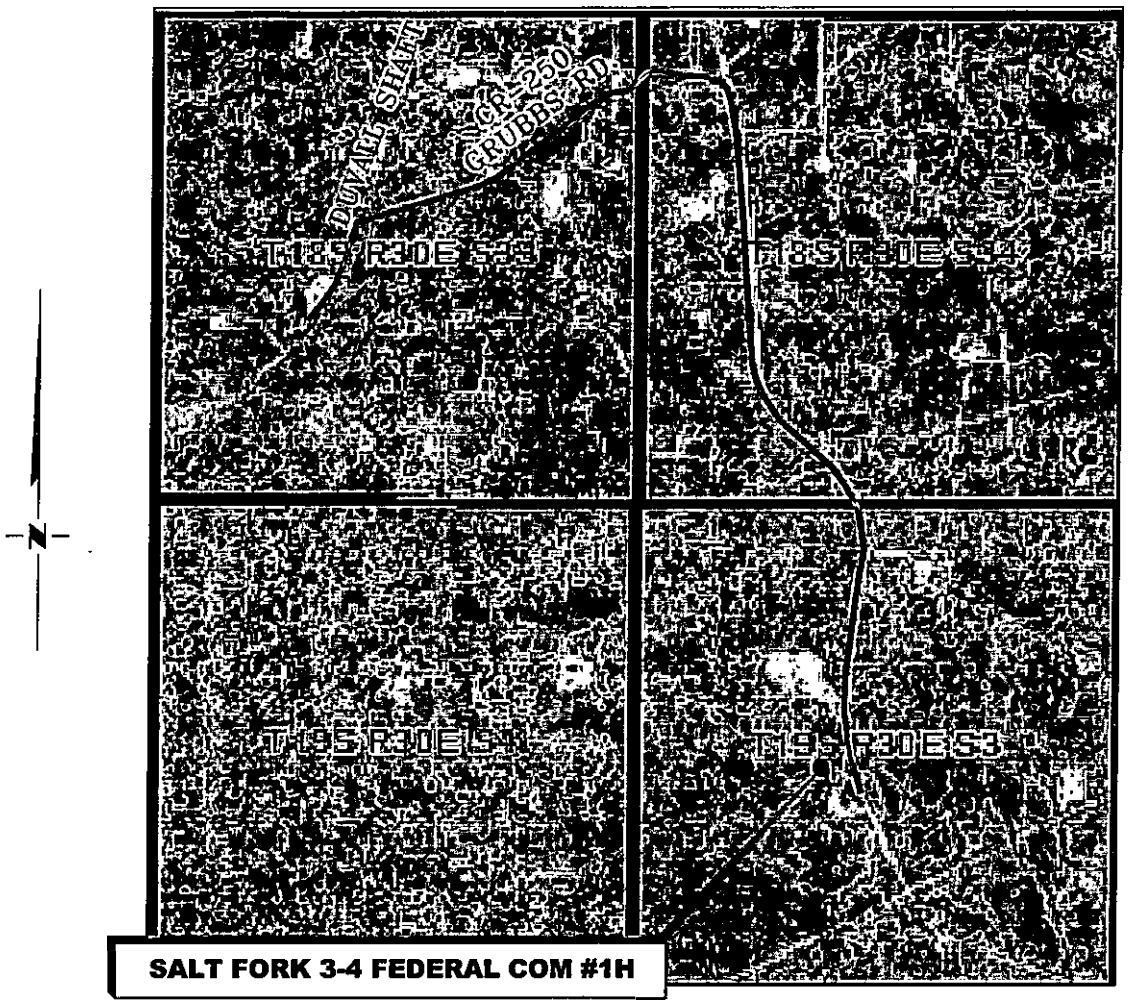
REV 1 ADD "COM" 6/2/15

RRC – Firm No.: TX 10193838 NM 4655451 – Job No.: LS1503113

# VICINITY MAP

Exhibit #1

NOT TO SCALE




*SECTION 3, TWP. 19 SOUTH, RGE. 30 EAST,*
*N. M. P. M., EDDY CO., NEW MEXICO*

OPERATOR: Apache Corporation
LEASE: Salt Fork 3–4 Federal Com
WELL NO.: 1H

LOCATION: 2364' FSL & 2258' FWL
ELEVATION: 3410'



| NO. | REVISION | DATE |
|---|---|---|
| | | |
| | | |
| 1 | Add "COM" | 6/2/15 |
| JOB NO.: LS1503113 | | |
| DWG. NO.: 1503113VM | | |

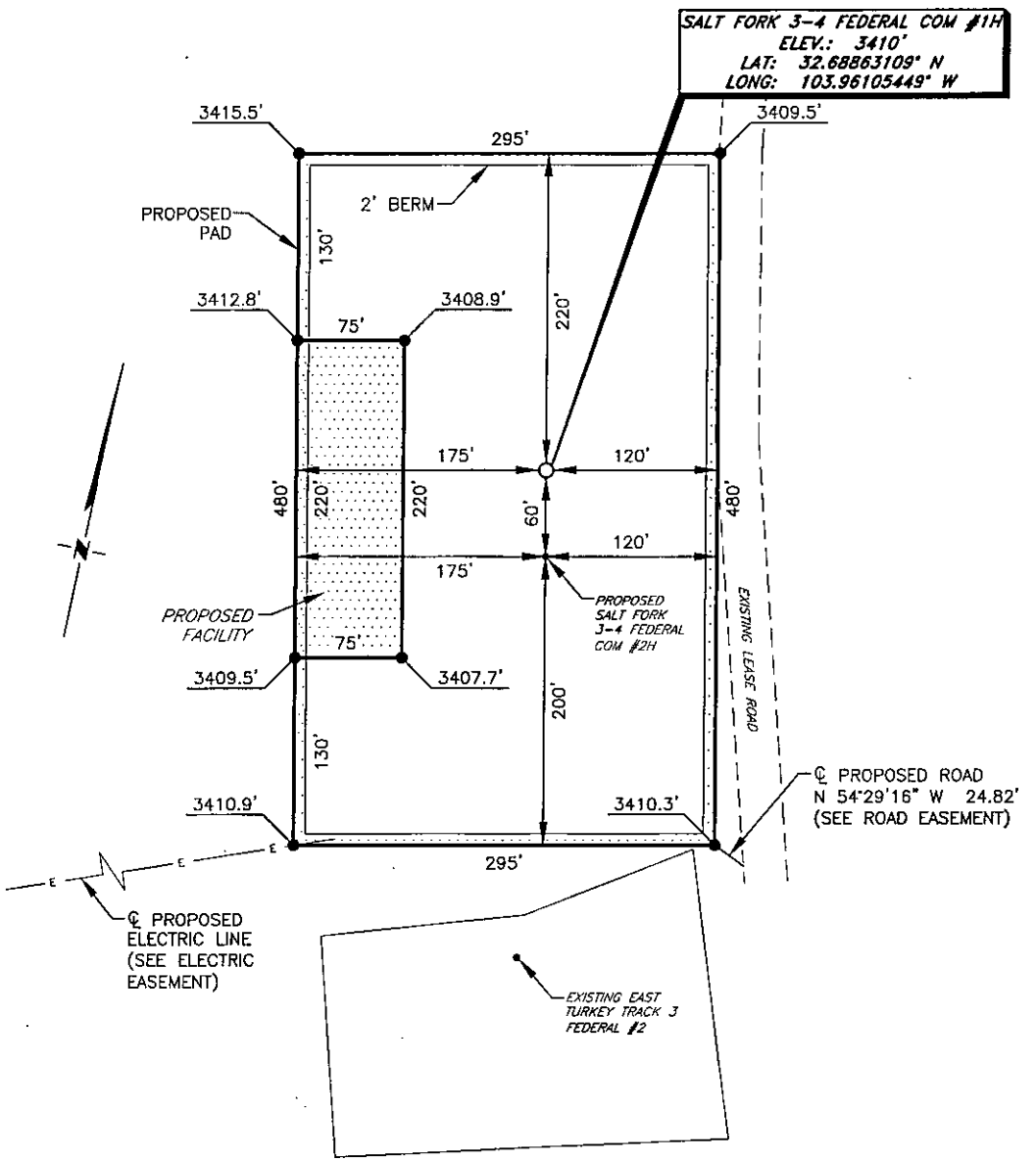
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

| |
|---|
| SCALE: NTS |
| DATE: 4–2–15 |
| SURVEYED BY: BC/AA |
| DRAWN BY: RMH |
| APPROVED BY: RMH |
| SHEET : 1 OF 1 |

Exhibit #1E

# APACHE CORPORATION
## SALT FORK 3-4 FEDERAL COM #1H
## (2364' FSL & 2258' FWL)
SECTION 3, T19S, R30E
N. M. P. M., EDDY COUNTY, NEW MEXICO




*DIRECTIONS TO LOCATION*

*From the intersection of Duvall Shaft Rd. and CR-250 (Grubbs Rd.) Go East on CR-250 approx. 1.0 miles to a lease road on the right;*

*Turn right and go South approx. 1.3 to location on the right.*

SCALE: 1" = 100'
0 50 100

*BEARINGS ARE NAD 27 GRID - NM EAST*
*DISTANCES ARE GROUND*



| NO. | REVISION | DATE |
|---|---|---|
| 1 | Add "COM" | 6/2/15 |

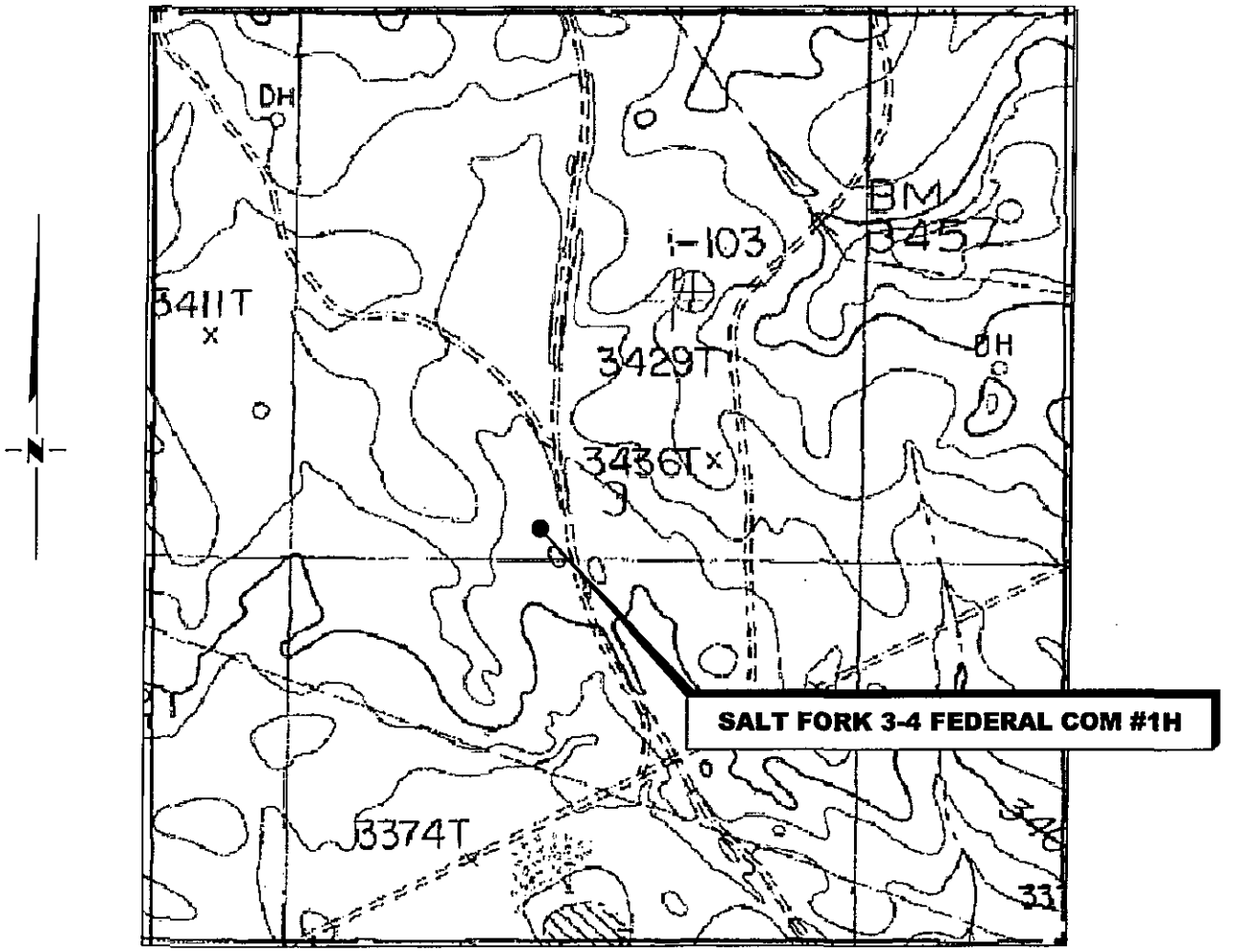
JOB NO.: LS1503113
DWG. NO.: 1503113PAD

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 4-2-2015
SURVEYED BY: BC/AS
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET : 1 OF 1

# LOCATION VERIFICATION MAP




*SECTION 3, TWP. 19 SOUTH, RGE. 30 EAST,*
*N. M. P. M., EDDY CO., NEW MEXICO*

OPERATOR: Apache Corporation
LEASE: Salt Fork 3-4 Federal Com
WELL NO.: 1H
ELEVATION: 3410'

LOCATION: 2364' FSL & 2258' FWL
CONTOUR INTERVAL: 10'
USGS TOPO. SOURCE MAP:
Hackberry Lake, NM (P. E. 1985)



| NO. | REVISION | DATE |
|---|---|---|
| | | |
| | | |
| 1 | Add "COM" | 6/2/15 |

JOB NO.: LS1503113
DWG. NO.: 1503113LVM

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1"=1000'
DATE: 4-2-15
SURVEYED BY: BL/AS
DRAWN BY: RMH
APPROVED BY: RMH
SHEET : 1 OF 1

Exhibit #2

# APACHE CORPORATION - 1 MI

## SALT FORK 3-4 FEDERAL COM #1H

SHL: 2364' FSL & 2258' FWL

BHL: 1980' FSL & 330' FWL

SEC: 3 T19S R30E

0 2,617 5,234

FEET

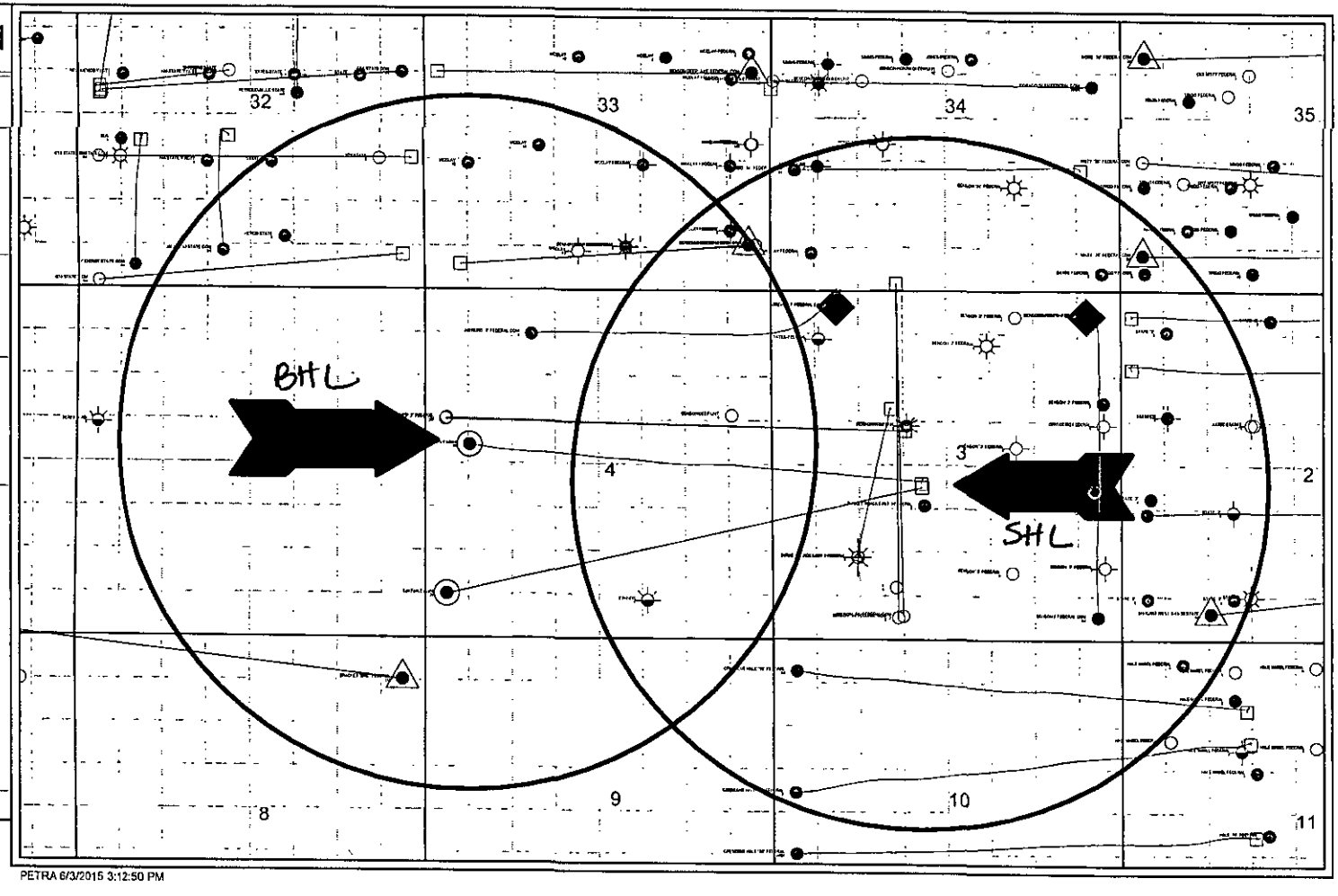
POSTED WELL DATA

Well Name
Well Number

WELL SYMBOLS

- Dry Hole, With Show of Gas
- Dry Hole, With Show of Oil & Gas
- Dry Hole, With Show of Oil
- Dry Hole
- Gas Well
- Oil Well
- Plugged & Abandoned Gas Well
- P&A'd Gas Well
- Pilot Hole
- P&A Oil
- Proposed Location
- Permitted Location

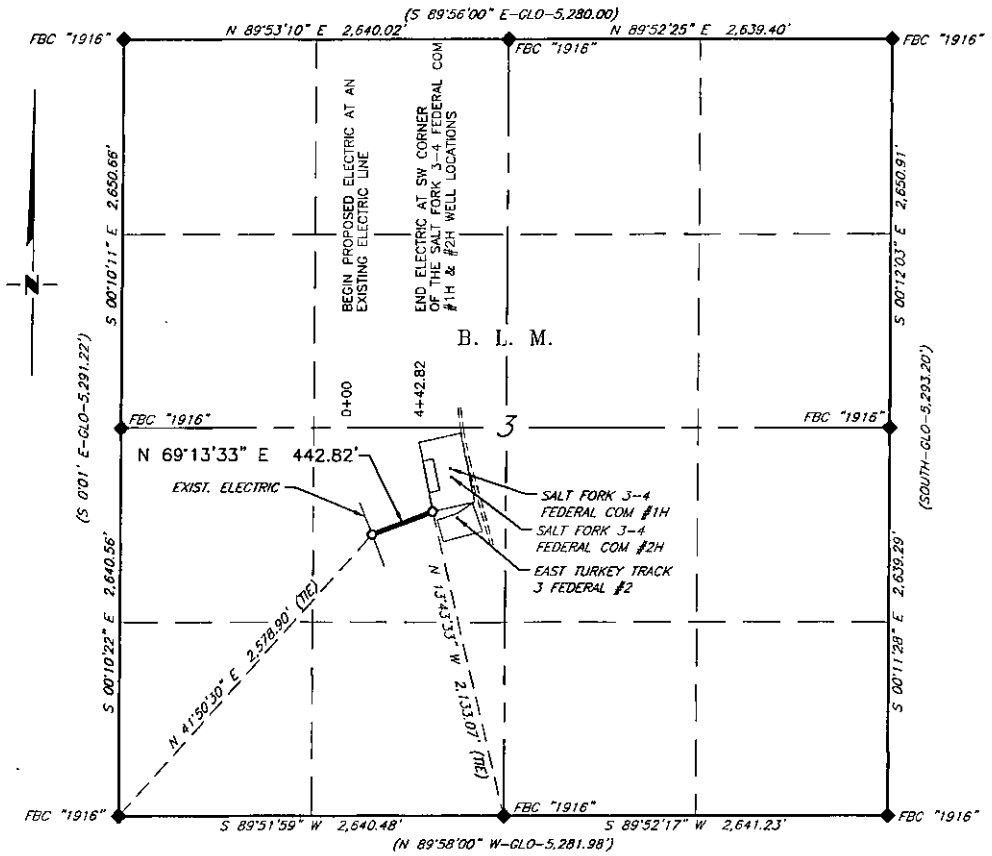
June 3, 2015




PETRA 6/3/2015 3:12:50 PM

Exhibit #1A

# APACHE CORPORATION
## PROPOSED ELECTRIC LINE FOR THE SALT FORK 3-4 FEDERAL COM #1H & #2H WELL LOCATIONS
### SECTION 3, T19S, R30E,
### N. M. P. M., EDDY CO., NEW MEXICO




DESCRIPTION

A strip of land 30 feet wide, being 442.82 feet or 26.838 rods in length, lying in Section 3, Township 19 South, Range 30 East, N. M. P. M., Eddy County, New Mexico, being 15 feet left and 15 feet right of the following described survey of a centerline across B. L. M. lands:

BEGINNING at Engr. Sta. 0+00, a point in the Southwest quarter of Section 3, which bears N 41°50'30" E, 2,578.90 feet from a brass cap, stamped "1916", found for the Southwest corner of Section 3;

Thence N 69°13'33" W, 442.82 feet, to Engr. Sta. 4+42.82, the End of Survey, a point which bears N 13°43'33" W, 2,133.07 feet from a brass cap, stamped "1916, found for the South quarter corner of Section 3.

Said strip of land contains 0.305 acres, more or less and is allocated by forties as follows:

| | | |
|---|---|---|
| NE 1/4 SW 1/4 | 26.838 Rods | 0.305 Acres |

SCALE: 1" = 1000'
0 500' 1000'

BEARINGS ARE GRID NAD 27 NM EAST
DISTANCES ARE HORIZ. GROUND.

LEGEND
( ) RECORD DATA - GLO
◆ FOUND MONUMENT AS NOTED
PROPOSED ELECTRIC LINE

I, R. M. Howett, a N. M. Professional Surveyor, hereby certify that I prepared this plat from an actual survey made on the ground under my direct supervision, said survey and plat meet the Min. Stds. for Land Surveying in the State of N. M. and are true and correct to the best of my knowledge and belief.

Robert M. Howett
Robert M. Howett NM PS 19680

ROBERT M. HOWETT NEW MEXICO 19680 PROFESSIONAL SURVEYOR

Firm No.: TX 10193838 NM 4655451



| NO. | REVISION | DATE |
|---|---|---|
| | | |
| | | |
| 1 | Add "COM" | 6/2/15 |
| JOB NO.: LS1503114 | | |
| DWG. NO.: 1503114EL | | |

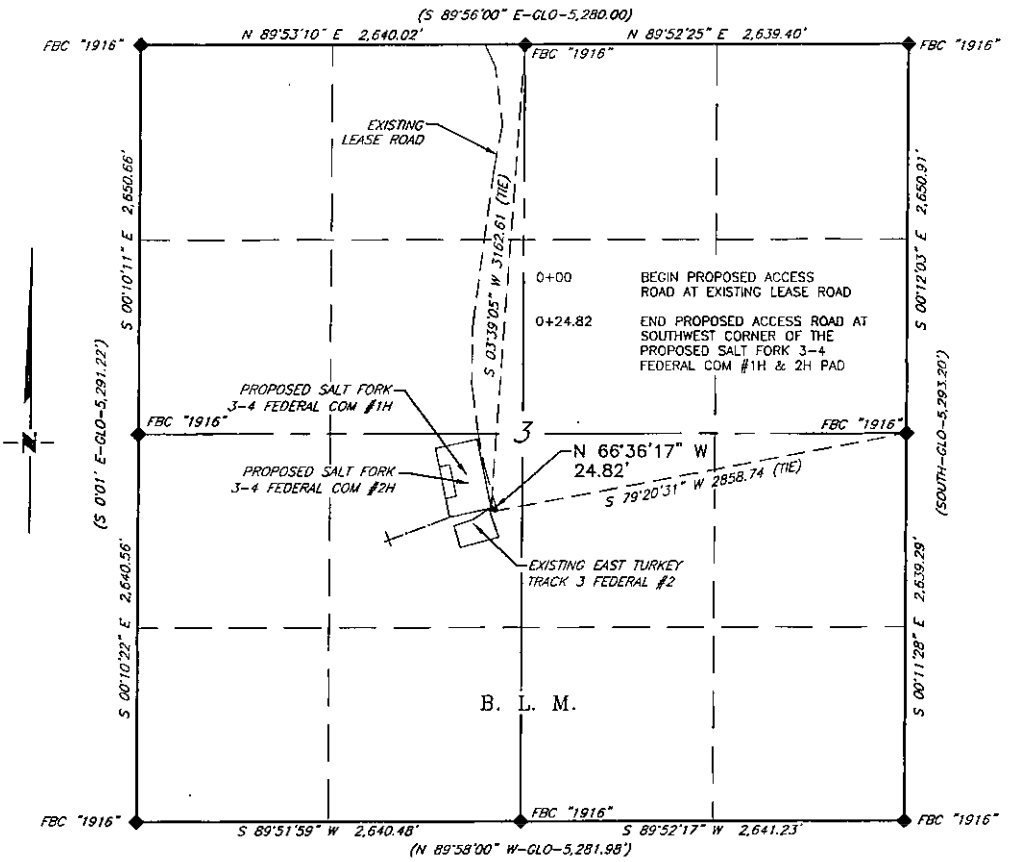
RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

| | |
|---|---|
| SCALE: 1" = 1000' | |
| DATE: 4-2-2015 | |
| SURVEYED BY: BC/AA | |
| DRAWN BY: RMH | |
| APPROVED BY: RMH | |
| SHEET : 1 OF 1 | |

Exhibit #1C

# APACHE CORPORATION
## PROPOSED ACCESS ROAD FOR THE SALT FORK 3-4 FEDERAL COM #1H & #2H
### SECTION 3, T19S, R30E,
### N. M. P. M., EDDY CO., NEW MEXICO




DESCRIPTION

A strip of land 30 feet wide, being 24.82 feet or 1.504 rods in length lying in Section 3, Township 19 South, Range 30 East, N. M. P. M., Eddy County, New Mexico, being 15 feet left and 15 feet right of the following described survey of a centerline across BLM lands;

BEGINNING at Engr. Sta. 0+00, a point in the Southwest quarter of Section 3, which bears S 79°20'31" W, 2,858.74 feet from a brass cap, stamped "1916, found for the East quarter corner of Section 3;

Thence N 54°29'16" W, 24.82 feet, to Engr. Sta. 0+24.82, the End of Survey, a point which bears S 03°39'05" W, 3,162.61 feet from a brass cap, stamped "1916" found for the North quarter corner of Section 3.

Said strip of land contains 0.017 acres, more or less, and is allocated by forties as follows:

| | | |
|---|---|---|
| NE 1/4 SW 1/4 | 1.504 Rods | 0.017 Acres |

SCALE: 1" = 1000'
0 500' 1000'

BEARINGS ARE GRID NAD 27 NM EAST
DISTANCES ARE HORIZ. GROUND.

LEGEND
( ) RECORD DATA - GLO
◆ FOUND MONUMENT AS NOTED
PROPOSED ACCESS ROAD

I, R. M. Howett, a N. M. Professional Surveyor, hereby certify that I prepared this plat from an actual survey made on the ground under my direct supervision, said survey and plat meet the Min. Stds. for Land Surveying in the State of N. M. and are true and correct to the best of my knowledge and belief.

Robert M. Howett
Robert M. Howett NM PS 19680

ROBERT M. HOWETT NEW MEXICO 19680 PROFESSIONAL SURVEYOR

Firm No.: TX 10193838 NM 4655451



| NO. | REVISION | DATE |
|---|---|---|
| 1 | Add "COM" | 6/2/15 |

JOB NO.: LS1503114
DWG. NO.: 1503114RD

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
DATE: 4-2-2015
SURVEYED BY: BC/AS
DRAWN BY: CMJ
APPROVED BY: RMH
SHEET : 1 OF 1

# APACHE CORPORATION
## SALT FORK 3-4 FEDERAL COM 1H

### 1. Geologic Formations

| | | | |
|---|---|---|---|
| TVD : | 8363' LP: 8462' | Pilot hole depth | N/A |
| MD at TD: | 15535' | Deepest expected fresh water: | 115' |

**Back Reef**

| Formation | Depth (TVD) from KB | Water/Mineral Bearing/ Target Zone? | Hazards* |
|---|---|---|---|
| Quaternary Aeolian | Surf | Water | |
| Rustler | 417' | Water | |
| Top of Salt | 603' | Salt | |
| Base of Salt | 1767' | Barren | |
| Yates | 1920' | Oil, Gas, Water | |
| Seven Rivers | 2199' | Oil, Gas, Water | |
| Queen | 2897' | Oil, Gas, Water | |
| Top of Bone Spring | 5886' | Oil, Gas, Water | |
| 1st Bone Spring Sand | 7490' | Oil, Gas, Water | |
| 2nd Bone Spring Sand | 8325' | Oil, Gas, Water | |
| | | | |

**H2S, water flows, loss of circulation, abnormal pressures, etc.*

### 2. Casing Program See COA

| Hole Size | Casing Interval From | Casing Interval To | Csg. Size | Weight (lbs) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17-1/2" | 0' | ~~500~~ 415 | 13-3/8" | 48 | H-40 | STC | 3.23 | 3.37 | 2.66 |
| 12-1/4" | 0' | 2350' | 9-5/8" | 36 | J-55 | STC | 1.65 | 2.72 | 5.50 |
| 7-7/8" " | 0' | 15,535' | 5-1/2" | 20# | L-80 | LTC | 1.21 | 1.23 | 2.88 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

**All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h*

| | Y or N |
|---|---|
| Is casing new? If used, attach certification as required in Onshore Order #1 | Y |
| Does casing meet API specifications? If no, attach casing specification sheet. | Y |
| Is premium or uncommon casing planned? If yes attach casing specification sheet. | N |
| Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria). | Y |
| Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing? | Y |
| | |
| Is well located within Capitan Reef? | N |
| If yes, does production casing cement tie back a minimum of 50' above the Reef? | |
| Is well within the designated 4 string boundary. | N |
| | |
| Is well located in SOPA but not in R-111-P? | Y ~~N~~ |
| If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing? | |

Sel COA

# APACHE CORPORATION
## SALT FORK 3-4 FEDERAL COM 1H

| | |
|---|---|
| Is well located in R-111-P and SOPA? | **Y** |
| If yes, are the first three strings cemented to surface? | Y |
| Is 2nd string set 100' to 600' below the base of salt? | Y |
| | |
| Is well located in high Cave/Karst? | **Y** |
| If yes, are there two strings cemented to surface? | Y |
| (For 2 string wells) If yes, is there a contingency casing if lost circulation occurs? | Y |
| | |
| Is well located in critical Cave/Karst? | **N** |
| If yes, are there three strings cemented to surface? | |

See COA

### 3. Cementing Program See COA

| Csg | # Sks | Wt. lb/ gal | Yld ft3/ sack | $H_20$ gal/sk | 500# Comp. Strength (hours) | Slurry Description |
|---|---|---|---|---|---|---|
| Surf | 370 | 14.8 | 1.34 | 6.31 | 7 | Lead: Class C w/2% CaCl2 (12hr-1,000 psi; 24hr-1,800 psi) |
| Inter | 390 | 12.9 | 1.92 | 9.92 | 8 | Lead: 35/65 Poz C w/6% gel + 5% salt (12hr-750 psi; 24hr-1,100 psi) |
| | 180 | 14.8 | 1.33 | 6.31 | 7 | Tail: Class C (12hr-1500 psi; 24hr-2200 psi) |
| Prod | 980 | 12.6 | 2.05 | 10.95 | 13 | Lead: 35/65 Poz C w/6% gel + 5% salt (12hr-450 psi; 24hr-750 psi) |
| | 1140 | 13.0 | 1.48 | 7.58 | 7 | Tail: TXI Lightweight w/ 1.3% salt + 0.3% retarder (12hr-1,000 psi 24hr-1,900 psi) |

**DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.*

**If water flow or lost circulation is encountered, Apache may 2-stage Interm csg. A DVT may be used in the 9-5/8" csg & ECP may be placed below DVT. Csg slips may be set before cmtg. TD of 12-1/4" @ +/- 2350'*

Low Cement

| Csg | # Sks | Wt. lb/ gal | Yld ft3/ sk | $H_20$ gal/sk | 500# Comp. Strength (hrs) | Slurry Description |
|---|---|---|---|---|---|---|
| Inter | 360 | 14.8 | 1.33 | 6.31 | 7 | Lead: Class C (12hr-1500 psi; 24hr-2200 psi) |
| | ECP/DVT: 1200' | | | | | |
| | 360 | 14.8 | 1.33 | 6.31 | 7 | Tail: Class C (12hr-1500 psi; 24hr-2200 psi) |

| Casing String | TOC | % Excess |
|---|---|---|
| Surface | Surface | 25% |
| Intermediate | Surface | 25% |
| Production | Surface | 25% |

Include Pilot Hole Cementing specs:
**Pilot hole depth : N/A**
**KOP : N/A**

# APACHE CORPORATION
## SALT FORK 3-4 FEDERAL COM 1H

### 4. Pressure Control Equipment See COA

| | |
|---|---|
| | A variance is requested for the use of a diverter on the surface casing. See attached for schematic. |

| BOP installed and tested before drilling which hole? | Size? | Min. Required WP | Type | ✓ | Tested to: |
|---|---|---|---|---|---|
| 12-1/4" | 13-5/8" | 3M | Annular | x | 50% of working pressure |
| | | | Blind Ram | | 2M |
| | | | Pipe Ram | | |
| | | | Double Ram | | |
| | | | Other* | | |
| 9-5/8" | 13-5/8" | 3M | Annular | x | 50% testing pressure |
| | | | Blind Ram | x | See COA ~~2M~~ 3M |
| | | | Pipe Ram | x | |
| | | | Double Ram | | |
| | | | Other* | | |

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

| | |
|---|---|
| | Formation integrity test will be performed per Onshore Order #2.<br>On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i. |
| | A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart. |
| NO | Are anchors required by manufacturer? |
| | A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.<br>• Provide description here<br>See attached schematic. |

# APACHE CORPORATION
## SALT FORK 3-4 FEDERAL COM 1H

### 5. Mud Program

| Depth | | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|---|
| From | To | | | | |
| 0 | Surf. shoe | FW | 8.4-8.6 | 28 | NC |
| Surf csg | Int shoe | BRINE | 10 | 30-32 | NC |
| Int shoe | TD | FW, BRINE | 8.4-9.5 | 30-32 | NC |

**Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.*

| | |
|---|---|
| What will be used to monitor the loss or gain of fluid? | PVT/Pason/Visual Monitoring |

### 6. Logging and Testing Procedures See COA

| Logging, Coring and Testing. | |
|---|---|
| Y | Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM. |
| | No Logs are planned based on well control or offset log information. |
| | Drill stem test? If yes, explain |
| | Coring? If yes, explain |

| Additional logs planned | | Interval |
|---|---|---|
| | Resistivity | Int. shoe to KOP |
| | Density | Int. shoe to KOP |
| | CBL | Production casing |
| Y | Mud log | 8000' to TD |
| | PEX | |

### 7. Drilling Conditions See COA

| Condition | Specify what type and where? |
|---|---|
| BH Pressure at deepest TVD | 3724 psi (TVD x 0.44) |
| Abnormal Temperature | No |

Mitigation measure for abnormal conditions. Describe.

| Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM. | |
|---|---|
| Y | H2S is present |
| Y | H2S Plan attached |

### 8. *Other facets of operation*

Is this a walking operation? NO
Will be pre-setting casing? NO

Attachments
**YES** Directional Plan
___ Other, describe

Apache
EXPLORING WHAT'S POSSIBLE

Project: Eddy County, NM (NAD27 NME)
Site: Salt Fork 3-4 Federal Com
Well: #1H
Wellbore: OH
Design: Plan #1 06-03-15
Rig: Capstar 114

PHOENIX TECHNOLOGY SERVICES

T G M

Azimuths to Grid North
True North: -0.20°
Magnetic North: 7.52°

Magnetic Field
Strength: 48483.4snT
Dip Angle: 60.63°
Date: 6/3/2015
Model: HDGM

## WELL DETAILS

Ground Level: 3410.00

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|
| 0.00 | 0.00 | 614393.40 | 614689.50 | 32° 41' 18.64502 N | 103° 57' 37.97827 W |

## SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target | Annotation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 2 | 7884.59 | 0.00 | 0.00 | 7884.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | KOP, Start 12°/100' Build |
| 3 | 8741.67 | 90.85 | 244.81 | 8462.00 | -209.23 | -438.47 | 12.00 | 244.81 | 449.35 | | LP, Begin 3°/100' Turn |
| 4 | 9575.83 | 90.86 | 269.84 | 8449.34 | -387.81 | -1245.75 | 3.00 | 89.78 | 1265.55 | | Begin 90.86° Inc Hold |
| 5 | 10330.17 | 90.86 | 269.84 | 8438.00 | -389.95 | -1999.99 | 0.00 | 0.00 | 2018.72 | MP1 (Salt Fork 3-4 Fed #1H) | Begin 2°/100' Build |
| 6 | 10335.80 | 90.97 | 269.84 | 8437.91 | -389.96 | -2005.63 | 2.00 | -1.14 | 2024.35 | | Begin 90.97° Inc Hold |
| 7 | 11330.31 | 90.97 | 269.84 | 8421.00 | -392.82 | -2999.99 | 0.00 | 0.00 | 3017.30 | MP2 (Salt Fork 3-4 Fed #1H) | Begin 2°/100' Drop |
| 8 | 11336.07 | 90.86 | 269.84 | 8420.91 | -392.84 | -3005.75 | 2.00 | 180.00 | 3023.05 | | Begin 90.86° Inc Hold |
| 9 | 12330.42 | 90.86 | 269.84 | 8406.00 | -395.69 | -3999.98 | 0.00 | 0.00 | 4015.88 | MP3 (Salt Fork 3-4 Fed #1H) | |
| 10 | 13330.53 | 90.86 | 269.84 | 8391.00 | -398.57 | -4999.98 | 0.00 | 0.00 | 5014.47 | MP4 (Salt Fork 3-4 Fed #1H) | |
| 11 | 14330.65 | 90.86 | 269.84 | 8376.00 | -401.44 | -5999.98 | 0.00 | 0.00 | 6013.05 | MP5 (Salt Fork 3-4 Fed #1H) | Begin 2°/100' Drop |
| 12 | 14342.75 | 90.62 | 269.84 | 8375.84 | -401.47 | -6012.07 | 2.00 | -180.00 | 6025.13 | | Begin 90.62° Inc Hold |
| 13 | 15535.35 | 90.62 | 269.84 | 8363.00 | -404.90 | -7204.60 | 0.00 | 0.00 | 7215.97 | BHL (Salt Fork 3-4 Fed #1H) | TD at 15535.35' MD |

## DESIGN TARGET DETAILS

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Shape |
|---|---|---|---|---|---|---|---|---|
| BHL (Salt Fork 3-4 Fed #1H) | 8363.00 | -404.90 | -7204.60 | 613988.50 | 607484.90 | 32° 41' 14.58100 N | 103° 59' 2.29600 W | Point |
| - plan hits target center | | | | | | | | |
| MP5 (Salt Fork 3-4 Fed #1H) | 8376.00 | -401.44 | -5999.98 | 613991.98 | 608689.52 | 32° 41' 14.57577 N | 103° 58' 48.20052 W | Point |
| - plan hits target center | | | | | | | | |
| MP4 (Salt Fork 3-4 Fed #1H) | 8391.00 | -398.57 | -4999.98 | 613994.83 | 609689.52 | 32° 41' 14.57110 N | 103° 58' 36.40944 W | Point |
| - plan hits target center | | | | | | | | |
| MP3 (Salt Fork 3-4 Fed #1H) | 8406.00 | -395.69 | -3999.98 | 613997.71 | 610689.52 | 32° 41' 14.56612 N | 103° 58' 24.79836 W | Point |
| - plan hits target center | | | | | | | | |
| MP2 (Salt Fork 3-4 Fed #1H) | 8421.00 | -392.82 | -2999.99 | 614000.58 | 611689.51 | 32° 41' 14.56084 N | 103° 58' 13.09728 W | Point |
| - plan hits target center | | | | | | | | |
| MP1 (Salt Fork 3-4 Fed #1H) | 8438.00 | -389.95 | -1999.99 | 614003.45 | 612689.51 | 32° 41' 14.55526 N | 103° 58' 1.39620 W | Point |
| - plan hits target center | | | | | | | | |

## FORMATION TOP DETAILS

| TVDPath | MDPath | Formation | DipAngle | DipDir |
|---|---|---|---|---|
| 417.00 | 417.00 | Rustler | | |
| 603.00 | 603.00 | Top of Salt | | |
| 1787.00 | 1787.00 | Base of Salt | | |
| 1920.00 | 1920.00 | Yates | | |
| 2199.00 | 2199.00 | Seven Rivers | | |
| 2897.00 | 2897.00 | Queen | | |
| 5886.00 | 5886.00 | Top of Bone Springs | | |
| 7490.00 | 7490.00 | 1st Bone Spring Sand | | |
| 8325.00 | 8363.55 | 2nd Bone Spring Sand | | |

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

Local Origin: Well #1H, Grid North

Latitude: 32° 41' 18.64502 N
Longitude: 103° 57' 37.97827 W

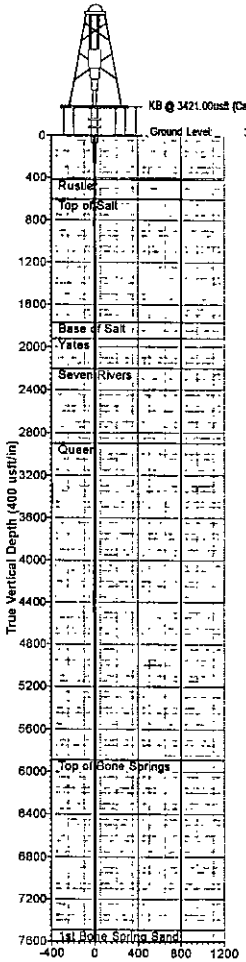
Grid East: 614689.50
Grid North: 614393.40
Scale Factor: 1.000

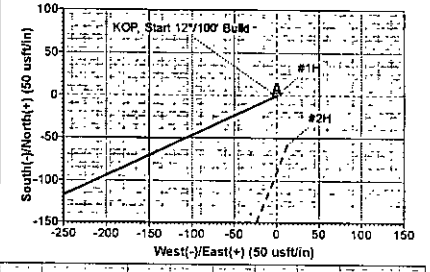
Geomagnetic Model: HDGM
Sample Date: 03-Jun-15
Magnetic Declination: 7.72°
Dip Angle from Horizontal: 60.63°
Magnetic Field Strength: 48483

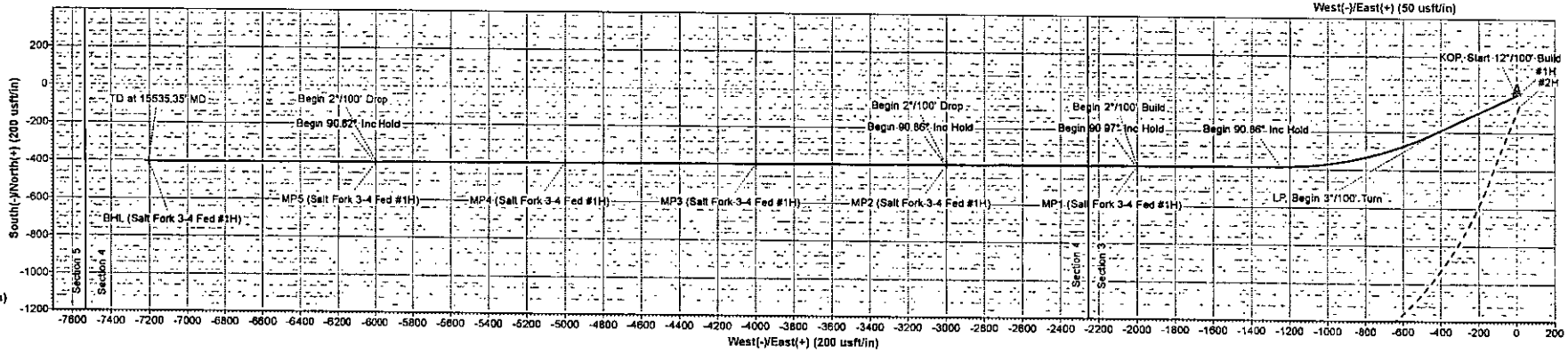
**To convert a Magnetic Direction to a Grid Direction, Add 7.52°**
To convert a Magnetic Direction to a True Direction, Add 7.72° East
To convert a True Direction to a Grid Direction, Subtract 0.20°

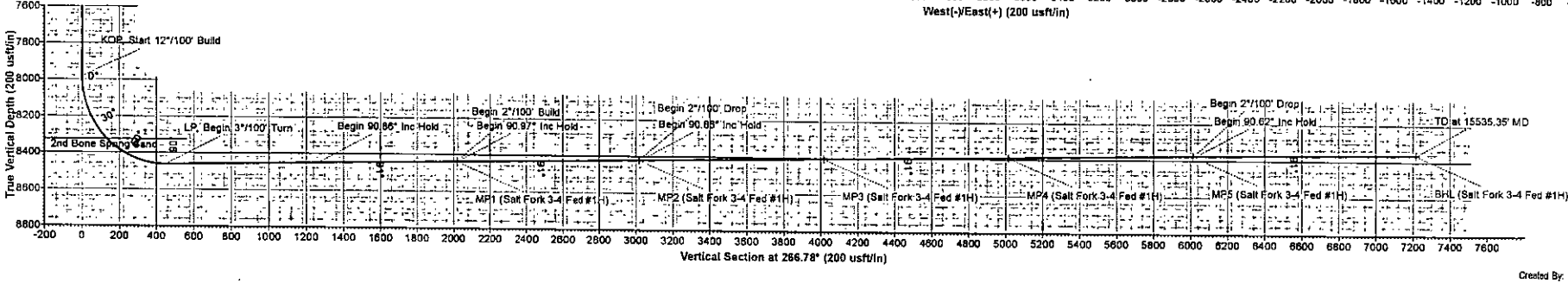
LEGEND

#2H, OH, Plan #1 06-03-15 V0
Plan #1 06-03-15




Created By: Julio Pita Date: 12:35, June 03 2015

Apache
EXPLORING WHAT'S POSSIBLE

# Apache Corporation

**Eddy County, NM (NAD27 NME)**
**Salt Fork 3-4 Federal Com**
**#1H**

**OH**

**Plan: Plan #1 06-03-15**

# Standard Planning Report

**03 June, 2015**

PHOENIX
TECHNOLOGY SERVICES

| | | | |
|---|---|---|---|
| **Database:** | Compass 5000 GCR | **Local Co-ordinate Reference:** | Well #1H |
| **Company:** | Apache Corporation | **TVD Reference:** | KB @ 3421.00usft (Capstar 114) |
| **Project:** | Eddy County, NM (NAD27 NME) | **MD Reference:** | KB @ 3421.00usft (Capstar 114) |
| **Site:** | Salt Fork 3-4 Federal Com | **North Reference:** | Grid |
| **Well:** | #1H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 06-03-15 | | |

**Project** Eddy County, NM (NAD27 NME)

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

**Site** Salt Fork 3-4 Federal Com

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 614,393.40 usft | **Latitude:** | 32° 41' 18.64502 N |
| **From:** | Map | **Easting:** | 614,689.50 usft | **Longitude:** | 103° 57' 37.97827 W |
| **Position Uncertainty:** | 0.00 usft | **Slot Radius:** | 13-3/16 " | **Grid Convergence:** | 0.20 ° |

**Well** #1H

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 usft | **Northing:** | 614,393.40 usft | **Latitude:** | 32° 41' 18.64502 N |
| | **+E/-W** | 0.00 usft | **Easting:** | 614,689.50 usft | **Longitude:** | 103° 57' 37.97827 W |
| **Position Uncertainty** | | 0.00 usft | **Wellhead Elevation:** | 0.00 usft | **Ground Level:** | 3,410.00 usft |

**Wellbore** OH

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | HDGM | 6/3/2015 | 7.72 | 60.63 | 48,483 |

**Design** Plan #1 06-03-15

**Audit Notes:**

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

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 266.78 |

**Plan Sections**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,984.59 | 0.00 | 0.00 | 7,984.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 8,741.67 | 90.85 | 244.81 | 8,462.00 | -206.23 | -438.47 | 12.00 | 12.00 | 0.00 | 244.81 | |
| 9,575.83 | 90.86 | 269.84 | 8,449.34 | -387.81 | -1,245.75 | 3.00 | 0.00 | 3.00 | 89.78 | |
| 10,330.17 | 90.86 | 269.84 | 8,438.00 | -389.95 | -1,999.99 | 0.00 | 0.00 | 0.00 | 0.00 | MP1 (Salt Fork 3-4 Fe |
| 10,335.80 | 90.97 | 269.84 | 8,437.91 | -389.96 | -2,005.63 | 2.00 | 2.00 | -0.04 | -1.14 | |
| 11,330.31 | 90.97 | 269.84 | 8,421.00 | -392.62 | -2,999.99 | 0.00 | 0.00 | 0.00 | 0.00 | MP2 (Salt Fork 3-4 Fe |
| 11,336.07 | 90.86 | 269.84 | 8,420.91 | -392.64 | -3,005.75 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 12,330.42 | 90.86 | 269.84 | 8,406.00 | -395.69 | -3,999.98 | 0.00 | 0.00 | 0.00 | 0.00 | MP3 (Salt Fork 3-4 Fe |
| *13,330.53* | *90.86* | *269.84* | *8,391.00* | *-398.57* | *-4,999.98* | *0.00* | *0.00* | *0.00* | *0.00* | *MP4 (Salt Fork 3-4 Fe* |
| 14,330.65 | 90.86 | 269.84 | 8,376.00 | -401.44 | -5,999.98 | 0.00 | 0.00 | 0.00 | 0.00 | MP5 (Salt Fork 3-4 Fe |
| 14,342.75 | 90.62 | 269.84 | 8,375.84 | -401.47 | -6,012.07 | 2.00 | -2.00 | 0.00 | -180.00 | |
| 15,535.35 | 90.62 | 269.84 | 8,363.00 | -404.90 | -7,204.60 | 0.00 | 0.00 | 0.00 | 0.00 | BHL (Salt Fork 3-4 Fe |

| | | | |
|---|---|---|---|
| **Database:** | Compass 5000 GCR | **Local Co-ordinate Reference:** | Well #1H |
| **Company:** | Apache Corporation | **TVD Reference:** | KB @ 3421.00usft (Capstar 114) |
| **Project:** | Eddy County, NM (NAD27 NME) | **MD Reference:** | KB @ 3421.00usft (Capstar 114) |
| **Site:** | Salt Fork 3-4 Federal Com | **North Reference:** | Grid |
| **Well:** | #1H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 06-03-15 | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 417.00 | 0.00 | 0.00 | 417.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Rustler** | | | | | | | | | |
| 603.00 | 0.00 | 0.00 | 603.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Top of Salt** | | | | | | | | | |
| 1,767.00 | 0.00 | 0.00 | 1,767.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Base of Salt** | | | | | | | | | |
| 1,920.00 | 0.00 | 0.00 | 1,920.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Yates** | | | | | | | | | |
| 2,199.00 | 0.00 | 0.00 | 2,199.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Seven Rivers** | | | | | | | | | |
| 2,897.00 | 0.00 | 0.00 | 2,897.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Queen** | | | | | | | | | |
| 5,886.00 | 0.00 | 0.00 | 5,886.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Top of Bone Springs** | | | | | | | | | |
| 7,490.00 | 0.00 | 0.00 | 7,490.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **1st Bone Spring Sand** | | | | | | | | | |
| 7,984.59 | 0.00 | 0.00 | 7,984.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **KOP, Start 12°/100' Build** | | | | | | | | | |
| 8,000.00 | 1.85 | 244.81 | 8,000.00 | -0.11 | -0.23 | 0.23 | 12.00 | 12.00 | 0.00 |
| 8,100.00 | 13.85 | 244.81 | 8,098.88 | -5.91 | -12.56 | 12.87 | 12.00 | 12.00 | 0.00 |
| 8,200.00 | 25.85 | 244.81 | 8,192.77 | -20.33 | -43.23 | 44.30 | 12.00 | 12.00 | 0.00 |
| 8,300.00 | 37.85 | 244.81 | 8,277.56 | -42.75 | -90.89 | 93.15 | 12.00 | 12.00 | 0.00 |
| 8,363.55 | 45.48 | 244.81 | 8,325.00 | -60.72 | -129.09 | 132.30 | 12.00 | 12.00 | 0.00 |
| **2nd Bone Spring Sand** | | | | | | | | | |
| 8,400.00 | 49.85 | 244.81 | 8,349.54 | -72.18 | -153.47 | 157.28 | 12.00 | 12.00 | 0.00 |
| 8,500.00 | 61.85 | 244.81 | 8,405.58 | -107.34 | -228.22 | 233.88 | 12.00 | 12.00 | 0.00 |
| 8,600.00 | 73.85 | 244.81 | 8,443.21 | -146.69 | -311.87 | 319.61 | 12.00 | 12.00 | 0.00 |
| 8,700.00 | 85.85 | 244.81 | 8,460.80 | -188.51 | -400.79 | 410.73 | 12.00 | 12.00 | 0.00 |
| 8,741.67 | 90.85 | 244.81 | 8,462.00 | -206.23 | -438.47 | 449.35 | 12.00 | 12.00 | 0.00 |
| **LP, Begin 3°/100' Turn** | | | | | | | | | |
| 8,800.00 | 90.86 | 246.56 | 8,461.13 | -230.25 | -491.61 | 503.76 | 3.00 | 0.01 | 3.00 |
| 8,900.00 | 90.86 | 249.56 | 8,459.63 | -267.60 | -584.35 | 598.44 | 3.00 | 0.01 | 3.00 |
| 9,000.00 | 90.87 | 252.56 | 8,458.12 | -300.05 | -678.91 | 694.68 | 3.00 | 0.01 | 3.00 |
| 9,100.00 | 90.88 | 255.56 | 8,456.59 | -327.51 | -775.05 | 792.20 | 3.00 | 0.00 | 3.00 |
| 9,200.00 | 90.88 | 258.56 | 8,455.06 | -349.89 | -872.49 | 890.74 | 3.00 | 0.00 | 3.00 |
| 9,300.00 | 90.88 | 261.56 | 8,453.53 | -367.15 | -970.96 | 990.03 | 3.00 | 0.00 | 3.00 |
| 9,400.00 | 90.87 | 264.56 | 8,452.01 | -379.22 | -1,070.21 | 1,089.80 | 3.00 | 0.00 | 3.00 |
| 9,500.00 | 90.87 | 267.56 | 8,450.49 | -386.09 | -1,169.95 | 1,189.77 | 3.00 | -0.01 | 3.00 |
| 9,575.83 | 90.86 | 269.84 | 8,449.34 | -387.81 | -1,245.75 | 1,265.55 | 3.00 | -0.01 | 3.00 |
| **Begin 90.86° Inc Hold** | | | | | | | | | |
| 9,600.00 | 90.86 | 269.84 | 8,448.98 | -387.88 | -1,269.91 | 1,289.68 | 0.00 | 0.00 | 0.00 |
| 9,700.00 | 90.86 | 269.84 | 8,447.48 | -388.16 | -1,369.90 | 1,389.52 | 0.00 | 0.00 | 0.00 |
| 9,800.00 | 90.86 | 269.84 | 8,445.97 | -388.45 | -1,469.89 | 1,489.37 | 0.00 | 0.00 | 0.00 |
| 9,900.00 | 90.86 | 269.84 | 8,444.47 | -388.73 | -1,569.88 | 1,589.22 | 0.00 | 0.00 | 0.00 |
| 10,000.00 | 90.86 | 269.84 | 8,442.96 | -389.01 | -1,669.87 | 1,689.06 | 0.00 | 0.00 | 0.00 |
| 10,100.00 | 90.86 | 269.84 | 8,441.46 | -389.30 | -1,769.85 | 1,788.91 | 0.00 | 0.00 | 0.00 |
| 10,200.00 | 90.86 | 269.84 | 8,439.96 | -389.58 | -1,869.84 | 1,888.76 | 0.00 | 0.00 | 0.00 |
| 10,300.00 | 90.86 | 269.84 | 8,438.45 | -389.86 | -1,969.83 | 1,988.60 | 0.00 | 0.00 | 0.00 |
| 10,330.17 | 90.86 | 269.84 | 8,438.00 | -389.95 | -1,999.99 | 2,018.72 | 0.00 | 0.00 | 0.00 |
| **Begin 2°/100' Build - MP1 (Salt Fork 3-4 Fed #1H)** | | | | | | | | | |
| 10,335.80 | 90.97 | 269.84 | 8,437.91 | -389.96 | -2,005.63 | 2,024.35 | 2.00 | 2.00 | -0.04 |

| | | | |
|---|---|---|---|
| **Database:** | Compass 5000 GCR | **Local Co-ordinate Reference:** | Well #1H |
| **Company:** | Apache Corporation | **TVD Reference:** | KB @ 3421.00usft (Capstar 114) |
| **Project:** | Eddy County, NM (NAD27 NME) | **MD Reference:** | KB @ 3421.00usft (Capstar 114) |
| **Site:** | Salt Fork 3-4 Federal Com | **North Reference:** | Grid |
| **Well:** | #1H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 06-03-15 | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---|---|---|---|---|---|---|---|---|---|
| **Begin 90.97° Inc Hold** | | | | | | | | | |
| 10,400.00 | 90.97 | 269.84 | 8,436.82 | -390.15 | -2,069.82 | 2,088.45 | 0.00 | 0.00 | 0.00 |
| 10,500.00 | 90.97 | 269.84 | 8,435.12 | -390.44 | -2,169.80 | 2,188.29 | 0.00 | 0.00 | 0.00 |
| 10,600.00 | 90.97 | 269.84 | 8,433.42 | -390.72 | -2,269.79 | 2,288.13 | 0.00 | 0.00 | 0.00 |
| 10,700.00 | 90.97 | 269.84 | 8,431.72 | -391.01 | -2,369.77 | 2,387.98 | 0.00 | 0.00 | 0.00 |
| 10,800.00 | 90.97 | 269.84 | 8,430.02 | -391.30 | -2,469.76 | 2,487.82 | 0.00 | 0.00 | 0.00 |
| 10,900.00 | 90.97 | 269.84 | 8,428.32 | -391.58 | -2,569.74 | 2,587.67 | 0.00 | 0.00 | 0.00 |
| 11,000.00 | 90.97 | 269.84 | 8,426.62 | -391.87 | -2,669.73 | 2,687.51 | 0.00 | 0.00 | 0.00 |
| 11,100.00 | 90.97 | 269.84 | 8,424.92 | -392.16 | -2,769.71 | 2,787.35 | 0.00 | 0.00 | 0.00 |
| 11,200.00 | 90.97 | 269.84 | 8,423.22 | -392.45 | -2,869.70 | 2,887.20 | 0.00 | 0.00 | 0.00 |
| 11,300.00 | 90.97 | 269.84 | 8,421.52 | -392.73 | -2,969.68 | 2,987.04 | 0.00 | 0.00 | 0.00 |
| 11,330.31 | 90.97 | 269.84 | 8,421.00 | -392.82 | -2,999.99 | 3,017.30 | 0.00 | 0.00 | 0.00 |
| **Begin 2°/100' Drop - MP2 (Salt Fork 3-4 Fed #1H)** | | | | | | | | | |
| 11,336.07 | 90.86 | 269.84 | 8,420.91 | -392.84 | -3,005.75 | 3,023.05 | 2.00 | -2.00 | 0.00 |
| **Begin 90.86° Inc Hold** | | | | | | | | | |
| 11,400.00 | 90.86 | 269.84 | 8,419.95 | -393.02 | -3,069.67 | 3,086.89 | 0.00 | 0.00 | 0.00 |
| 11,500.00 | 90.86 | 269.84 | 8,418.45 | -393.31 | -3,169.66 | 3,186.73 | 0.00 | 0.00 | 0.00 |
| 11,600.00 | 90.86 | 269.84 | 8,416.95 | -393.60 | -3,269.65 | 3,286.58 | 0.00 | 0.00 | 0.00 |
| 11,700.00 | 90.86 | 269.84 | 8,415.45 | -393.88 | -3,369.63 | 3,386.43 | 0.00 | 0.00 | 0.00 |
| 11,800.00 | 90.86 | 269.84 | 8,413.95 | -394.17 | -3,469.62 | 3,486.27 | 0.00 | 0.00 | 0.00 |
| 11,900.00 | 90.86 | 269.84 | 8,412.45 | -394.46 | -3,569.61 | 3,586.12 | 0.00 | 0.00 | 0.00 |
| 12,000.00 | 90.86 | 269.84 | 8,410.95 | -394.74 | -3,669.60 | 3,685.97 | 0.00 | 0.00 | 0.00 |
| 12,100.00 | 90.86 | 269.84 | 8,409.45 | -395.03 | -3,769.59 | 3,785.82 | 0.00 | 0.00 | 0.00 |
| 12,200.00 | 90.86 | 269.84 | 8,407.96 | -395.32 | -3,869.58 | 3,885.66 | 0.00 | 0.00 | 0.00 |
| 12,300.00 | 90.86 | 269.84 | 8,406.46 | -395.61 | -3,969.57 | 3,985.51 | 0.00 | 0.00 | 0.00 |
| 12,330.42 | 90.86 | 269.84 | 8,406.00 | -395.69 | -3,999.98 | 4,015.88 | 0.00 | 0.00 | 0.00 |
| **MP3 (Salt Fork 3-4 Fed #1H)** | | | | | | | | | |
| 12,400.00 | 90.86 | 269.84 | 8,404.96 | -395.89 | -4,069.55 | 4,085.36 | 0.00 | 0.00 | 0.00 |
| 12,500.00 | 90.86 | 269.84 | 8,403.46 | -396.18 | -4,169.54 | 4,185.20 | 0.00 | 0.00 | 0.00 |
| 12,600.00 | 90.86 | 269.84 | 8,401.96 | -396.47 | -4,269.53 | 4,285.05 | 0.00 | 0.00 | 0.00 |
| 12,700.00 | 90.86 | 269.84 | 8,400.46 | -396.75 | -4,369.52 | 4,384.90 | 0.00 | 0.00 | 0.00 |
| 12,800.00 | 90.86 | 269.84 | 8,398.96 | -397.04 | -4,469.51 | 4,484.74 | 0.00 | 0.00 | 0.00 |
| 12,900.00 | 90.86 | 269.84 | 8,397.46 | -397.33 | -4,569.50 | 4,584.59 | 0.00 | 0.00 | 0.00 |
| 13,000.00 | 90.86 | 269.84 | 8,395.96 | -397.62 | -4,669.48 | 4,684.44 | 0.00 | 0.00 | 0.00 |
| 13,100.00 | 90.86 | 269.84 | 8,394.46 | -397.90 | -4,769.47 | 4,784.28 | 0.00 | 0.00 | 0.00 |
| 13,200.00 | 90.86 | 269.84 | 8,392.96 | -398.19 | -4,869.46 | 4,884.13 | 0.00 | 0.00 | 0.00 |
| 13,300.00 | 90.86 | 269.84 | 8,391.46 | -398.48 | -4,969.45 | 4,983.98 | 0.00 | 0.00 | 0.00 |
| 13,330.53 | 90.86 | 269.84 | 8,391.00 | -398.57 | -4,999.98 | 5,014.47 | 0.00 | 0.00 | 0.00 |
| **MP4 (Salt Fork 3-4 Fed #1H)** | | | | | | | | | |
| 13,400.00 | 90.86 | 269.84 | 8,389.96 | -398.77 | -5,069.44 | 5,083.83 | 0.00 | 0.00 | 0.00 |
| 13,500.00 | 90.86 | 269.84 | 8,388.46 | -399.05 | -5,169.43 | 5,183.67 | 0.00 | 0.00 | 0.00 |
| 13,600.00 | 90.86 | 269.84 | 8,386.96 | -399.34 | -5,269.41 | 5,283.52 | 0.00 | 0.00 | 0.00 |
| 13,700.00 | 90.86 | 269.84 | 8,385.46 | -399.63 | -5,369.40 | 5,383.37 | 0.00 | 0.00 | 0.00 |
| 13,800.00 | 90.86 | 269.84 | 8,383.96 | -399.91 | -5,469.39 | 5,483.21 | 0.00 | 0.00 | 0.00 |
| 13,900.00 | 90.86 | 269.84 | 8,382.46 | -400.20 | -5,569.38 | 5,583.06 | 0.00 | 0.00 | 0.00 |
| 14,000.00 | 90.86 | 269.84 | 8,380.96 | -400.49 | -5,669.37 | 5,682.91 | 0.00 | 0.00 | 0.00 |
| 14,100.00 | 90.86 | 269.84 | 8,379.46 | -400.78 | -5,769.36 | 5,782.75 | 0.00 | 0.00 | 0.00 |
| 14,200.00 | 90.86 | 269.84 | 8,377.96 | -401.06 | -5,869.34 | 5,882.60 | 0.00 | 0.00 | 0.00 |
| 14,300.00 | 90.86 | 269.84 | 8,376.47 | -401.35 | -5,969.33 | 5,982.45 | 0.00 | 0.00 | 0.00 |
| 14,330.65 | 90.86 | 269.84 | 8,376.01 | -401.44 | -5,999.98 | 6,013.05 | 0.00 | 0.00 | 0.00 |
| **Begin 2°/100' Drop - MP5 (Salt Fork 3-4 Fed #1H)** | | | | | | | | | |
| 14,342.75 | 90.62 | 269.84 | 8,375.84 | -401.47 | -6,012.08 | 6,025.13 | 2.00 | -2.00 | 0.00 |
| **Begin 90.62° Inc Hold** | | | | | | | | | |

| | | | |
|---|---|---|---|
| **Database:** | Compass 5000 GCR | **Local Co-ordinate Reference:** | Well #1H |
| **Company:** | Apache Corporation | **TVD Reference:** | KB @ 3421.00usft (Capstar 114) |
| **Project:** | Eddy County, NM (NAD27 NME) | **MD Reference:** | KB @ 3421.00usft (Capstar 114) |
| **Site:** | Salt Fork 3-4 Federal Com | **North Reference:** | Grid |
| **Well:** | #1H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 06-03-15 | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---|---|---|---|---|---|---|---|---|---|
| 14,400.00 | 90.62 | 269.84 | 8,375.23 | -401.64 | -6,069.32 | 6,082.30 | 0.00 | 0.00 | 0.00 |
| 14,500.00 | 90.62 | 269.84 | 8,374.15 | -401.93 | -6,169.32 | 6,182.15 | 0.00 | 0.00 | 0.00 |
| 14,600.00 | 90.62 | 269.84 | 8,373.07 | -402.21 | -6,269.31 | 6,282.00 | 0.00 | 0.00 | 0.00 |
| 14,700.00 | 90.62 | 269.84 | 8,372.00 | -402.50 | -6,369.31 | 6,381.86 | 0.00 | 0.00 | 0.00 |
| 14,800.00 | 90.62 | 269.84 | 8,370.92 | -402.79 | -6,469.30 | 6,481.71 | 0.00 | 0.00 | 0.00 |
| 14,900.00 | 90.62 | 269.84 | 8,369.84 | -403.07 | -6,569.29 | 6,581.56 | 0.00 | 0.00 | 0.00 |
| 15,000.00 | 90.62 | 269.84 | 8,368.77 | -403.36 | -6,669.29 | 6,681.41 | 0.00 | 0.00 | 0.00 |
| 15,100.00 | 90.62 | 269.84 | 8,367.69 | -403.65 | -6,769.28 | 6,781.26 | 0.00 | 0.00 | 0.00 |
| 15,200.00 | 90.62 | 269.84 | 8,366.61 | -403.94 | -6,869.27 | 6,881.12 | 0.00 | 0.00 | 0.00 |
| 15,300.00 | 90.62 | 269.84 | 8,365.53 | -404.22 | -6,969.27 | 6,980.97 | 0.00 | 0.00 | 0.00 |
| 15,400.00 | 90.62 | 269.84 | 8,364.46 | -404.51 | -7,069.26 | 7,080.82 | 0.00 | 0.00 | 0.00 |
| 15,500.00 | 90.62 | 269.84 | 8,363.38 | -404.80 | -7,169.26 | 7,180.67 | 0.00 | 0.00 | 0.00 |
| 15,535.35 | 90.62 | 269.84 | 8,363.00 | -404.90 | -7,204.60 | 7,215.97 | 0.00 | 0.00 | 0.00 |

**TD at 15535.35' MD - BHL (Salt Fork 3-4 Fed #1H)**

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| BHL (Salt Fork 3-4 Fed # - plan hits target center - Point | 0.00 | 0.00 | 8,363.00 | -404.90 | -7,204.60 | 613,988.50 | 607,484.90 | 32° 41' 14.88100 N | 103° 59' 2.29600 W |
| MP5 (Salt Fork 3-4 Fed : - plan misses target center by 0.01usft at 14330.65usft MD (8376.01 TVD, -401.44 N, -5999.98 E) - Point | 0.00 | 0.00 | 8,376.00 | -401.44 | -5,999.98 | 613,991.96 | 608,689.53 | 32° 41' 14.87577 N | 103° 58' 48.20052 W |
| MP4 (Salt Fork 3-4 Fed : - plan hits target center - Point | 0.00 | 0.00 | 8,391.00 | -398.57 | -4,999.98 | 613,994.84 | 609,689.52 | 32° 41' 14.87110 N | 103° 58' 36.49944 W |
| MP3 (Salt Fork 3-4 Fed : - plan hits target center - Point | 0.00 | 0.00 | 8,406.00 | -395.69 | -3,999.98 | 613,997.71 | 610,689.52 | 32° 41' 14.86612 N | 103° 58' 24.79836 W |
| MP2 (Salt Fork 3-4 Fed : - plan hits target center - Point | 0.00 | 0.00 | 8,421.00 | -392.82 | -2,999.99 | 614,000.58 | 611,689.52 | 32° 41' 14.86084 N | 103° 58' 13.09728 W |
| MP1 (Salt Fork 3-4 Fed : - plan hits target center - Point | 0.00 | 0.00 | 8,438.00 | -389.95 | -1,999.99 | 614,003.46 | 612,689.51 | 32° 41' 14.85526 N | 103° 58' 1.39620 W |

| | | | |
|---|---|---|---|
| **Database:** | Compass 5000 GCR | **Local Co-ordinate Reference:** | Well #1H |
| **Company:** | Apache Corporation | **TVD Reference:** | KB @ 3421.00usft (Capstar 114) |
| **Project:** | Eddy County, NM (NAD27 NME) | **MD Reference:** | KB @ 3421.00usft (Capstar 114) |
| **Site:** | Salt Fork 3-4 Federal Com | **North Reference:** | Grid |
| **Well:** | #1H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #1 06-03-15 | | |

**Formations**

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 417.00 | 417.00 | Rustler | | | |
| 603.00 | 603.00 | Top of Salt | | | |
| 1,767.00 | 1,767.00 | Base of Salt | | | |
| 1,920.00 | 1,920.00 | Yates | | | |
| 2,199.00 | 2,199.00 | Seven Rivers | | | |
| 2,897.00 | 2,897.00 | Queen | | | |
| 5,886.00 | 5,886.00 | Top of Bone Springs | | | |
| 7,490.00 | 7,490.00 | 1st Bone Spring Sand | | | |
| 8,363.55 | 8,325.00 | 2nd Bone Spring Sand | | | |

**Plan Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates +N/-S (usft) | Local Coordinates +E/-W (usft) | Comment |
|---|---|---|---|---|
| 7,984.59 | 7,984.59 | 0.00 | 0.00 | KOP, Start 12°/100' Build |
| 8,741.67 | 8,462.00 | -206.23 | -438.47 | LP, Begin 3°/100' Turn |
| 9,575.83 | 8,449.34 | -387.81 | -1,245.75 | Begin 90.86° Inc Hold |
| 10,330.17 | 8,438.00 | -389.95 | -1,999.99 | Begin 2°/100' Build |
| 10,335.80 | 8,437.91 | -389.96 | -2,005.63 | Begin 90.97° Inc Hold |
| 11,330.31 | 8,421.00 | -392.82 | -2,999.99 | Begin 2°/100' Drop |
| 11,336.07 | 8,420.91 | -392.84 | -3,005.75 | Begin 90.86° Inc Hold |
| 14,330.65 | 8,376.00 | -401.44 | -5,999.98 | Begin 2°/100' Drop |
| 14,342.75 | 8,375.84 | -401.47 | -6,012.08 | Begin 90.62° Inc Hold |
| 15,535.35 | 8,363.00 | -404.90 | -7,204.60 | TD at 15535.35' MD |

## APACHE BOP AND CHOKE MANIFOLD SCHEMATIC

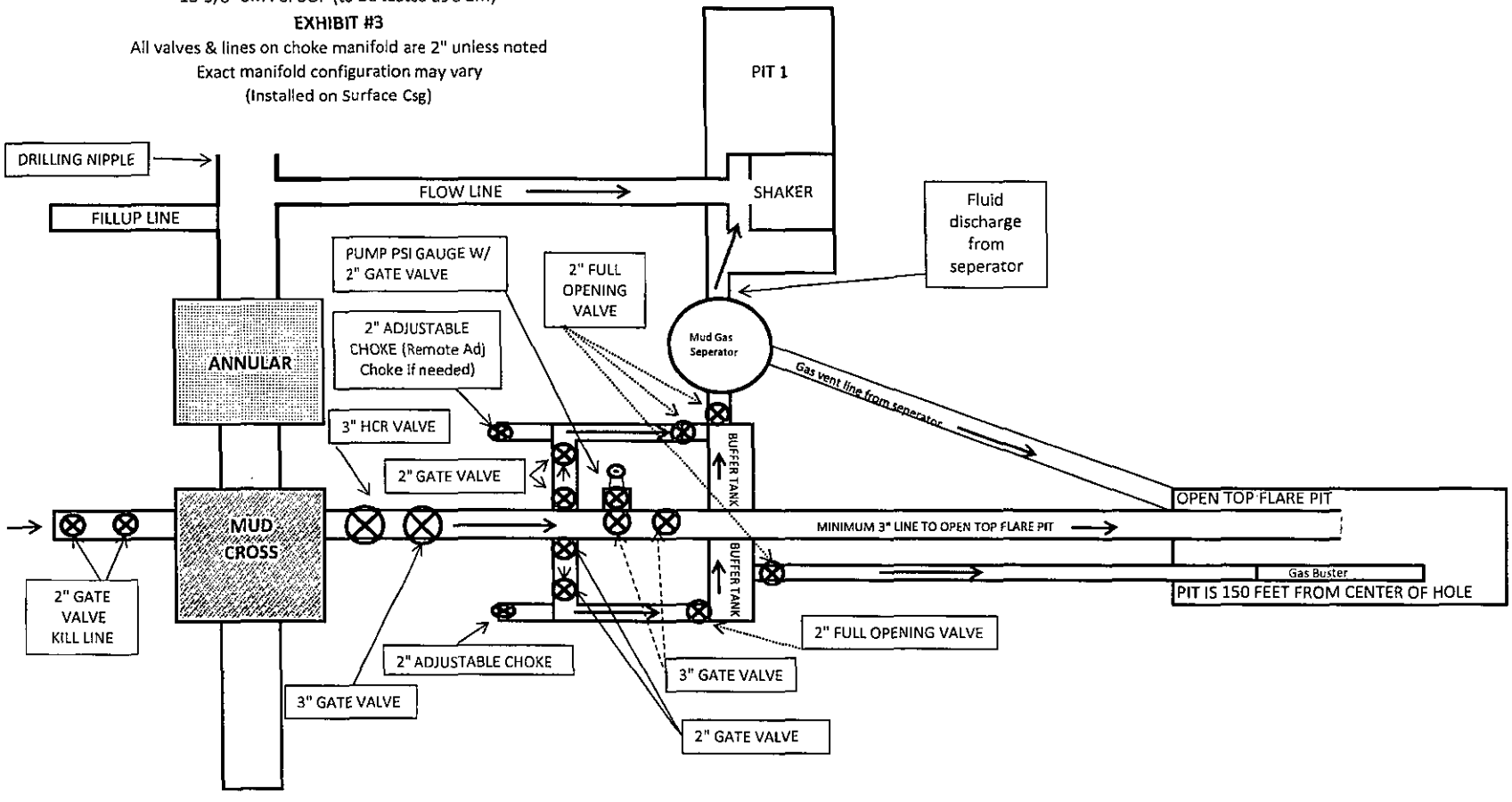
13-5/8" 3M PSI BOP (to be tested as a 2M)

**EXHIBIT #3**

All valves & lines on choke manifold are 2" unless noted

Exact manifold configuration may vary

(Installed on Surface Csg)




*** If H2S is encountered in quantities greater than 100ppm, Apache will shut in well & install a remote operated choke ***

## APACHE BOP AND CHOKE MANIFOLD SCHEMATIC

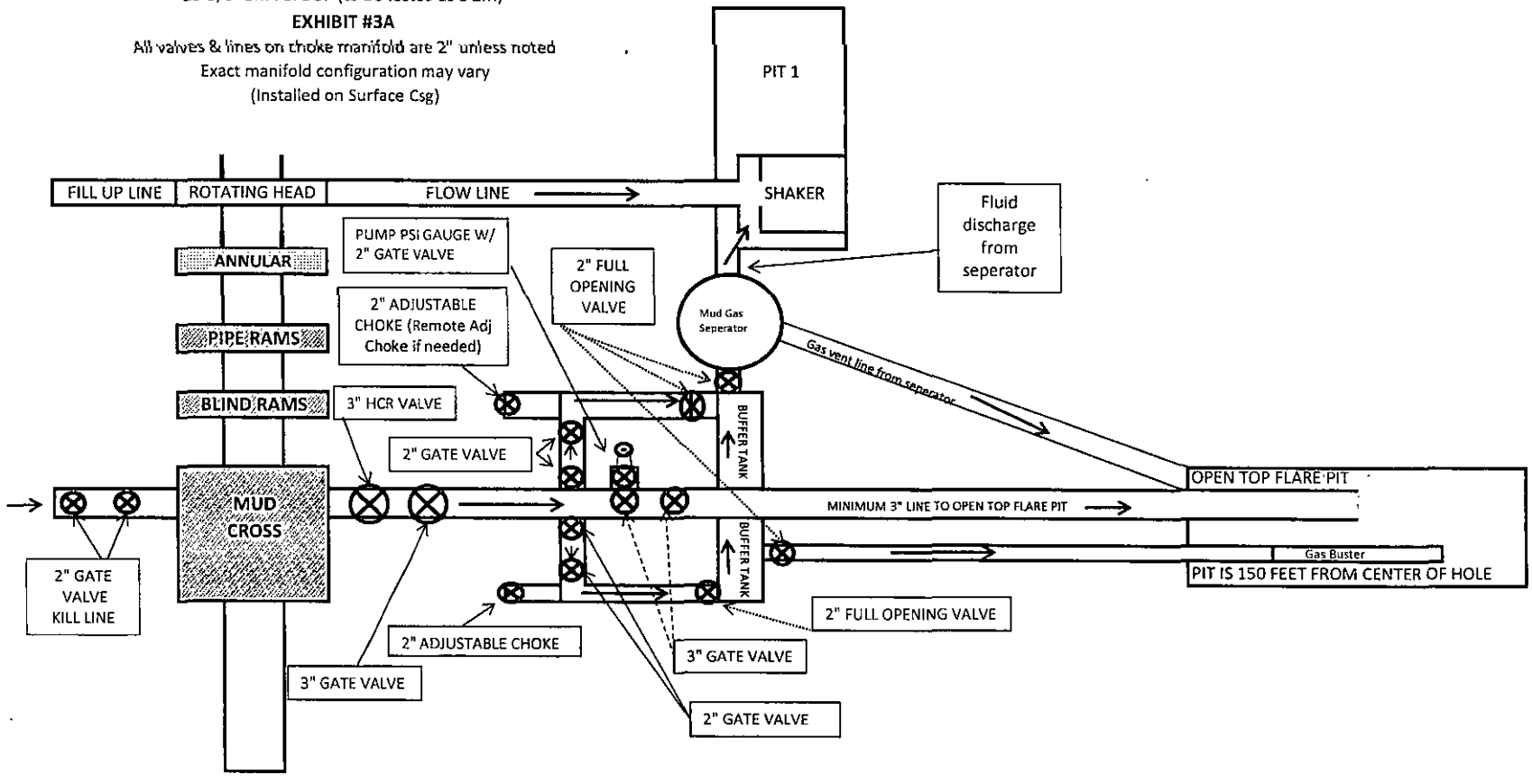
13-5/8" 3M PSI BOP (to be tested as a 2M)

**EXHIBIT #3A**

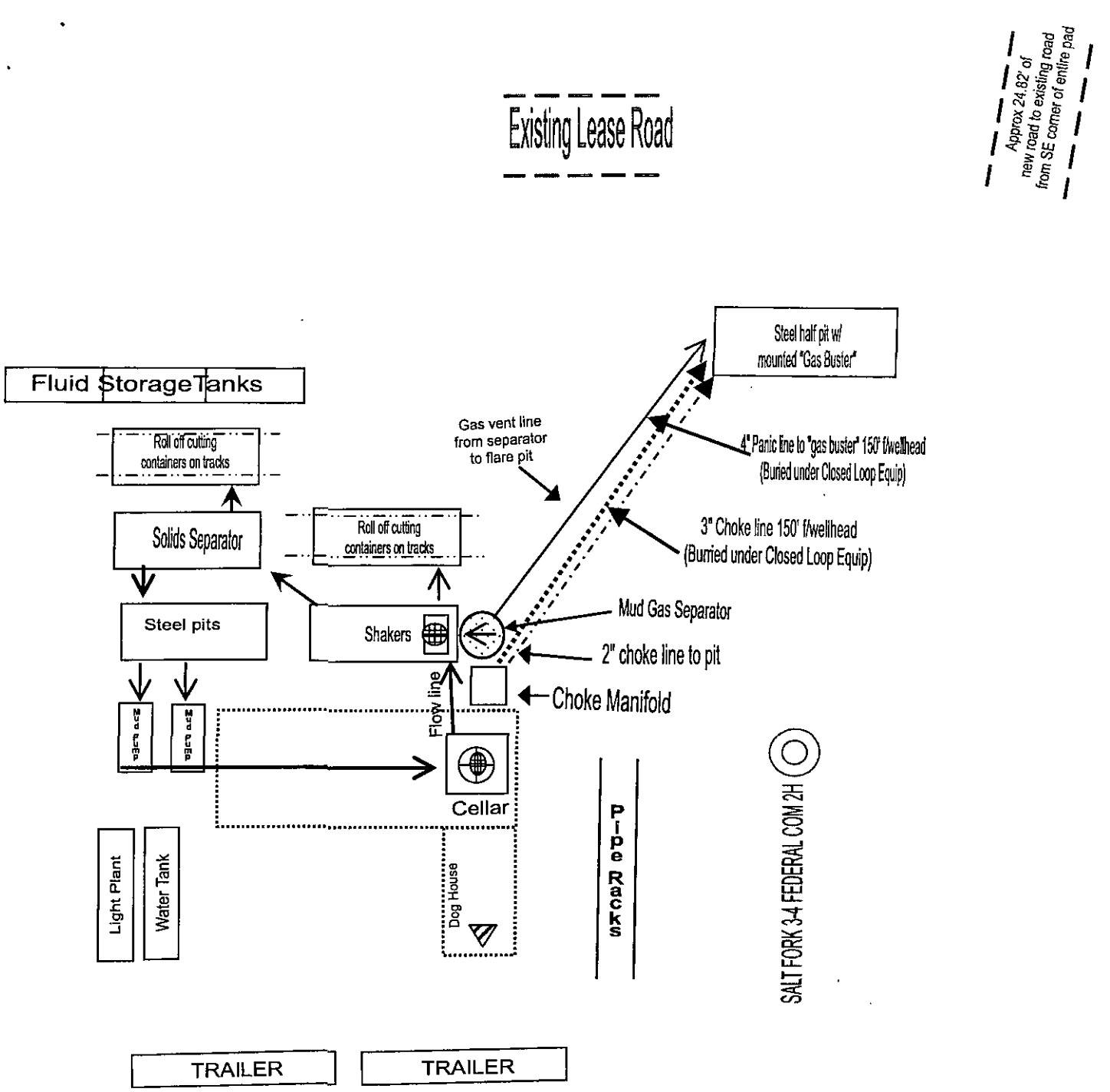
All valves & lines on choke manifold are 2" unless noted

Exact manifold configuration may vary

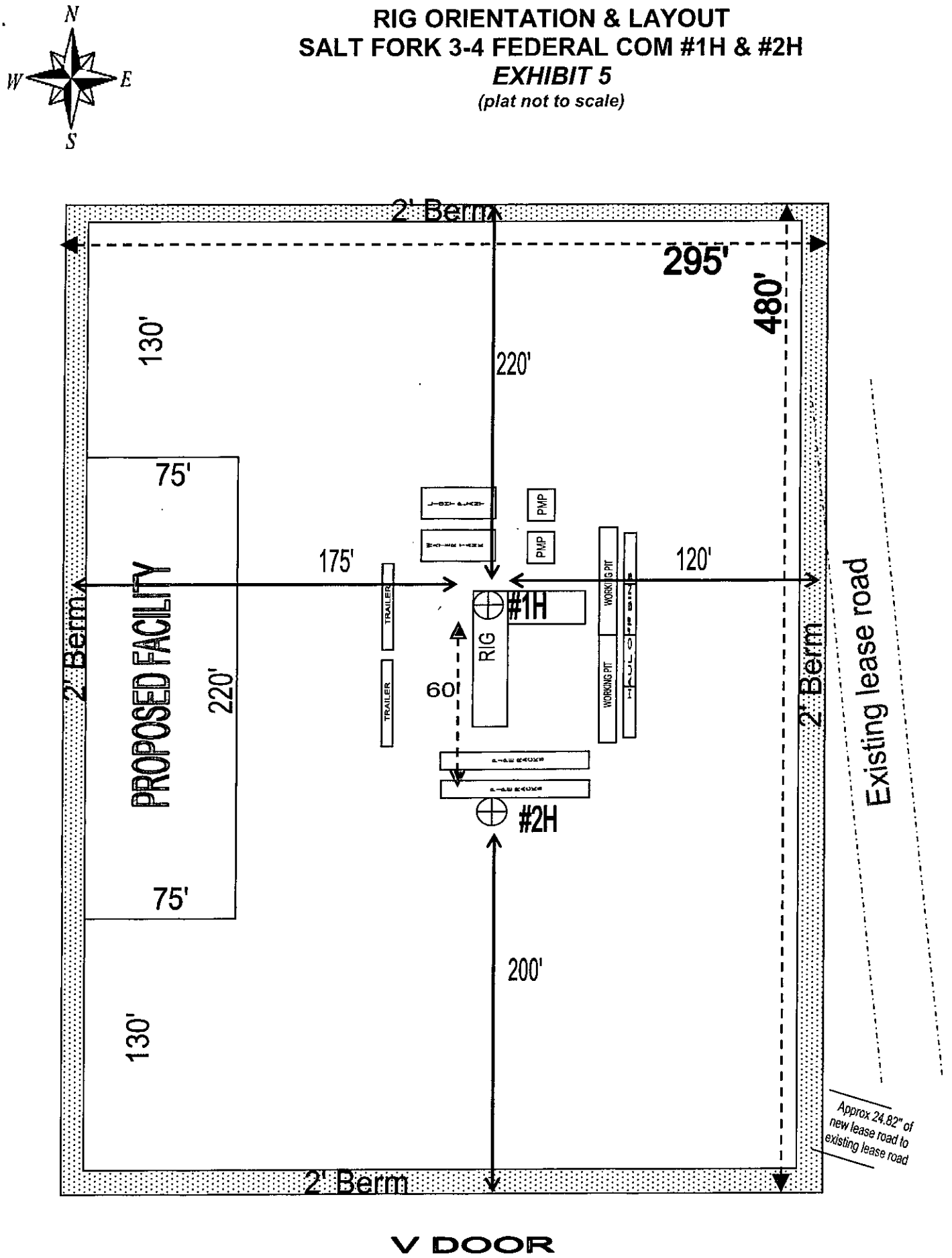
(Installed on Surface Csg)




*** If H2S is encountered in quantities greater than 100ppm, Apache will shut in well & install a remote operated choke ***


Existing Lease Road
Approx 24.82' of new road to existing road from SE corner of entire pad
Steel half pit w/ mounted "Gas Buster"
Fluid StorageTanks
Gas vent line from separator to flare pit
4" Panic line to "gas buster" 150' f/wellhead (Buried under Closed Loop Equip)
Roll off cutting containers on tracks
Solids Separator
Roll off cutting containers on tracks
3" Choke line 150' f/wellhead (Buried under Closed Loop Equip)
Steel pits
Shakers
Mud Gas Separator
2" choke line to pit
Choke Manifold
Flow line
Cellar
Light Plant
Water Tank
Dog House
Pipe Racks
SALT FORK 3-4 FEDERAL COM 2H
TRAILER
TRAILER
Apache
Closed Loop Equipment Diagram
Exhibit 4
(Plat not to scale)
N
E
S
W
SALT FORK 3-4 FEDERAL COM 1H & 2H

# RIG ORIENTATION & LAYOUT
# SALT FORK 3-4 FEDERAL COM #1H & #2H
## *EXHIBIT 5*
*(plat not to scale)*

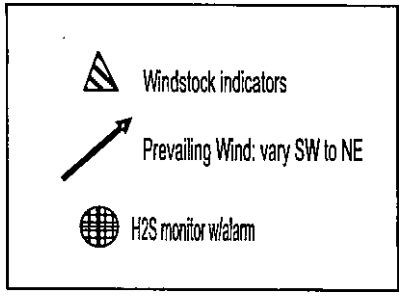


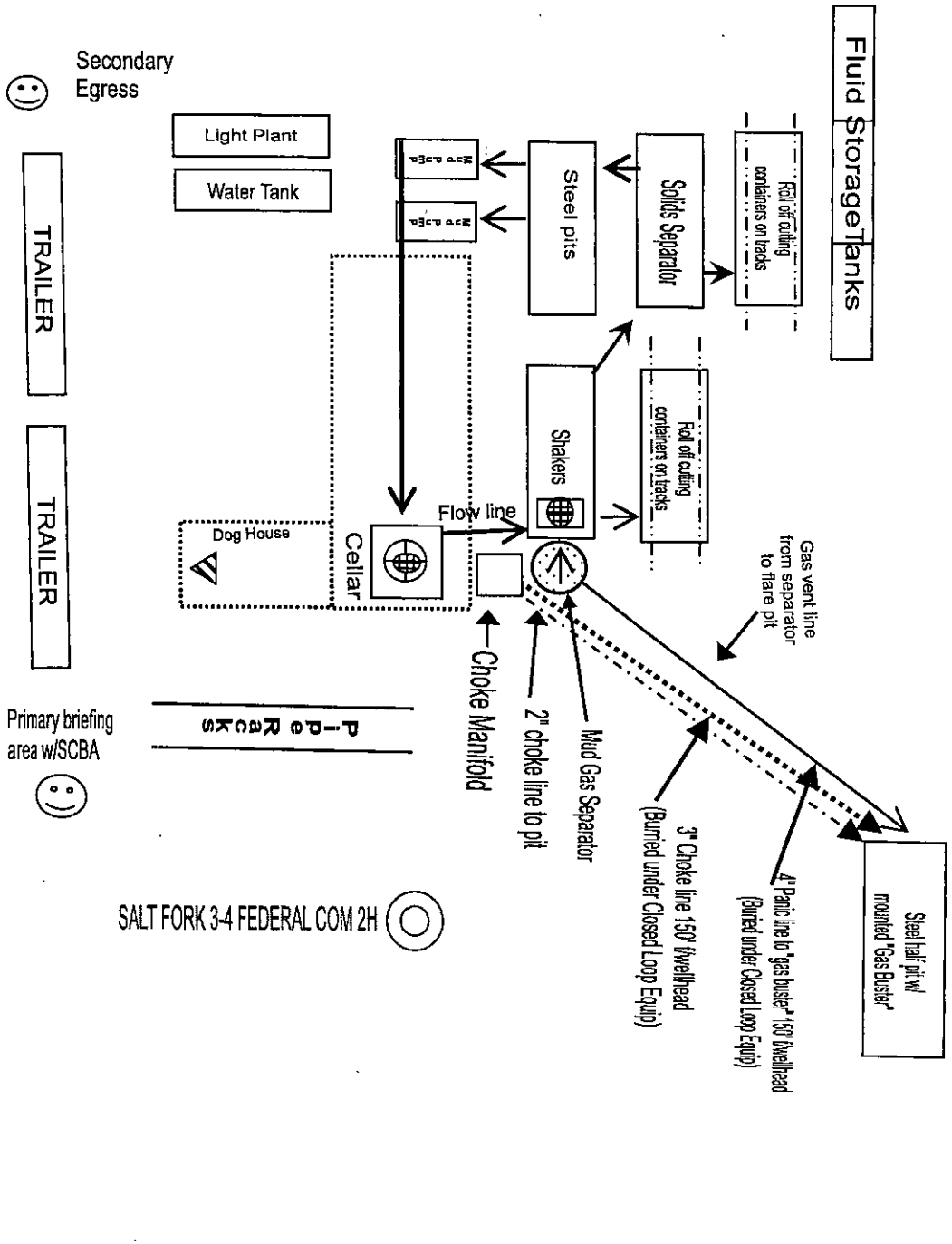
Apache

Drilling Location
H2S Safety Equipment Diagram
Exhibit 6
(plat not to scale)

N
W E
S

# SALT FORK 3-4 FEDERAL COM 1H & 2H



# HYDROGEN SULFIDE ($H_2S$) DRILLING OPERATIONS PLAN

## Hydrogen Sulfide Training:

All regularly assigned personnel, contracted or employed by Apache Corporation will receive training from qualified instructor(s) in the following areas prior to commencing drilling possible hydrogen sulfide bearing formations in this well:

- The hazards and characteristics of hydrogen sulfide ($H_2S$)
- The proper use and maintenance of personal protective equipment and life support systems.
- The proper use of $H_2S$ detectors, alarms, warning systems, briefing area, evacuation procedures & prevailing winds.
- The proper techniques for first aid and rescue procedures.

## Supervisory personnel will be trained in the following areas:

- The effects of $H_2S$ on metal components. If high tensile tubulars are to be utilized, personnel will be trained in their special maintenance requirements.
- Corrective action & shut-in procedures when drilling or reworking a well & blowout prevention / well control procedures.
- The contents and requirements of the $H_2S$ Drilling Operations Plan

There will be an initial training session just prior to encountering a known or probable $H_2S$ zone (within 3 days or 500') and weekly $H_2S$ and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific $H_2S$ Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received proper training.

# $H_2S$ SAFETY EQUIPMENT AND SYSTEMS:

## Well Control Equipment that will be available & installed if $H_2S$ is encountered:

- Flare Line with electronic igniter or continuous pilot.
- Choke manifold with a minimum of one remote choke.
- Blind rams & pipe rams to accommodate all pipe sizes with properly sized closing unit.
- Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head & flare gun with flares

## Protective Equipment for Essential Personnel:

- Mark II Survive-air 30 minute units located in dog house & at briefing areas, as indicated on wellsite diagram.

## H2S Dection and Monitoring Equipment:

- Two portable $H_2S$ monitors positioned on location for best coverage & response. These units have warning lights & audible sirens when $H_2S$ levels of 20 ppm are reached.
- One portable $H_2S$ monitor positioned near flare line.

## H2S Visual Warning Systems:

- Wind direction indicators are shown on wellsite diagram.
- Caution / Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

## Mud Program:

- The Mud Program has been designed to minimize the volume of $H_2S$ circulated to the surface. Proper mud weights, safe drilling practices & the use of $H_2S$ scavengers will minimize hazards when penetrating $H_2S$ bearing zones.
- A mud-gas separator and $H_2S$ gas buster will be utilized as needed.

## Metallurgy:

- All drill strings, casing, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold & lines, & valves will *be suitable for $H_2S$ service.*
- All elastomers used for packing & seals shall be $H_2S$ trim.

## Communication:

- Cellular telephone and 2-way radio communications in company vehicles, rig floor and mud logging trailer.

# HYDROGEN SULFIDE ($H_2S$) CONTINGENCY PLAN

**Assumed 100 ppm ROE = 3000'**

100 ppm $H_2S$ concentration shall trigger activation of this plan.

## Emergency Procedures

In the event of a release of gas containing $H_2S$, the first responder(s) must

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with $H_2S$ monitors and air packs in order to control the release.
- Use the "buddy system" to ensure no injuries occur during the response
- Take precautions to avoid personal injury during this operation.
- Contact operators and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the :
    - Detection of $H_2S$, and
    - Measures for protection against the gas,
    - Equipment used for protection and emergency response.

## Ignition of Gas source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide ($SO_2$). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever this is an ignition of the gas.

### Characteristics of $H_2S$ and $SO_2$

| Common Name | Chemical Formula | Specific Gravity | Threshold Limit | Hazardous Limit | Lethal Concentration |
|---|---|---|---|---|---|
| Hydrogen Sulfide | $H_2S$ | 1.189 Air = I | 10 ppm | 100 ppm/hr | 600 ppm |
| Sulfur Dioxide | $SO_2$ | 2.21 Air = I | 2 ppm | N/A | 1000 ppm |

### Contacting Authorities

Apache Corporation personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Apache's response must be in coordination with the State of New Mexico's *"Hazardous Materials Emergency Response Plan" (HMER).*

# WELL CONTROL EMERGENCY RESPONSE PLAN

## I. GENERAL PHILOSOPHY

Our objective is to ensure that during an emergency, a predetermined procedure is followed so that prompt decisions can be made based on accurate information.

The best way to handle and emergency is with an experienced organization set up for the sole purpose of solving the problem. The *Well Control Emergency Response Team* was organized to handle dangerous & expensive well control problems. The *Team* is structured such that each individual can contribute the most from his area of expertise. Key decision-makers are determined prior to an emergency to avoid confusion about who is in charge.

If the well is flowing uncontrolled at the surface or subsurface, *The Emergency Response Team* will be mobilized. The *Team* is *customized for the people currently on the Apache staff. Staff changes may require a change in the plan.*

## II. EMERGENCY PROCEDURE ON DRILLING OR COMPLETION OPERATIONS

**A.** In the event of an emergency the *Drilling Foreman or Tool-Pusher* will immediately contact only one of the following starting with the first name listed:

| Name | Office | Mobile | Home |
|---|---|---|---|
| Danny Laman – Drlg Superintendent | 432-818-1022 | 432-634-0288 | |
| Tim Orsak – Drilling Engineer | 432-818-1630 | 432-634-4471 | |
| Bobby Smith – Drilling Manager | 432-818-1020 | 432-556-7701 | |
| Bill Jones – EH&S Coordinator | | 432-967-9576 | |

***This one phone call will free the Drilling Foreman to devote his full time to securing the safety of personnel & equipment. This call will initiate the process to mobilize the Well Control Emergency Response Team. Apache maintains an Emergency Telephone Conference Room in the Houston office. This room is available for us by the Permian Region. The room has 50 separate telephone lines.*

**B.** The Apache employee contacted by the Drilling Foreman will begin contacting the rest of the *Team*. If **DANNY LAMAN** is out of contact, **TIM ORSAK** will be notified.

**C.** If a member of the *Emergency Response Team* is away from the job, he must be available for call back. Telephone numbers should be left with secretaries or a key decision-maker.

**D.** Apache's reporting procedure for spills or releases of oil or hazardous materials will be implemented when spills or releases have occurred or are probable.

### EMERGENCY RESPONSE NUMBERS:

| | |
|---|---|
| **SHERIFF DEPARTMENT** | |
| Eddy County | 575-887-7551 |
| Lea County | 575-396-3611 |
| **FIRE DEPARTMENT** | 911 |
| Artesia | 575-746-5050 |
| Carlsbad | 575-885-2111 |
| Eunice | 575-394-2111 |
| Hobbs | 575-397-9308 |
| Jal | 575-395-2221 |
| Lovington | 575-396-2359 |
| **HOSPITALS** | 911 |
| Artesia Medical Emergency | 575-746-5050 |
| Carlsbad Medical Emergency | 575-885-2111 |
| Eunice Medical Emergency | 575-394-2112 |
| Hobbs Medical Emergency | 575-397-9308 |
| Jal Medical Emergency | 575-395-2221 |
| Lovington Medical Emergency | 575-396-2359 |
| **AGENT NOTIFICATIONS** | |
| Bureau of Land Management | 575-393-3612 |
| New Mexico Oil Conservation Division | 575-393-6161 |

EXHIBIT #7

# WARNING

YOU ARE ENTERING AN H2S AREA
AUTHORIZED PERSONNEL ONLY

1. BEARDS OR CONTACT LENSES NOT ALLOWED
2. HARD HATS REQUIRED
3. SMOKING DESIGNATED AREAS ONLY
4. BE WIND CONSCIOUS AT ALL TIMES
5. CHECK WITH APACHE CORPORATION

APACHE CORPORATION
1-888-257-6840

# Surface Use Plan of Operations

## Introduction

The following surface use plan of operations will be followed and carried out once the APD is approved. No other disturbance will be created other than what was submitted in this surface use plan. If any other surface disturbance is needed after the APD is approved, a BLM approved sundry notice or right of way application will be acquired prior to any new surface disturbance.

Before any surface disturbance is created, stakes or flagging will be installed to mark boundaries of permitted areas of disturbance, including soils storage areas. As necessary, slope, grade, and other construction control stakes will be placed to ensure construction in accordance with the surface use plan. All boundary markers will be maintained in place until final construction cleanup is completed. If disturbance boundary markers are disturbed or knocked down, they will be replaced before construction proceeds.

If terms and conditions are attached to the approved APD and amend any of the proposed actions in this surface use plan, we will adhere to the terms and conditions.

## 1. Existing Roads

a. The existing access road route to the proposed project is depicted on EXHIBIT 1. Improvements to the driving surface will be done where necessary. No new surface disturbance will be done, unless otherwise noted in the New or Reconstructed Access Roads section of this surface use plan..

b. The existing access road route to the proposed project does not cross lease or unit boundaries, so a BLM right-of-way grant will not be acquired for this proposed road route.

c. The operator will improve or maintain existing roads in a condition the same as or better than before operations begin. The operator will repair pot holes, clear ditches, repair the crown, etc. All existing structures on the entire access route such as cattleguards, other range improvement projects, culverts, etc. will be properly repaired or replaced if they are damaged or have deteriorated beyond practical use.

d. We will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or wind events. BLM written approval will be acquired before application of surfactants, binding agents, or other dust suppression chemicals on roadways.

## 2. New or Reconstructed Access Roads

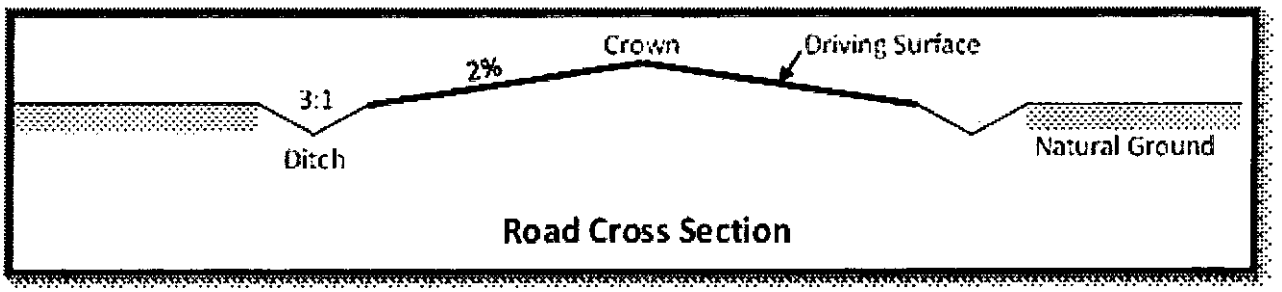
a. An access road will be needed for this proposed project. See the survey plat for the location of the access road.

b. The length of access road needed to be constructed for this proposed project is about 25 feet.

c. The maximum driving width of the access road will be 14 feet. The maximum width of surface disturbance when constructing the access road will not exceed 25 feet. All areas outside of the driving surface will be revegetated.

d. The access road will be constructed with 6 inches of compacted ROLLED & COMPACTED CALICHE.

e. When the road travels on fairly level ground, the road will be crowned and ditched with a 2% slope from the tip of the road crown to the edge of the driving surface. The ditches will be 3 feet wide with 3:1 slopes. See Road Cross Section diagram below.




f. The access road will be constructed with a ditch on each side of the road.

g. The maximum grade for the access road will be 2 percent.

h. No turnouts will be constructed on the proposed access road.

i. No cattleguards will be installed for this proposed access road.

j. No BLM right-of-way grant is needed for the construction of this access road.

k. No culverts will be constructed for this proposed access road.

l. No low water crossings will be constructed for the access road.

m. Since the access road is on level ground, no lead-off ditches will be constructed for the proposed access road.

n. Newly constructed or reconstructed roads, on surface under the jurisdiction of the Bureau of Land Management, will be constructed as outlined in the BLM "Gold Book" and to meet the standards of the anticipated traffic flow and all anticipated weather requirements as needed. Construction will include ditching, draining, crowning and capping or sloping and dipping the roadbed as necessary to provide a well-constructed and safe road.

## 3. Location of Existing Wells

a. EXHIBIT 2 of the APD depicts all known wells within a one mile radius of the proposed well.

b. There is no other information regarding wells within a one mile radius.

## 4. Location of Existing and/or Proposed Production Facilities

a. All permanent, lasting more than 6 months, above ground structures including but not limited to pumpjacks, storage tanks, barrels, pipeline risers, meter housing, etc. that are not subject to safety requirements will be painted a non-reflective paint color, Shale Green, from the BLM Standard Environmental Colors chart, unless another color is required in the APD Conditions of Approval.

b. If any type of production facilities are located on the well pad, they will be strategically placed to allow for maximum interim reclamation, recontouring, and revegetation of the well location.

c. A production facility is proposed to be installed on the proposed well location. Production from the well will be processed on site in the production facility. EXHIBIT 1E depicts the location of the production facilities as they relate to the well and well pad.

d. The proposed production facility will have a secondary containment structure that is constructed to hold the capacity of 1-1/2 times the largest tank, plus freeboard to account for percipitation, unless more stringent protective requirements are deemed necessary.

e. EXHIBIT 5 depicts the production facility as well.

**If any plans change regarding the production facility or other infrastructure (pipeline, electric line, etc.), we will submit a sundry notice or right of way (if applicable) prior to installation or construction.**

### Electric Line(s)

a. We plan to install an overhead electric line for the proposed well. The proposed length of the electric line will be 443 feet. EXHIBIT 1A depicts the location of the proposed electric line route. The electric line will be construction to provide protection from raptor electrocution.

b. The proposed electric line does not cross lease boundaries, so a right of way grant will not need to be acquired from the BLM.

## 5. Location and Types of Water

a. The source and location of the water supply are as follows: ALL WATER_ FRESH OR OTHERWISE_ WILL BE PURCHASED FROM A COMMERCIAL SOURCE & TRUCKED TO THE LOCATION VIA EXISTING & OR PROPOSED ACCESS ROADS NO WATER SOURCE WELLS WILL BE DRILLED & NO SURFACE WATER WILL BE UTILIZED.

b. The operator will use established or constructed oil and gas roads to transport water to the well site. The operator will try to utilize the identified access route in the surface use plan.

## 6. Construction Material

a. CALICHE WILL BE HAULED/TRUCKED FROM A BLM APPROVED PIT. NO SURFACE MATERIALS WILL BE DISTRIBUTED EXCEPT THOSE NECESSARY FOR ACTUAL GRADING & CONSTRUCTION OF THE DRILL SITE & ACCESS ROAD.

## 7. Methods for Handling Waste

a. Drilling fluids and produced oil and water from the well during drilling and completion operations will be stored safely and disposed of properly in an NMOCD approved disposal facility.

b. Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility. All trash on and around the well site will be collected for disposal.

c. Human waste and grey water will be properly contained and disposed of properly at a state approved disposal facility.

d. After drilling and completion operations, trash, chemicals, salts, frac sand and other waste material will be removed and disposed of properly at a state approved disposal facility.

e. The well will be drilled utilizing a closed loop system. Drill cutting will be properly disposed of into steel tanks and taken to an NMOCD approved disposal facility.

## 8. Ancillary Facilities

a. No ancillary facilities will be needed for this proposed project.

## 9. Well Site Layout

a. The following information is presented in the well site survey plat or diagram:

i. reasonable scale (near 1":50')

ii. well pad dimensions

iii. well pad orientation

iv. drilling rig components

v. proposed access road

vi. elevations of all points

vii. topsoil stockpile

viii. reserve pit location/dimensions if applicable

ix. other disturbances needed (flare pit, stinger, frac farm pad, etc.)

x. existing structures within the 600' x 600' archaeoligical surveyed area (pipelines, electric lines, well pads, etc.

b. The proposed drilling pad was staked and surveyed by a professional surveyor. The attached survey plat of the well site depicts the drilling pad layout as staked.

c. A title of a well site diagram is EXHIBIT 5. This diagram depicts the RIG ORIENTATION & LAYOUT.

d. Topsoil Salvaging

i. Grass, forbs, and small woody vegetation, such as mesquite will be excavated as the topsoil is removed. Large woody vegetation will be stripped and stored separately and respread evenly on the site following topsoil respreading. Topsoil depth is defined as the top layer of soil that contains 80% of the roots. In areas to be heavily disturbed, the top 6 inches of soil material, will be stripped and stockpiled on the perimeter of the well location and along the perimeter of the access road to control run-on and run-off, to keep topsoil viable, and to make redistribution of topsoil more efficient during interim reclamation. Stockpiled topsoil should include vegetative material. Topsoil will be clearly segregated and stored separately from subsoils. Contaminated soil will not be stockpiled, but properly treated and handled prior to topsoil salvaging.

## 10. Plans for Surface Reclamation

**Reclamation Objectives**

i. The objective of interim reclamation is to restore vegetative cover and a portion of the landform sufficient to maintain healthy, biologically active topsoil; control erosion; and minimize habitat and forage loss, visual impact, and weed infestation, during the life of the well or facilities.

ii. The long-term objective of final reclamation is to return the land to a condition similar to what existed prior to disturbance. This includes restoration of the landform and natural vegetative community, hydrologic systems, visual resources, and wildlife habitats. To ensure that the long-term objective will be reached through human and natural processes, actions will be taken to ensure standards are met for site stability, visual quality, hydrological functioning, and vegetative productivity.

iii. The BLM will be notified at least 3 days prior to commencement of any reclamation procedures.

iv. If circumstances allow, interim reclamation and/or final reclamation actions will be completed no later than 6 months from when the final well on the location has been completed or plugged. We will gain written permission from the BLM if more time is needed.

v. Interim reclamation will not be performed on the well site because PER JEFFERY ROBERTSON, BLM REP, NO RECLAMATION WILL BE REQUIRED.

**Interim Reclamation Procedures (If performed)**

1. Within 30 days of well completion, the well location and surrounding areas will be cleared of, and maintained free of, all materials, trash, and equipment not required for production.

2. In areas planned for interim reclamation, all the surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads.

3. The areas planned for interim reclamation will then be recontoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be backfilled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be recontoured to the above ratios during interim reclamation.

4. Topsoil will be evenly respread and aggressively revegetated over the entire disturbed area not needed for all-weather operations including cuts & fills. To seed the area, the proper BLM seed mixture, free of noxious weeds, will be used. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

5. Proper erosion control methods will be used on the area to control erosion, runoff and siltation of the surrounding area.

6. The interim reclamation will be monitored periodically to ensure that vegetation has reestablished and that erosion is controlled.

**Final Reclamation (well pad, buried pipelines, etc.)**

1. Prior to final reclamation procedures, the well pad, road, and surrounding area will be cleared of material, trash, and equipment.

2. All surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads.

3. All disturbed areas, including roads, pipelines, pads, production facilities, and interim reclaimed areas will be recontoured to the contour existing prior to initial construction or a contour that blends indistinguishably with the surrounding landscape. Topsoil that was spread over the interim reclamation areas will be stockpiled prior to recontouring. The topsoil will be redistributed evenly over the entire disturbed site to ensure successful revegetation.

4. After all the disturbed areas have been properly prepared, the areas will be seeded with the proper BLM seed mixture, free of noxious weeds. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

5. Proper erosion control methods will be used on the entire area to control erosion, runoff and siltation of the surrounding area.

6. All unused equipment and structures including pipelines, electric line poles, tanks, etc. that serviced the well will be removed.

7. All reclaimed areas will be monitored periodically to ensure that revegetation occurs, that the area is not redisturbed, and that erosion is controlled.

## 11. Surface Ownership

a. The surface ownership of the proposed project is FEDERAL.

## 12. Other Information

a. ONSITE COMPLETED BY JEFFERY ROBERTSON ON 4/2/15. FED NMNM-114973 dated 12/1/2005, covering the NW/4SW/4 of Section 4 in T19S-R30E is set to expire on 11/30/2015. Apache Corporation would like to request a quick turnaround on the submitted APD to ensure the lease remains active or requests an extension of the lease until such time as the Salt Fork 3-4 Federal Com #1H is producing. The projected spud date of the well is as soon as the APD is received.OPERATOR REP: DANNY LAMAN, DRLG SUP, 432-818-1022 OR 432-634-0288; OPERATOR PRODUCTION REP: JAVIER BERDOZA, 575-677-3642 OR 575-441-5755.

## 13. Maps and Diagrams

EXHIBIT 1 - Existing Road
EXHIBIT 2 - Wells Within One Mile
EXHIBIT 1E - Production Facilities Diagram
EXHIBIT 5 - Additional Production Facilities Diagram
EXHIBIT 1A - Electric Line
EXHIBIT 5 - Well Site Diagram

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | Apache Corporation |
| LEASE NO.: | NMNM114973 |
| WELL NAME & NO.: | Salt Fork 3 4 Federal Com 1H |
| SURFACE HOLE FOOTAGE: | 2364'/S & 2258'/W |
| BOTTOM HOLE FOOTAGE | 1980'/S & 330'/W |
| LOCATION: | Section 3, T.19 S., R.30 E., NMPM |
| COUNTY: | Eddy County, New Mexico |

## TABLE OF CONTENTS

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


☐ **General Provisions**
☐ **Permit Expiration**
☐ **Archaeology, Paleontology, and Historical Sites**
☐ **Noxious Weeds**
☒ **Special Requirements**
- Communitization Agreement
- Lesser Prairie-Chicken Timing Stipulations
- Ground-level Abandoned Well Marker
- Cave/Karst

☐ **Construction**
- Notification
- Topsoil
- Closed Loop System
- Federal Mineral Material Pits
- Well Pads
- Roads

☐ **Road Section Diagram**
☐ **Drilling**
- Waste Material and Fluids

☐ **Production (Post Drilling)**
- Well Structures & Facilities
- Pipelines
- Electric Lines

☐ **Interim Reclamation**
☐ **Final Abandonment & Reclamation**

## I. GENERAL PROVISIONS

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

## II. PERMIT EXPIRATION

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

## III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

## IV. NOXIOUS WEEDS

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

# V. SPECIAL REQUIREMENT(S)

**Communitization Agreement:**

1. The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.

2. If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.

3. In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

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

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

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

## Cave and Karst

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

### Cave/Karst Surface Mitigation

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

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

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

**Pad Berming:**
The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

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

**Leak Detection System:**

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

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

## Cave/Karst Subsurface Mitigation

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

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

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

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

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

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

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

# VI. CONSTRUCTION

## A. NOTIFICATION

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

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

## B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

## C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

## D. FEDERAL MINERAL MATERIALS PIT

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

## E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

## F. EXCLOSURE FENCING (CELLARS & PITS)

**Exclosure Fencing**
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

## G. ON LEASE ACCESS ROADS

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

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

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

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

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

**Ditching**
Ditching shall be required on both sides of the road.

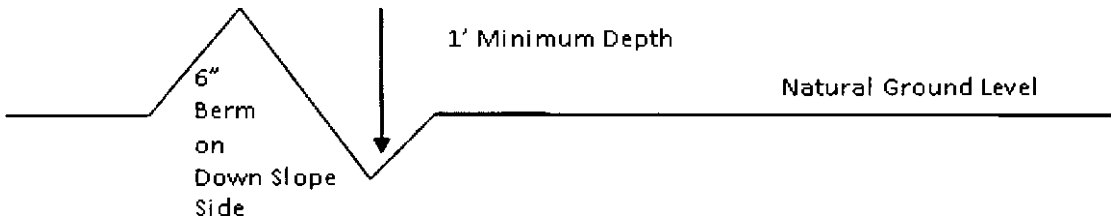
**Turnouts**
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

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

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

**Cross Section of a Typical Lead-off Ditch**




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

**Formula for Spacing Interval of Lead-off Ditches**

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

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

**Cattleguards**

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattleguards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguards that are in place and are utilized during lease operations.

**Fence Requirement**

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

**Public Access**

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

**Construction Steps**

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

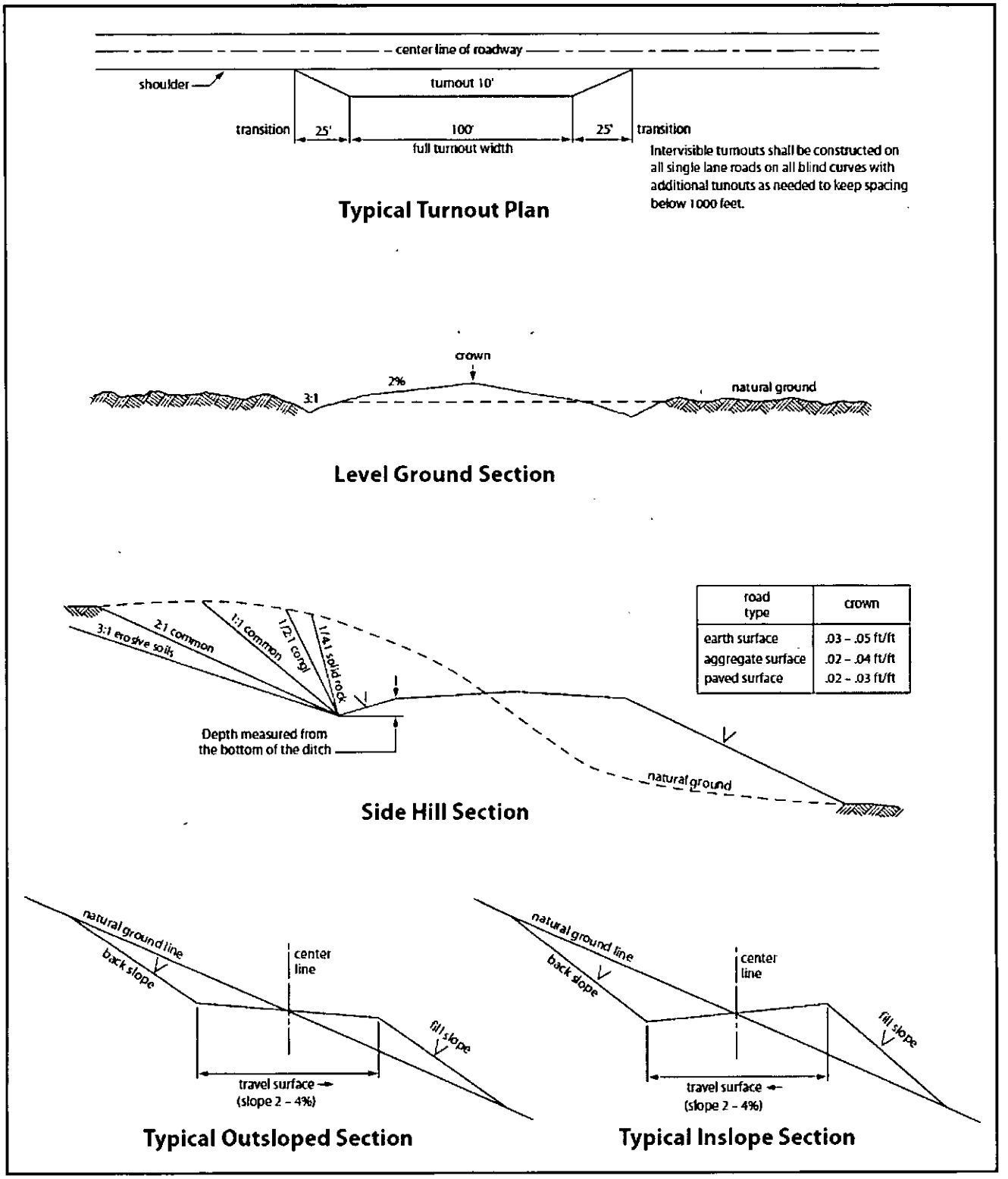



Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

# VII. DRILLING

## A. DRILLING OPERATIONS REQUIREMENTS

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

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

☒ **Lea County**
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Queen** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

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

**The initial wellhead installed on the well will remain on the well with spools used as needed.**

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

**Wait on cement (WOC) for Potash Areas:**
**After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE.**

**Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.**

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

**HIGH CAVE/ KARST AREA: A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH. THEREFORE, ONE INCH OPERATIONS ARE NOT SUFFICIENT TO PROTECT CAVE KARST RESOURCES. A CASING DESIGN THAT HAS A ONE INCH JOB PERFORMED DOES NOT COUNT AS A SOLID SHEATH.**

**ON A THREE STRING DESIGN: IF THE PRIMARY CEMENT JOB ON THE SURFACE CASING DOES NOT CIRCULATE, THEN THE NEXT TWO CASING STRINGS MUST BE CEMENTED TO SURFACE.**

**Risks:**
Possibility of water flows in the Salado and in the Artesia Group.
Possibility of lost circulation in the Artesia Group.
Secretary Potash.

1. The **13-3/8** inch surface casing shall be set at approximately 415 feet (in a competent bed of an anhydrite zone, and if salt is encountered, set casing at least 25 feet above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    **b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9/5/8** inch intermediate casing is:

**Option 1:**

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/ karst and potash.**

**Option 2:**

**Operator has proposed DV tool at depth of 1200 feet, but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50 feet below previous shoe and a minimum of 200 feet above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.**

a. First stage to DV tool:

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

a. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Excess calculates to 19% - Additional cement may be required.**

**If cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.**

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

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

   ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

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

5. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

## C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

2. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** inch intermediate casing shoe shall be **3000 (3M)** psi.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

    d. The results of the test shall be reported to the appropriate BLM office.

    e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

    f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

## D. DRILL STEM TEST

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

## E. WASTE MATERIAL AND FLUIDS

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

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

**KGR 02242016**

# PRODUCTION (POST DRILLING)

## A. WELL STRUCTURES & FACILITIES

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

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

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

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

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

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

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

## B. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

**A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.**

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

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

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

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

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

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

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

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

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

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

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

cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:
    - For reclamation remove poles, lines, transformer, etc. and dispose of properly.
    - Fill in any holes from the poles removed.

## VIII. INTERIM RECLAMATION

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

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

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

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

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

## X. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

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

Seed Mixture 3, for Shallow Sites

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

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

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

| Species | lb/acre |
|---|---|
| Plains Bristlegrass (*Setaria macrostachya*) | 1.0 |
| Green Sprangletop (*Leptochloa dubia*) | 2.0 |
| Sideoats Grama (*Bouteloua curtipendula)* | 5.0 |

*Pounds of pure live seed:

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