

ATS-12-214

OCD-ARTESIA

Form 3160-3  
(April 2004)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM-007724
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator APACHE CORPORATION		7. If Unit or CA Agreement, Name and No.
3a. Address 303 VETERANS AIRPARK LN #3000 MIDLAND, TX 79705		8. Lease Name and Well No. SANTA ELENA 19 FEDERAL #1H
3b. Phone No. (include area code) 432-818-1167		9. API Well No. 30-015- 40567
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 1650' FNL & 330' FWL At proposed prod. zone 1650' FNL & 330' FEL		10. Field and Pool, or Exploratory WILDCAT, ABO-97019 PAVO MESA-Abo
11. Sec., T. R. M. or Blk. and Survey or Area LOT: 2 SEC: 19 T16S R30E		12. County or Parish EDDY
13. State NM		14. Distance in miles and direction from nearest town or post office* APPROX 6 MILES NORTH OF LOCO HILLS, NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 330'	16. No. of acres in lease 2116.68 ACRES	17. Spacing Unit dedicated to this well 156.46 ACRES
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. ~1000'	19. Proposed Depth Pilot - 7800' TVP - 7800' MD - 12000' 11790'	20. BLM/BIA Bond No. on file BLM - CO - 1463 NATIONWIDE
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3740'	22. Approximate date work will start* As soon as Approved	23. Estimated duration ~ 38 DAYS
24. Attachments		

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

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

25. Signature <i>Sorina L Flores</i>	Name (Printed/Typed) SORINA L. FLORES	Date 2/8/12
Title SUPV OF DRILLING SERVICES		

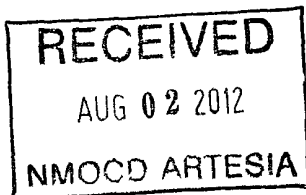
Approved by (Signature) <i>/s/ James A. Amos</i>	Name (Printed/Typed)	Date JUL 31 2012
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

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.

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

\*(Instructions on page 2)

Roswell Controlled Water Basin



Approval Subject to General Requirements  
& Special Stipulations Attached

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

**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 6 day of January, 2012

Well: SANTA ELENA 19 FEDERAL #1H

Operator Name: APACHE CORPORATION

Signature: Bob Lange Printed Name: BOB LANGE

Title: Drilling Engineer Date: 1/6/12

Email (optional): bob.lange@apachecorp.com

Street or Box: 303 Veterans Airpark Ln., Ste. 3000

City, State, Zip Code: Midland, TX 79705

Telephone: 432-818-1114

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. 3000  
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: NMMN-007724 SANTA ELENA 19 FEDERAL #1H

Legal Description of Land: 1650' FNL & 330' FWL

UL: 2 Section: 19 Township: 16S 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

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

Title: DRILLING MANAGER, PERMIAN REGION

Date: 12/29/11

DISTRICT I  
1625 N. FRENCH DR., HOBBS, NM 88240

DISTRICT II  
1301 W. GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III  
1000 RIO BRAZOS RD., AZTEC, NM 87410

DISTRICT IV  
11650 S. ST. FRANCIS DR., SANTA FE, NM 87505

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

Form C-102  
Revised July 16, 2010  
Submit to Appropriate  
District Office

☐ AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

API Number <b>30-015-40567</b>	Pool Code <b>97019</b>	Pool Name <b>Pavo Mesa Whitecat; ABO</b>
Property Code <b>39385</b>	Property Name <b>SANTA ELENA 19 FEDERAL</b>	Well Number <b>1H</b>
GRID No. <b>873</b>	Operator Name <b>APACHE CORPORATION</b>	Elevation <b>3740'</b>

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
2	19	16-S	30-E		1650	NORTH	330	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	19	16-S	30-E		1650	NORTH	330	EAST	EDDY
Dedicated Acres <b>156.46</b>	Joint or Infill	Consolidation Code	Order No. <b>11790 7/31</b>						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

		<p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Sorina L. Flores</i> 12/20/11 Signature Date</p> <p><i>Sorina L. Flores</i> Printed Name</p> <p><i>Sorina.L.Flores@apachecorp.com</i> E-mail Address</p>
<p>SECTION TABLE QUARTER &amp; SIXTEENTH CORNER COORDINATES</p> <p>GEODETIC COORDINATES NAD 27 NME</p> <p>SURFACE LOCATION</p> <p>           (A) - Y=695133.4 N, X=596432.2 E Y=694805.3 N X=596763.1 E            (B) - Y=693812.8 N, X=596436.2 E LAT.=32.909700° N LONG.=104.018037° W            (C) - Y=693821.6 N, X=601600.9 E LAT.=32°54'35\" N LONG.=104°01'05\" W            (D) - Y=695143.0 N, X=601595.9 E         </p> <p>BOTTOM HOLE LOCATION</p> <p>Y=694814.3 N X=601267.2 E</p>		<p><b>SURVEYOR CERTIFICATION</b></p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>JUNE 22, 2011</p> <p>Date of Survey</p> <p>Signature &amp; Seal of Professional Surveyor:</p> <p><i>Ronald E. Eidson</i> 6/27/2011 Certificate Number 3239 Gary C. Eidson 12641 JWSC W O : 11.11.1361</p>

# DRILLING PLAN: BLM COMPLIANCE

(Supplement to BLM 3160-3)

## APACHE CORPORATION (OGRID: 873) SANTA ELENA 19 FEDERAL #1H

Lease #: NMNM-007724 Projected TD: 8000' GL: 3740'

SHL: 1650' FNL & 330' FWL BHL: 1650' FNL & 330' FEL UL: 2 SEC: 19 T16S R30E EDDY COUNTY, NM

### 1. GEOLOGIC NAME OF SURFACE FORMATION: Eolian/Piedmond Alluvial Deposits

### 2. ESTIMATED TOPS OF GEOLOGICAL MARKERS & DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:

Rustler	385'	Glorieta	4172' (Oil)
Salt Top	403'	Paddock	4214' (Oil)
Salt Bottom	493'	Blindbry	4781' (Oil)
Yates	1160'	Tubb	5398' (Oil)
Seven Rivers	1303' (Oil)	Drinkard	5590' (Oil)
Queen	1929' (Oil)	ABO	6169' (Oil)
Grayburg	2345' (Oil)	TD	7800'TVD/ ~12000'MD
San Andres	2722' (Oil)		

Depth to Ground Water: ~ 91'

Fresh water & prospectively valuable minerals, as described by BLM, encountered during drilling, will be recorded by depth & adequately protected. All oil & gas shows within zones of correlative rights will be tested to determine commercial potential. Surface fresh water sands will be protected by setting 13-3/8" csg @ 400' & circ cmt back to surface. All intervals will be isolated by setting 7" csg to TD & circ cmt above the base of 9-5/8" csg. \*\* Apache proposes to drill a pilot hole to ~7800', run & set 7" csg to pilot hole TD ~ 7800', mill window at +/- 7490', build curve, TD at +/- 12000' MD.

### 3. CASING PROGRAM: All casing is new & API approved

HOLE SIZE	DEPTH	OD CSG	WEIGHT	COLLAR	GRADE	COLLAPSE	BURST	TENSION
17-1/2"	0' – 400'	13-3/8"	48#	STC	H-40	1.125	1.0	1.8
12-1/4"	0'-2800'	9-5/8"	40#	LTC	J-55	1.125	1.0	1.8
8-3/4"	0'-7800'	7"	26#	LTC	L-80	1.125	1.0	1.8
6-1/8"	7200'-12000'	4-1/2" liner	13.3#	LTC	P-110	1.125	1.0	1.8

### 4. CEMENT PROGRAM:

#### A. 13-3/8" Surface: \*\*100% excess cmt; cmt to surface\*\*

Lead: 430 sx Class C w/ 1% CaCl<sub>2</sub>, 0.25% R38 (14.8 wt, 1.34 yld)

Compressive Strengths: 12 hr – 813 psi 24 hr – 1205 psi

#### B. 9-5/8" Intermediate: \*\*50% excess cmt; cmt to surface\*\*

Lead: 430 sx (50:50) Poz C w/ 6% Bentonite, 5% Salt, 0.25% R38 (1.9wt, 2.47 yld)

Compressive Strengths: 12 hr – 589 psi 24 hr – 947 psi

Tail: 190 sx Class C w/, 0.25% R38 (14.8 wt, 1.34 yld)

Compressive Strengths: 12 hr – 813 psi 24 hr – 1205 psi \*\*\*50% excess cmt; cmt to surface\*\*\*

#### C. 7" Production: (TOC: ~500' from surface) \*\*35% excess cmt\*\*

Lead: 530 sx (50:50) H w/ 5% Salt, 0.25% R38, 6% Bentonite (11.9 wt, 2.48 yld)

Compressive Strengths: 12 hr – 540 psi 24 hr – 866 psi

Tail: 150 sx (50:50) H w/ 5% Salt, 0.25% R38, 2% Bentonite (14.4 wt, 1.22 yld)

Compressive Strengths: 12 hr – 1379 psi 24 psi – 2332 psi

#### D. 4-1/2" Liner (No Cmt): Run & set 4-1/2" 13.3# P-110 LTC Packer/Sleeve liner to +/-12,000' MD

*See cmt* **\*\* The above cmt volumes could be revised pending caliper measurement from open hole logs. For Surface csg: If cmt does not circ to surface, the appropriate BLM office shall be notified & a tag with 1" will be performed at four positions 90 degrees apart to verify cmt depth. If depth is greater than 100' or water is standing in the annulus, remedial cementing will be done. If no water & TOC tag is less than 100', when 100% excess cmt of the annulus volume is run on the primary job, ready-mix will be used to bring cmt to surface.**

## 5. PROPOSED CONTROL EQUIPMENT

"EXHIBIT 3 & 3A": 13-5/8" 3M psi WP BOP consisting of an annular type preventer. Annular will be nipped up on the 13-5/8" surface csg head & tested to 70% of csg burst. After intermediate csg is set & cemented, a 13 5/8" 3M X 11" 5M "B" section will be installed and an 11" 5M BOP (consisting of an annular type preventer, pipe rams & blind rams) will be installed on the "B" section & utilized continuously until TD is reached. BOP will be tested @ 3M psi (max surface pressure is not expected to exceed 3M psi). BHP calculated to be approx 3432psi. \*All BOP's and associated equipment will be tested as per BLM *Drilling Operations Order #2*. BOP will be operated and checked each 24 hr period & blind rams will be operated & checked on each trip out of hole. Tests will be documented on the daily driller's log. "EXHIBIT 3 & 3A" also shows a 5M psi choke manifold with a 3" blow down line. Full opening stabbing valve & Kelly cock will be on derrick floor in case of need. No abnormal pressures or temperatures are expected in this well. No nearby wells have encountered any problems.

## 6. PROPOSED MUD CIRCULATION SYSTEM: (Closed Loop System)

INTERVAL	MW (ppg)	VISC (sec/qt)	FLUID LOSS (cc)	MUD TYPE
0' - 400'	8.4	29	NC	Fresh Water
400' - 2800'	9.8 - 10.0	29	NC	Brine
2800' - 7800'	8.9 - 9.0	29	NC	Cut Brine
7200' - 12000'	8.9 - 9.0	29	NC	Cut Brine

**\*\* The necessary mud products for weight addition and fluid loss control will be on location at all times. In order to run open hole logs & casing, the above mud properties may have to be altered to meet these needs.**

## 7. AUXILIARY WELL CONTROL EQUIPMENT / MONITORING EQUIPMENT:

13-3/8" x 3M psi annular type preventer  
11" x 5M psi Double BOP/Blind & pipe ram & 11" 5M psi annular type preventer  
5M psi upper and lower Kelly valve  
5M Inside BOP and 5M safety valve  
11" x 5M psi mud cross - H2S detector on production hole  
Gate-type safety valve 3" choke line from BOP to manifold  
2" adjustable chokes - 3" blow down line  
Fill up line as per Onshore Order 2

## 8. LOGGING, CORING & TESTING PROGRAM: *See COA*

- OH logs: Dual Laterolog, MSFL, CNL, Litho-Density, Gamma Ray, Caliper & Sonic from TD back to 8-5/8" csg shoe.
- Run CNL, Gamma Ray from 8-5/8" csg shoe back to surface.
- No cores, DST's or mud logger are planned at this time.
- Additional testing will be initiated subsequent to setting the 5-1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows & drill stem tests.

## 9. POTENTIAL HAZARDS:

No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered, however, the proposed mud program will be modified to increase the mud-weight. There is known presence of H<sub>2</sub>S in this area. If H<sub>2</sub>S is encountered the operator will comply with the provisions of *Onshore Oil & Gas Order No. 6*. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 3432 psi and estimated BHT: 115°.

## 10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

Road and location construction will begin after BLM has approved APD. Anticipated spud date will be as soon after Santa Fe and BLM approval and as soon as rig will be available. Move in operations and drilling is expected to take ~ 38 days. If production casing is run then an additional 90 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.

## 11. OTHER FACETS OF OPERATION:

After running csg, cased hole Gamma Ray, Neutron Collar logs will be run from TD back to all possible productive zones. The Wildcat; ABO formation will be perforated and stimulated in order to establish production. The well will be swab tested & potentialized as an oil well.



## **Apache Corporation**

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

**Santa Elena 19 Federal #1H**

**Santa Elena 19 Federal #1H**

**OH**

**Plan: Plan #1**

## **Standard Planning Report**

**23 December, 2011**





SDI  
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Santa Elena 19 Federal #1H
Company:	Apache Corporation	TVD Reference:	GL Elev @ 3740.00usft
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	GL Elev @ 3740.00usft
Site:	Santa Elena 19 Federal #1H	North Reference:	Grid
Well:	Santa Elena 19 Federal #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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:	Santa Elena 19 Federal #1H		
Site Position:	Map	Northing:	694,805.30 usft
From:		Easting:	596,763.10 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 54' 34.921 N
		Longitude:	104° 1' 4.933 W
		Grid Convergence:	0.17 °

Well	Santa Elena 19.Federal #1H					
Well Position	+N/-S	0.00 usft	Northing:	694,805.30 usft	Latitude:	32° 54' 34.921 N
	+E/-W	0.00 usft	Easting:	596,763.10 usft	Longitude:	104° 1' 4.933 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,740.00 usft

Wellbore:	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/12/22	7.78	60.73	48,925

Design	Plan #1			
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	89.89

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	
7,012.00	0.00	0.00	7,012.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,754.08	88.94	89.89	7,490.00	0.94	469.19	11.98	11.98	0.00	89.89	
11,789.69	88.94	89.89	7,565.00	9.00	4,504.10	0.00	0.00	0.00	0.00	PBHL-Santa Elena 19





SDI  
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Santa Elena 19 Federal #1H
Company:	Apache Corporation	TVD Reference:	GL Elev @ 3740.00usft
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	GL Elev @ 3740.00usft
Site:	Santa Elena 19 Federal #1H	North Reference:	Grid
Well:	Santa Elena 19 Federal #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
359.00	0.00	0.00	359.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Rustler</b>										
377.00	0.00	0.00	377.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Top of Salt</b>										
467.00	0.00	0.00	467.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Base of Salt</b>										
1,134.00	0.00	0.00	1,134.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Yates</b>										
1,277.00	0.00	0.00	1,277.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Seven Rivers</b>										
1,903.00	0.00	0.00	1,903.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Queen</b>										
2,696.00	0.00	0.00	2,696.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>San Andres</b>										
4,146.00	0.00	0.00	4,146.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Glorieta</b>										
5,372.00	0.00	0.00	5,372.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Tubb</b>										
6,143.00	0.00	0.00	6,143.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Abo</b>										
7,012.00	0.00	0.00	7,012.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>KOP Start Build 11.98°/100'</b>										
7,100.00	10.55	89.89	7,099.50	0.02	8.08	8.08	11.98	11.98	0.00	
7,200.00	22.53	89.89	7,195.19	0.07	36.49	36.49	11.98	11.98	0.00	
7,300.00	34.52	89.89	7,282.89	0.17	84.16	84.16	11.98	11.98	0.00	
7,397.00	46.14	89.89	7,356.72	0.29	146.82	146.82	11.98	11.98	0.00	
<b>T/Abo Porosity</b>										
7,400.00	46.50	89.89	7,358.79	0.30	148.99	148.99	11.98	11.98	0.00	
7,443.68	51.74	89.89	7,387.37	0.36	182.01	182.01	11.98	11.98	0.00	
<b>Base Abo Anhydrite</b>										
7,500.00	58.48	89.89	7,419.56	0.46	228.17	228.17	11.98	11.98	0.00	
7,600.00	70.47	89.89	7,462.57	0.64	318.25	318.25	11.98	11.98	0.00	
7,604.21	70.97	89.89	7,463.96	0.64	322.23	322.23	11.98	11.98	0.00	
<b>Abo B</b>										
7,700.00	82.45	89.89	7,485.94	0.83	415.30	415.30	11.98	11.98	0.00	
7,754.08	88.94	89.89	7,490.00	0.94	469.19	469.19	11.98	11.98	0.00	
<b>Land EOC hold 88.94°</b>										
7,800.00	88.94	89.89	7,490.85	1.03	515.11	515.11	0.00	0.00	0.00	
7,900.00	88.94	89.89	7,492.71	1.23	615.09	615.09	0.00	0.00	0.00	
8,000.00	88.94	89.89	7,494.57	1.43	715.07	715.07	0.00	0.00	0.00	
8,100.00	88.94	89.89	7,496.43	1.63	815.05	815.05	0.00	0.00	0.00	
8,200.00	88.94	89.89	7,498.28	1.83	915.04	915.04	0.00	0.00	0.00	
8,300.00	88.94	89.89	7,500.14	2.03	1,015.02	1,015.02	0.00	0.00	0.00	
8,400.00	88.94	89.89	7,502.00	2.23	1,115.00	1,115.00	0.00	0.00	0.00	
8,500.00	88.94	89.89	7,503.86	2.43	1,214.98	1,214.99	0.00	0.00	0.00	
8,600.00	88.94	89.89	7,505.72	2.63	1,314.97	1,314.97	0.00	0.00	0.00	
8,700.00	88.94	89.89	7,507.58	2.83	1,414.95	1,414.95	0.00	0.00	0.00	
8,800.00	88.94	89.89	7,509.44	3.03	1,514.93	1,514.93	0.00	0.00	0.00	
8,900.00	88.94	89.89	7,511.29	3.23	1,614.91	1,614.92	0.00	0.00	0.00	
9,000.00	88.94	89.89	7,513.15	3.43	1,714.90	1,714.90	0.00	0.00	0.00	
9,100.00	88.94	89.89	7,515.01	3.63	1,814.88	1,814.88	0.00	0.00	0.00	



SDI  
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Santa Elena 19 Federal #1H
Company:	Apache Corporation	TVD Reference:	GL Elev @ 3740.00usft
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	GL Elev @ 3740.00usft
Site:	Santa Elena 19 Federal #1H	North Reference:	Grid
Well:	Santa Elena 19 Federal #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1.		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,200.00	88.94	89.89	7,516.87	3.83	1,914.86	1,914.86	0.00	0.00	0.00
9,300.00	88.94	89.89	7,518.73	4.03	2,014.84	2,014.85	0.00	0.00	0.00
9,400.00	88.94	89.89	7,520.59	4.23	2,114.83	2,114.83	0.00	0.00	0.00
9,500.00	88.94	89.89	7,522.45	4.43	2,214.81	2,214.81	0.00	0.00	0.00
9,600.00	88.94	89.89	7,524.30	4.63	2,314.79	2,314.80	0.00	0.00	0.00
9,700.00	88.94	89.89	7,526.16	4.83	2,414.77	2,414.78	0.00	0.00	0.00
9,800.00	88.94	89.89	7,528.02	5.02	2,514.76	2,514.76	0.00	0.00	0.00
9,900.00	88.94	89.89	7,529.88	5.22	2,614.74	2,614.74	0.00	0.00	0.00
10,000.00	88.94	89.89	7,531.74	5.42	2,714.72	2,714.73	0.00	0.00	0.00
10,100.00	88.94	89.89	7,533.60	5.62	2,814.70	2,814.71	0.00	0.00	0.00
10,200.00	88.94	89.89	7,535.46	5.82	2,914.69	2,914.69	0.00	0.00	0.00
10,300.00	88.94	89.89	7,537.31	6.02	3,014.67	3,014.67	0.00	0.00	0.00
10,400.00	88.94	89.89	7,539.17	6.22	3,114.65	3,114.66	0.00	0.00	0.00
10,500.00	88.94	89.89	7,541.03	6.42	3,214.63	3,214.64	0.00	0.00	0.00
10,600.00	88.94	89.89	7,542.89	6.62	3,314.62	3,314.62	0.00	0.00	0.00
10,700.00	88.94	89.89	7,544.75	6.82	3,414.60	3,414.61	0.00	0.00	0.00
10,800.00	88.94	89.89	7,546.61	7.02	3,514.58	3,514.59	0.00	0.00	0.00
10,900.00	88.94	89.89	7,548.46	7.22	3,614.56	3,614.57	0.00	0.00	0.00
11,000.00	88.94	89.89	7,550.32	7.42	3,714.55	3,714.55	0.00	0.00	0.00
11,100.00	88.94	89.89	7,552.18	7.62	3,814.53	3,814.54	0.00	0.00	0.00
11,200.00	88.94	89.89	7,554.04	7.82	3,914.51	3,914.52	0.00	0.00	0.00
11,300.00	88.94	89.89	7,555.90	8.02	4,014.49	4,014.50	0.00	0.00	0.00
11,400.00	88.94	89.89	7,557.76	8.22	4,114.48	4,114.48	0.00	0.00	0.00
11,500.00	88.94	89.89	7,559.62	8.42	4,214.46	4,214.47	0.00	0.00	0.00
11,600.00	88.94	89.89	7,561.47	8.62	4,314.44	4,314.45	0.00	0.00	0.00
11,700.00	88.94	89.89	7,563.33	8.82	4,414.42	4,414.43	0.00	0.00	0.00
11,789.69	88.94	89.89	7,565.00	9.00	4,504.10	4,504.11	0.00	0.00	0.00
PBHL-Santa Elena 19 Fed #1H									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL-Santa Elena 19 F	0.00	0.00	7,565.00	9.00	4,504.10	694,814.30	601,267.20	32° 54' 34.874 N	104° 0' 12.099 W
- plan hits target center									
- Point									



SDI  
Planning Report



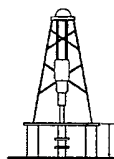
Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Santa Elena 19 Federal #1H
Company:	Apache Corporation	TVD Reference:	GL Elev @ 3740.00usft
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	GL Elev @ 3740.00usft
Site:	Santa Elena 19 Federal #1H	North Reference:	Grid
Well:	Santa Elena 19 Federal #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
359.00	359.00	Rustler		1.06	89.89
377.00	377.00	Top of Salt		1.06	89.89
467.00	467.00	Base of Salt		1.06	89.89
1,134.00	1,134.00	Yates		1.06	89.89
1,277.00	1,277.00	Seven Rivers		1.06	89.89
1,903.00	1,903.00	Queen		1.06	89.89
2,696.00	2,696.00	San Andres		1.06	89.89
4,146.00	4,146.00	Glorieta		1.06	89.89
5,372.00	5,372.00	Tubb		1.06	89.89
6,143.00	6,143.00	Abo		1.06	89.89
7,397.00	7,356.72	T/Abo Porosity		1.06	89.89
7,443.68	7,387.37	Base Abo Anhydrite		1.06	89.89
7,604.21	7,463.96	Abo B		1.06	89.89

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,012.00	7,012.00	0.00	0.00	KOP Start Build 11.98°/100'
7,754.08	7,490.00	0.94	469.19	Land EOC hold 88.94°

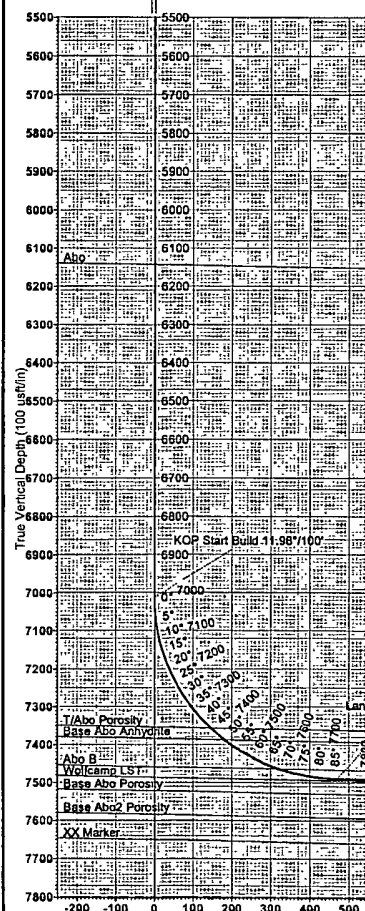


Santa Elena 19 Federal #1H  
Eddy County, NM (NAD27 NME)  
Northing: (Y) 694805.30  
Easting: (X) 596763.10  
Plan #1



GL Elev @ 3740.00usft

Ground Elev 3740.00



WELL DETAILS: Santa Elena 19 Federal #1H						
+N-S	+E-W	North	Ground Level	3740.00	Latitude	Longitude
0.00	0.00	694805.30	Easting	596763.10	32° 54' 34.521 N	104° 1' 4.933 W

SECTION DETAILS						
Sec	MD	Inc	Ab	TVD	+N-S	+E-W
1	0.00	0.00	0.00	0.00	0.00	0.00
2	7012.00	0.00	0.00	7012.00	0.00	0.00
3	7754.08	88.94	89.89	7400.00	0.04	489.19
4	11759.69	88.94	89.89	7365.00	9.00	4504.10

DESIGN TARGET DETAILS						
Name	TVD	+N-S	+E-W	North	Easting	Latitude
PBHL-Santa Elena 19 Fed #1H	7365.00	9.00	4504.10	694814.30	601287.20	32° 54' 34.874 N



Admuths to Grid North  
True North -0.17°  
Magnetic North 7.61°  
Magnetic Field  
Strength 48825.2nT  
Dip Angle 60.73°  
Date 2011/12/22  
Model IGRF2010



Scientific Drilling  
Directional Drilling Operations

PROJECT DETAILS: Eddy County, NM (NAD27 NME)	
Geoid System: US State Plane 1927 (Exact solution)	Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866	Zone: New Mexico East 3001
System Datum: Mean Sea Level	

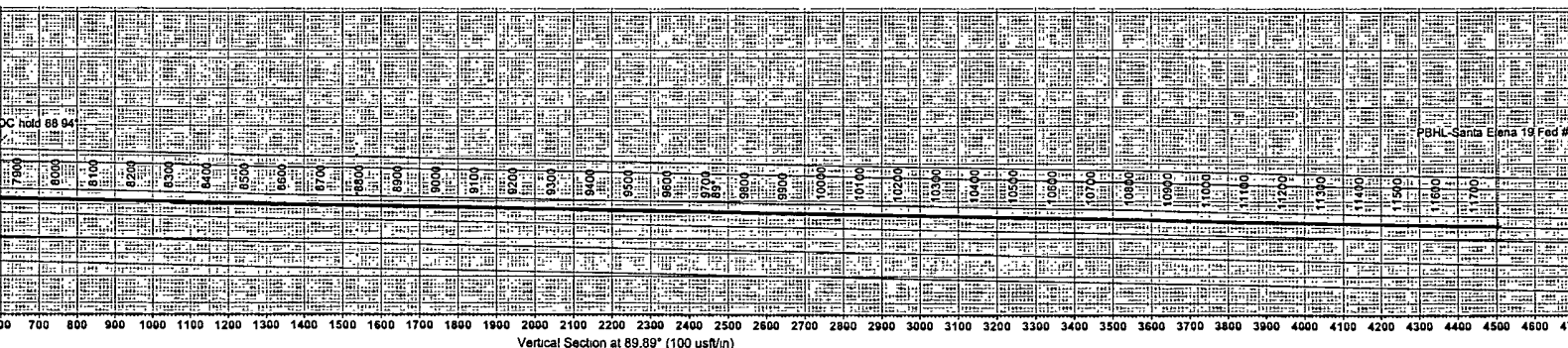
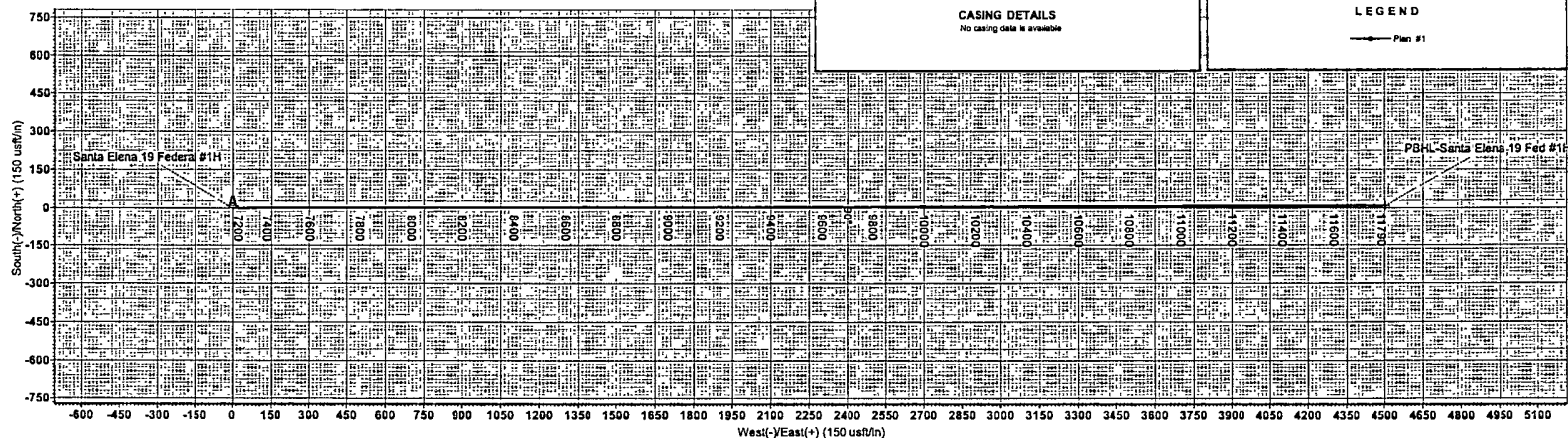
SITE DETAILS: Santa Elena 19 Federal #1H	
Site Centre Northing	694805.30
Easting	596763.10
Positional Uncertainty	0.00
Convergence	0.17
Local North	Grid

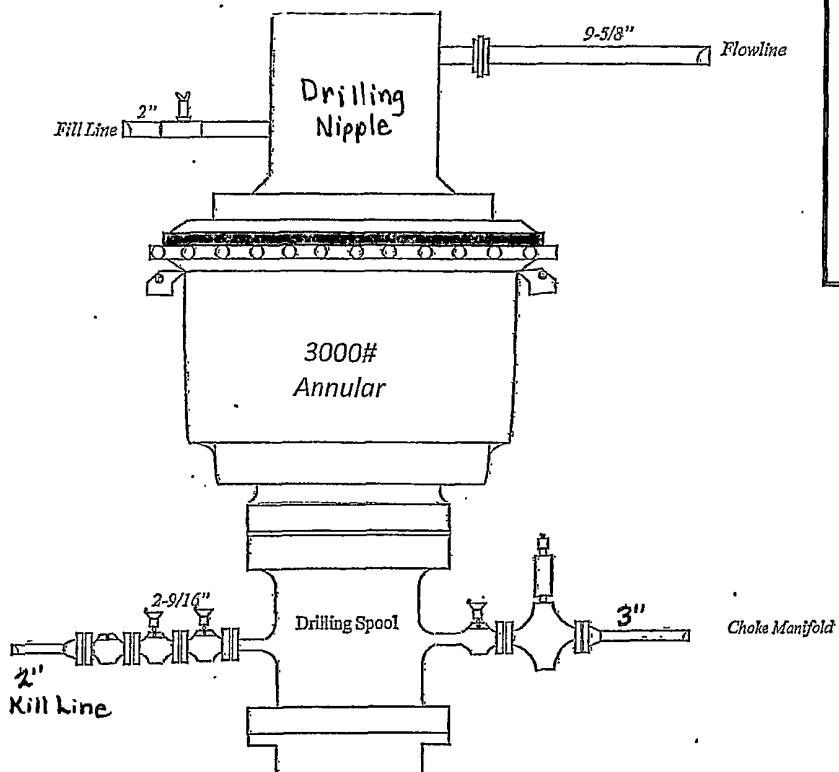
Map System: US State Plane 1927 (Exact solution)	
Ellipsoid: Clarke 1866	Zone: New Mexico East 3001
Local Origin: Site Santa Elena 19 Federal #1H, Grid North	
Latitude	32° 54' 34.821 N
Longitude	104° 1' 4.933 W
Grid East	596763.10
Grid North	694805.30
Scale Factor	1.000
Geomagnetic Model: IGRF2010	
Sample Date	22-Dec-11
Magnetic Declination	7.78°
Dip Angle from Horizontal	60.73°
Magnetic Field Strength	48825

FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	DipAngle
359.00	359.00	Rooster	1.06
377.00	377.00	Top of Salt	1.06
467.00	467.00	Base of Salt	1.06
1134.00	1134.00	Yates	1.06
1277.00	1277.00	Seven Rivers	1.06
1903.00	1903.00	Quana	1.06
2556.00	2556.00	San Andres	1.06
4146.00	4146.00	Gloria	1.06
5372.00	5372.00	Tubo	1.06
6143.00	6143.00	Abo	1.06
7367.72	7367.72	T/Abo Porosity	1.06
7463.96	7463.96	Base Abo Anhydrite	1.06

CASING DETAILS	
No casing data is available	

LEGEND	
Plan #1	

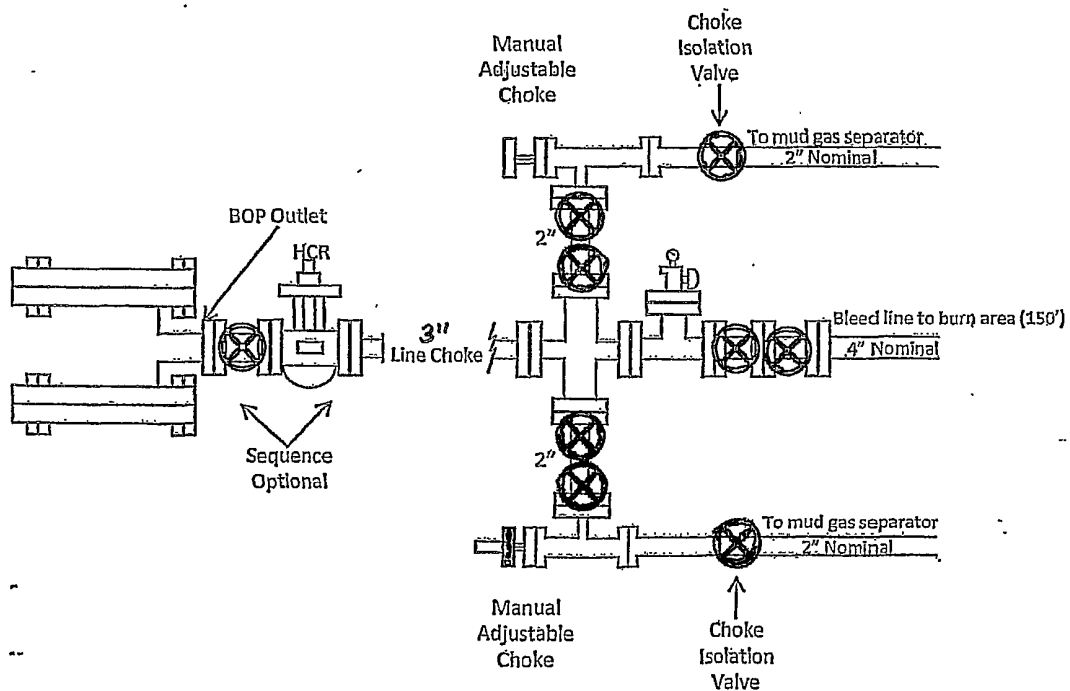


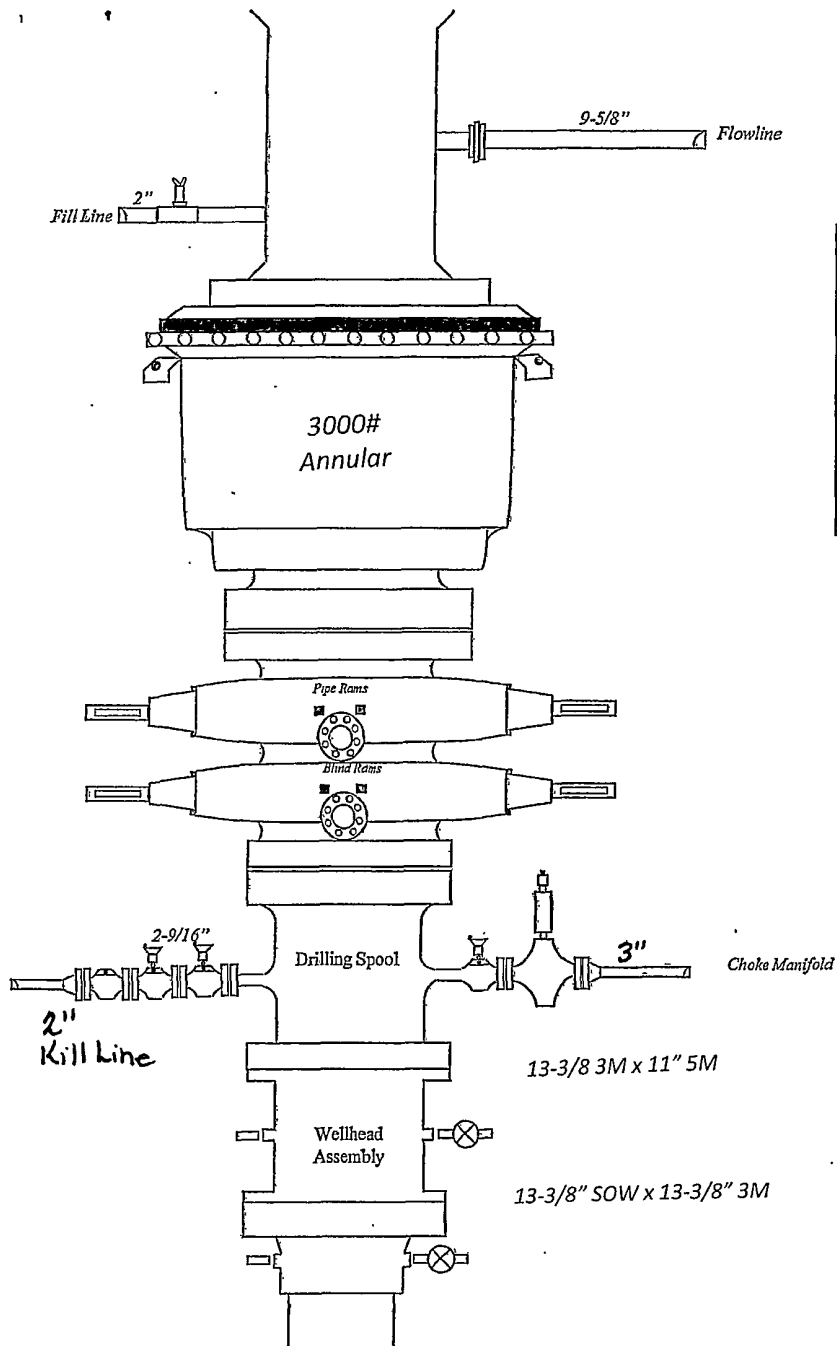


# 13-5/8" 3M psi BOPE & Choke Manifold

## Exhibit 3

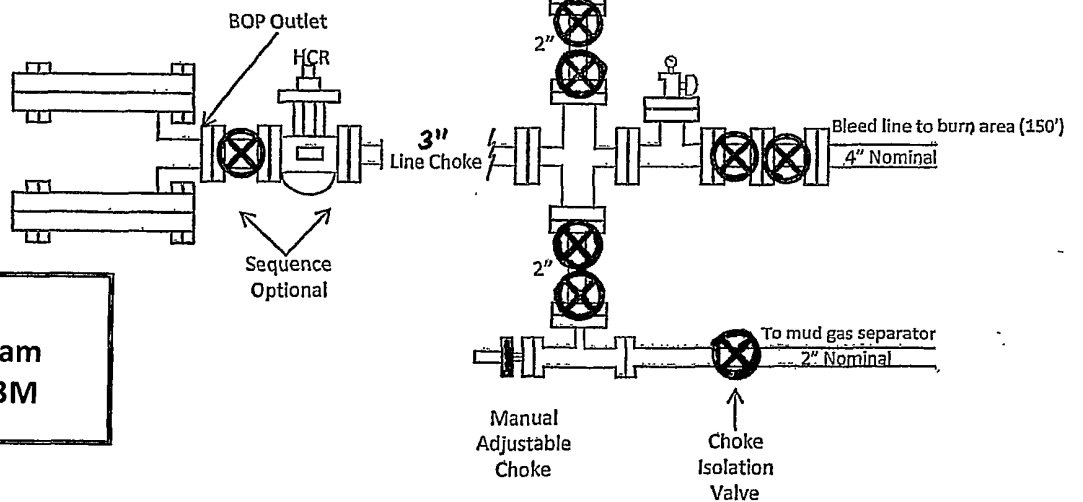
All valve & lines on choke manifold are 2" unless noted.  
Exact manifold configuration may vary





# **11" 5M psi BOPE & Choke Manifold EXHIBIT 3A**

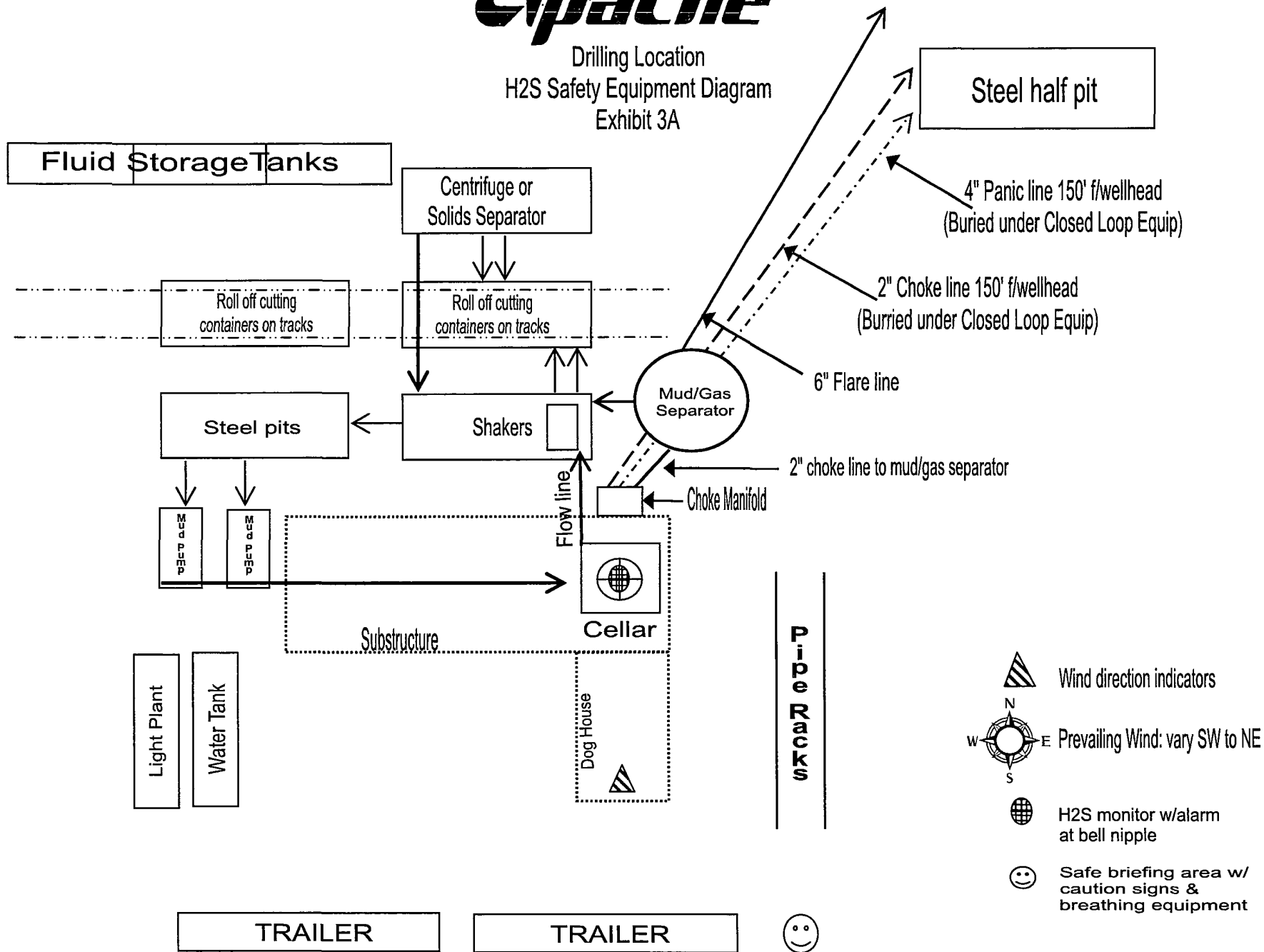
All valve & lines on choke manifold are 2" unless noted. Exact manifold configuration may vary



**Choke Manifold Diagram  
5M Service tested to 3M**

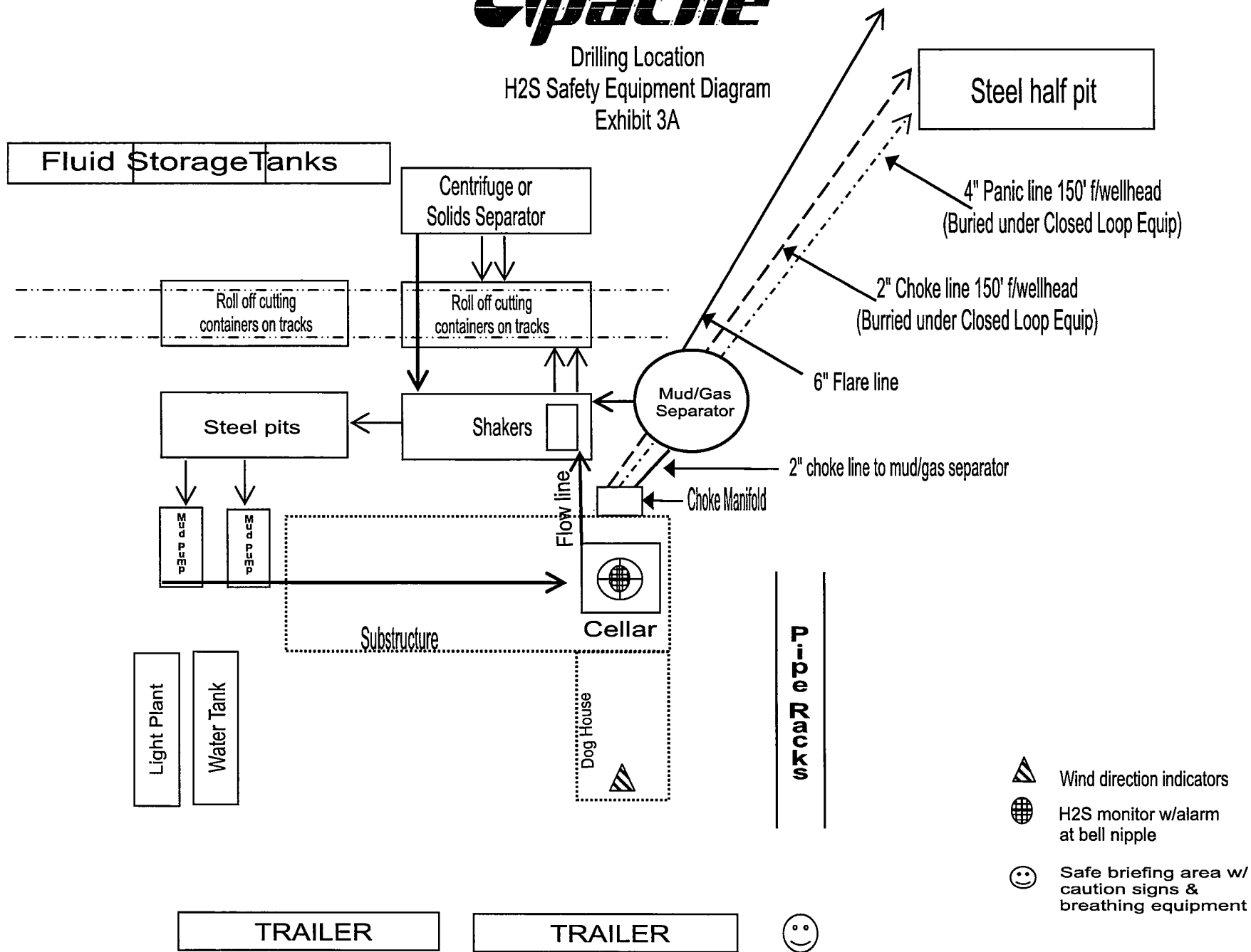
# Apache

Drilling Location  
H2S Safety Equipment Diagram  
Exhibit 3A



# Apache

Drilling Location  
H2S Safety Equipment Diagram  
Exhibit 3A





# **HYDROGEN SULFIDE (H<sub>2</sub>S) 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<sub>2</sub>S)
- The proper use and maintenance of personal protective equipment and life support systems.
- The proper use of H<sub>2</sub>S 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<sub>2</sub>S 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<sub>2</sub>S Drilling Operations Plan

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500') and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S 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<sub>2</sub>S SAFETY EQUIPMENT AND SYSTEMS:**

### **Well Control Equipment that will be available & installed if H<sub>2</sub>S 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.

### **H<sub>2</sub>S Detection and Monitoring Equipment:**

- Two portable H<sub>2</sub>S monitors positioned on location for best coverage & response. These units have warning lights & audible sirens when H<sub>2</sub>S levels of 20 ppm are reached.
- One portable H<sub>2</sub>S monitor positioned near flare line.

### **H<sub>2</sub>S 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<sub>2</sub>S circulated to the surface. Proper mud weights, safe drilling practices & the use of H<sub>2</sub>S scavengers will minimize hazards when penetrating H<sub>2</sub>S bearing zones.
- A mud-gas separator and H<sub>2</sub>S 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<sub>2</sub>S service.
- All elastomers used for packing & seals shall be H<sub>2</sub>S trim.

### **Communication:**

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

# HYDROGEN SULFIDE (H<sub>2</sub>S) CONTINGENCY PLAN

**Assumed 100 ppm ROE = 3000'**

100 ppm H<sub>2</sub>S concentration shall trigger activation of this plan.

## Emergency Procedures

In the event of a release of gas containing H<sub>2</sub>S, 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<sub>2</sub>S 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<sub>2</sub>S, 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<sub>2</sub>). 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<sub>2</sub>S and SO<sub>2</sub>**

<b>Common Name</b>	<b>Chemical Formula</b>	<b>Specific Gravity</b>	<b>Threshold Limit</b>	<b>Hazardous Limit</b>	<b>Lethal Concentration</b>
Hydrogen Sulfide	H <sub>2</sub> S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21 Air = 1	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 an 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	432-520-3528
Bob Lange – Drilling Engineer	432-818-1114	432-661-6404	
Bobby Smith – Drilling Manager	432-818-1020	432-556-7701	
Jeff Burt – EH&S Coordinator		432-631-9081	

*\*\*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.*

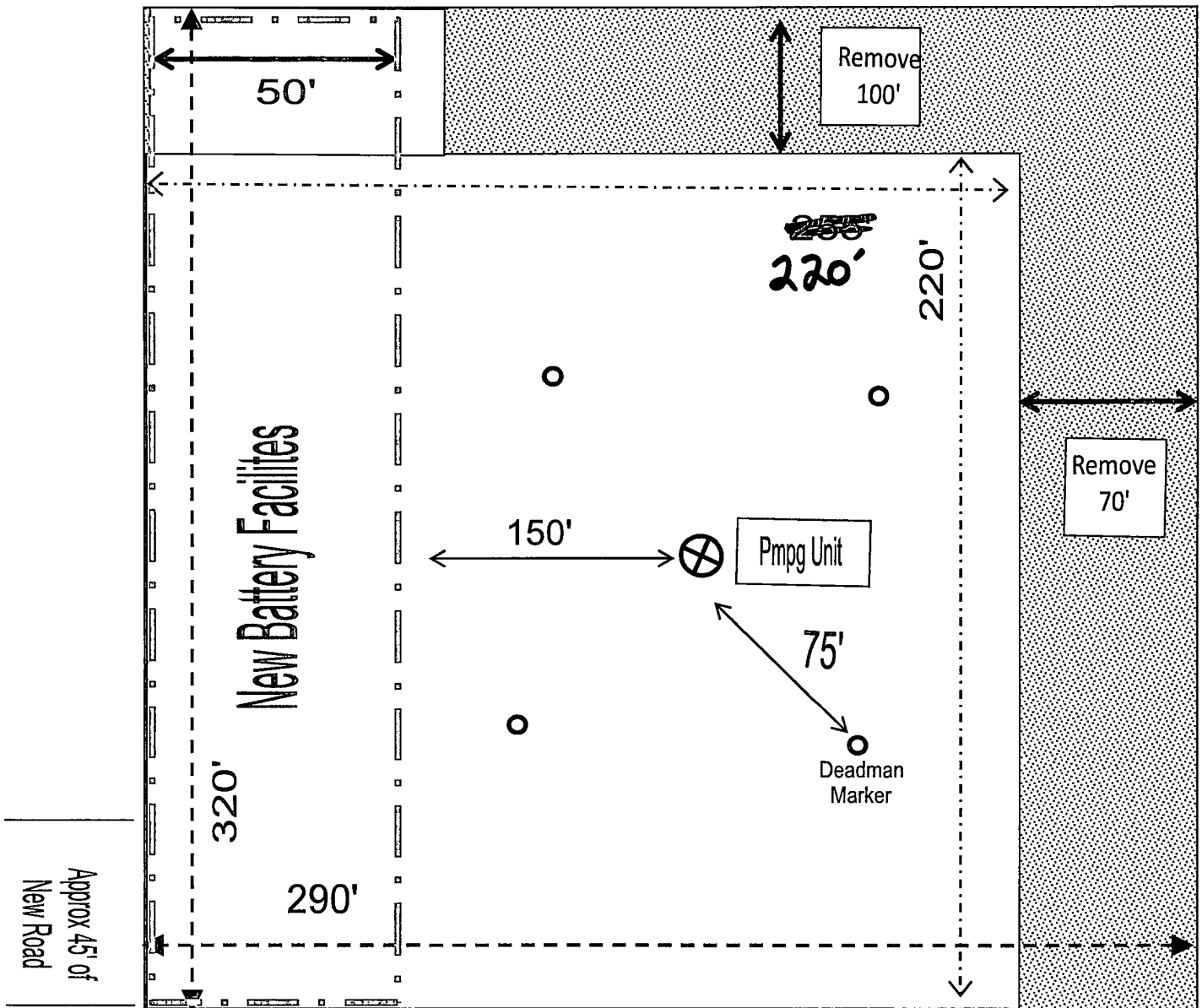
- B. The Apache employee contacted by the Drilling Foreman will begin contacting the rest of the *Team*. If **Danny Laman** is out of contact, **Bob Lange** will be notified.
- C. If a member of the *Emergency Response Team* is away from the job, he must be available for call back. Telephone numbers 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



INTERIM RECLAMATION LAYOUT  
SANTA ELENA 19 FEDERAL #1H  
EXHIBIT #6



TN  
5/24/12

## PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Apache Corporation
LEASE NO.:	NM7724
WELL NAME & NO.:	1H Santa Elena 19 Federal
SURFACE HOLE FOOTAGE:	1650' FNL & 330' FWL
BOTTOM HOLE FOOTAGE:	1650' FNL & 330' FEL
LOCATION:	Section 19, T.16 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**
  - Access Road
  - Well Pad Construction
  - Production Facility
  - Lesser Prairie-Chicken Timing Stipulations
  - Ground-level Abandoned Well Marker
- ☒ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
  - Logging Requirements
  - Waste Material and Fluids
- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
- ☐ **Interim Reclamation**
- ☒ **Final Abandonment & Reclamation**