

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

5 Lease Serial No.
NMLC - 029426B

6 If Indian, Allottee or Tribe Name

7 If Unit or CA Agreement, Name and No

8 Lease Name and Well No.
CROW FEDERAL #14H <308711>

9 API Well No.
30-015- **40578**

10 Field and Pool, or Exploratory
CEDAR LAKE; GLORIETA-YESO

11 Sec., T. R. M. or Blk. and Survey or Area

UL: M SEC: 10 T17S R31E

12 County or Parish

EDDY

13. State

NM

1a. Type of work: ☒ DRILL ☐ REENTER

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

2 Name of Operator
APACHE CORPORATION

3a. Address **303 VETERANS AIRPARK LN #3000
MIDLAND, TX 79705**

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

4. Location of Well (Report location clearly and in accordance with any State requirements *)

At surface **923' FSL & 250' FWL SEC: 10 UL: M**

At proposed prod. zone **923' FSL & 330' FWL SEC: 9 UL: M**

14. Distance in miles and direction from nearest town or post office*

APPROX 4 MILES NORTHEAST OF LOCO HILLS, NM

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

250'

16. No. of acres in lease

1919.88 ACRES

17 Spacing Unit dedicated to this well

160 ACRES

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

~ 25'

19. Proposed Depth
**TVD ~ 5640'
MD ~ 10775'**

20 BLM/BIA Bond No. on file

BLM - CO - 1463 NATIONWIDE

21. Elevations (Show whether DF, KDB, RT, GL, etc)
3884'

22. Approximate date work will start*

As Soon As Approved

23. Estimated duration

~ 25 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.
2. A Drilling Plan
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).

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 authorized officer

25. Signature *Sorina L Flores*

Name (Printed/Typed)
SORINA L. FLORES

Date **5/22/12**

Title
SUPV OF DRILLING SERVICES

Approved by (Signature) */s/ Don Peterson*

Name (Printed/Typed) **/s/ Don Peterson**

Date **JUL 31 2012**

Title *for* **FIELD MANAGER**

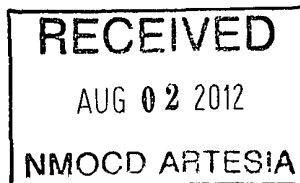
Office
CARLSBAD FIELD OFFICE

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.

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.

*(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 2nd day of May, 2012

Well: CROW FEDERAL #14H

Operator Name: APACHE CORPORATION

Signature: Terry West Printed Name: TERRY WEST

Title: Drilling Engineer Date: _____

Email (optional): terry.west@apachecorp.com

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

City, State, Zip Code: Midland, TX 79705

Telephone: 432-818-1114

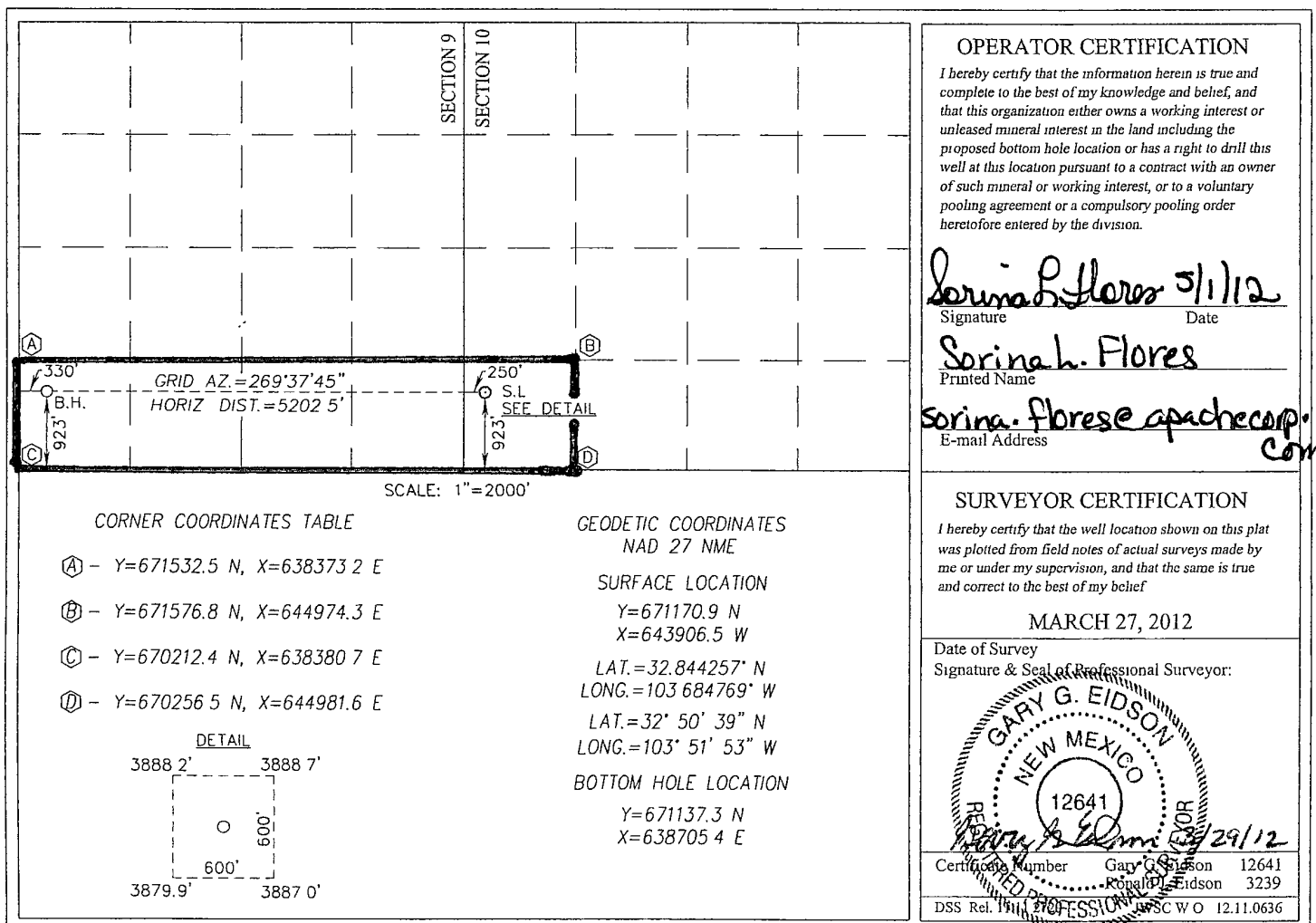
Field Representative (if not above signatory): _____

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.



DRILLING PLAN: BLM COMPLIANCE
(Supplement to BLM 3160-3)

APACHE CORPORATION (OGRID: 873) CROW FEDERAL #14H

Lease #: NMLC-029426B Projected TVD: ~ 5640' MD: ~ 10775' GL: 3884'
SHL: 923' FSL & 250' FWL UL: M SEC: 10 BHL: 923' FSL & 330' FWL UL: M SEC: 9
T17S R31E 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:

Quaternary Aeolian	Surf	Queen	2781'
Rustler	530'	Grayburg	3206'
Salt Top	701'	San Andres	3541' (Oil)
Salt Bottom	1705'	Glorieta	5021'
Yates	1872'	Yeso (Paddock)	5075' (Oil)
Seven Rivers	2154'	TD	TVD: 5640' MD: 10775'

Avg 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 @ 555' & circ cmt back to surface. Hydrocarbon zones will be protected by setting 9-5/8" csg @ ~ 3500', if water flow is encountered, then 7" @ ~ 5400'; and a 4-1/2" liner from the 7" csg though the KOP @ ~ 5403'; the curve & on to TD @ ~ 10775' MD.

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

STRING	HOLE SIZE	DEPTH	OD CSG	WEIGHT	COLLAR	GRADE	COLLAPSE	BURST	TENSION
5 1/2" A Surface	17-1/2"	0' - 555' 5 1/2"	13-3/8"	48#	STC	H-40	1.0	1.21	1.8
Intermediate*	12-1/4"	0' - 3500'	9-5/8"	36#	STC	J-55	1.0	1.21	1.8
Production	8-3/4"	0' - 5400'	7"	26#	LTC	J-55	1.0	1.21	1.8
Production Liner	6-1/8"	5300' - 10775'	4.5"	11.6#	LTC	L-80	1.125	1.21	1.8

*Contingency: 9-5/8" sting will only be ran if water flows are encountered.

4. CEMENT PROGRAM:

A. Surface (TOC - Surface) **100% excess cmt to surf Cmt with:**

Lead: 170 sx Class H 50/50 w/10% Gel + 0.5# Star Seal + 0.25% De-foamer + 3% Salt (11.9 wt, 2.31 yld)

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

Tail: 360 sx Class C w/ 0.25% De-foamer (14.8 wt, 1.33 yld)

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

B. Intermediate (TOC - Surface) **50% excess cmt to surf Cmt with:**

Lead: 550 sx Class H 50/50 w/10% Gel + 2# Star Seal + 0.25% De-foamer (11.9 wt, 2.24 yld)

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

Tail: 380 sx Class C w/1% CaCL + 0.25% De-foamer (14.8 wt, 1.34 yld)

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

C. Production (TOC: ~2500' from surface) **35% excess cmt Cmt with:**

Lead: 270 sx Class H 50/50 w/10% Gel + 2# Star Seal + 0.25% Defoamer (11.9 wt, 2.24 yld)

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

Tail: 450 sx Class C w/1% CaCL + 0.25% De-foamer (14.8 wt, 1.34 yld)

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

**Contingency: If 9-5/8" string is not ran, the following cmt program will be used for the Production string & will bring cmt to surface using 35% excess:*

Lead: 1242 sx Class H 50/50 w/10% Gel + 2# Star Seal + 0.25% Defoamer (11.9 wt, 2.24 yld)

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

Tail: 200 sx Class C w/1% CaCL + 0.25% De-foamer (14.8 wt, 1.34 yld)

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

- D. Apache proposes to run a multiple packer system on the 4-1/2" production liner which will tie back into the 7" string (No cmt will be used).

**** 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. The top of cement shall be determined by either a temperature survey or by tagging, as directed by the BLM for the specific set of circumstances. Cement will then be brought to surface via either 1" or ready mix operations, as specified by the BLM at that time.

5. PROPOSED CONTROL EQUIPMENT

"EXHIBIT 3" shows a 13-5/8" 3M psi WP BOP consisting of at least annular bag type preventer. This BOP will be nipped up on the 13-3/8" surface csg head & tested to 70% of casing burst. After the 9-5/8" intermediate csg is set & cemented (or after the 7" string, if the 9-5/8" casing isn't ran), either a 13-5/8" or an 11" 3M BOP consisting of an annular bag type preventer, middle blind rams and bottom pipe rams will be installed in place of the original BOP & utilized continuously until TD is reached. The BOP will be tested at 2000 psi, maximum surface pressure is not expected to exceed 2M psi, BHP is calculated to be approximately 2481 psi. *All BOP's & associated equipment will be tested as per BLM *Drilling Operations Order #2*. The BOP will be operated & checked each 24 hr period & blind rams will be operated & checked when the drill pipe is out of the hole. Functional tests will be documented on the daily driller's log. "EXHIBIT 3" also shows a 3M 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' – 550' <i>575</i>	8.6 – 8.8	28 – 30	NC	FW
550' – 3500' *	9.8 – 10.0	28 – 34	NC	Brine
3500' – 5400'	8.6 – 9.1	28 – 36	NC	FW/Brine
5400' – 10775'	8.6 – 9.1	28 – 40	15 - NC	FW/Brine

** Contingency: If 9-5/8" string is not ran, these mud properties will be continued to the next casing seat instead of those indicated on the next line.*

**** 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 5/8" or 11" x 3000 psi Double BOP/Blind & pipe ram (3M BOP/BOPE to be used as 2M system)
4-1/2" x 3000 psi Kelly valve
11" x 3000 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 cmt*

- A. OH logs: Dual Laterolog, MSFL, CNL, Litho-Density, Gamma Ray, Caliper & Sonic from TD back to last csg shoe.
- B. Run CNL, Gamma Ray from 8-5/8" csg shoe back to surface.
- C. No cores, DST's or mud logger are planned at this time.
- D. 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 H₂S in this area. If H₂S 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: 2481 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 BLM approval and as soon as rig will be available. Move in operations and drilling is expected to take ~ 25 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 Cedar Lake; Glorieta-Yeso 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

Crow federal 14H

Job # 1210352

Wellbore #1

Plan: Plan 1 4-25-2012

Apache Corp. Planning Report

25 April, 2012

Apache Corp. Planning Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow federal 14H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site:	Crow federal 14H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Well:	Job # 1210352	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan 1 4-25-2012	Database:	Compass5000

Project	Eddy County, NM		
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	Crow federal 14H				
Site Position:	Northing:	671,170.90 usft	Latitude:	32° 50' 39.3238 N	
From:	Easting:	643,906.50 usft	Longitude:	103° 51' 53.1683 W	
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.25 °

Well	Job # 1210352					
Well Position	+N/-S	0.00 usft	Northing:	671,170.90 usft	Latitude:	32° 50' 39.3238 N
	+E/-W	0.00 usft	Easting:	643,906.50 usft	Longitude:	103° 51' 53.1683 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,915.00 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	04/25/12	7.66	60.69	48,868

Design	Plan 1 4-25-2012			
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	269.63

Survey Tool Program	Date 04/25/12			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	10,775.09	Plan 1 4-25-2012 (Wellbore #1)	MWD	MWD - Standard

Apache Corp. Planning Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow federal 14H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site:	Crow federal 14H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Well:	Job # 1210352	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan 1 4-25-2012	Database:	Compass5000

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	3,915.00	0.00	0.00	0.00	0.00	0.00	671,170.90	643,906.50
200.00	0.00	0.00	3,715.00	200.00	0.00	0.00	0.00	0.00	671,170.90	643,906.50
Begin Nudge Build 2.00°/100'										
270.00	1.40	269.63	3,645.01	269.99	-0.01	-0.85	0.85	2.00	671,170.89	643,905.65
360.00	3.20	269.63	3,555.08	359.92	-0.03	-4.46	4.46	2.00	671,170.87	643,902.04
400.16	4.00	269.63	3,515.00	400.00	-0.05	-6.98	6.98	2.00	671,170.85	643,899.52
Hold 4° Inc for 500.00'										
450.00	4.00	269.63	3,465.28	449.72	-0.07	-10.46	10.46	0.00	671,170.83	643,896.04
540.00	4.00	269.63	3,375.50	539.50	-0.11	-16.74	16.74	0.00	671,170.79	643,889.76
630.00	4.00	269.63	3,285.72	629.28	-0.15	-23.02	23.02	0.00	671,170.75	643,883.48
720.00	4.00	269.63	3,195.94	719.06	-0.19	-29.29	29.29	0.00	671,170.71	643,877.21
810.00	4.00	269.63	3,106.16	808.84	-0.23	-35.57	35.57	0.00	671,170.67	643,870.93
900.00	4.00	269.63	3,016.38	898.62	-0.27	-41.85	41.85	0.00	671,170.63	643,864.65
900.16	4.00	269.63	3,016.22	898.78	-0.27	-41.86	41.86	0.00	671,170.63	643,864.64
Begin Drop @ -1.50°/100'										
990.00	2.65	269.63	2,926.53	988.47	-0.30	-47.07	47.07	1.50	671,170.60	643,859.43
1,080.00	1.30	269.63	2,836.59	1,078.41	-0.32	-50.18	50.18	1.50	671,170.58	643,856.32
1,166.60	0.00	0.00	2,750.00	1,165.00	-0.33	-51.16	51.16	1.50	671,170.57	643,855.34
Vertical										
5,404.80	0.00	0.00	-1,488.20	5,403.20	-0.33	-51.16	51.16	0.00	671,170.57	643,855.34
KOP Build 15.00°/100'										
5,490.00	12.78	269.63	-1,572.70	5,487.70	-0.39	-60.62	60.62	15.00	671,170.51	643,845.88
5,580.00	26.28	269.63	-1,657.32	5,572.32	-0.59	-90.64	90.64	15.00	671,170.31	643,815.86
5,670.00	39.78	269.63	-1,732.60	5,647.60	-0.90	-139.58	139.58	15.00	671,170.00	643,766.92
5,760.00	53.28	269.63	-1,794.38	5,709.38	-1.32	-204.74	204.75	15.00	671,169.58	643,701.76
5,850.00	66.78	269.63	-1,839.24	5,754.24	-1.82	-282.53	282.53	15.00	671,169.08	643,623.97
5,940.00	80.28	269.63	-1,864.69	5,779.69	-2.38	-368.63	368.64	15.00	671,168.52	643,537.87

Apache Corp. Planning Report

Company: Apache Corporation		Local Co-ordinate Reference:					Site Crow federal 14H			
Project: Eddy County, NM		TVD Reference:					WELL @ 3915.00usft (Original Well Elev)			
Site: Crow federal 14H		MD Reference:					WELL @ 3915.00usft (Original Well Elev)			
Well: Job # 1210352		North Reference:					Grid			
Wellbore: Wellbore #1		Survey Calculation Method:					Minimum Curvature			
Design: Plan 1 4-25-2012		Database:					Compass5000			

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
6,016.47	91.75	269.63	-1,870.00	5,785.00	-2.87	-444.79	444.80	15.00	671,168.03	643,461.71	
LP @ 5785' TVD											
6,030.00	91.75	269.63	-1,869.59	5,784.59	-2.96	-458.31	458.32	0.00	671,167.94	643,448.19	
6,055.34	91.75	269.63	-1,868.81	5,783.81	-3.12	-483.64	483.65	0.02	671,167.78	643,422.86	
6,120.00	91.75	269.63	-1,866.84	5,781.84	-3.54	-548.27	548.28	0.00	671,167.36	643,358.23	
6,210.00	91.75	269.63	-1,864.10	5,779.10	-4.12	-638.23	638.24	0.00	671,166.78	643,268.27	
6,300.00	91.75	269.63	-1,861.36	5,776.36	-4.70	-728.18	728.20	0.00	671,166.20	643,178.32	
6,390.00	91.75	269.63	-1,858.62	5,773.62	-5.28	-818.14	818.15	0.00	671,165.62	643,088.36	
6,480.00	91.75	269.63	-1,855.87	5,770.87	-5.87	-908.09	908.11	0.00	671,165.03	642,998.41	
6,570.00	91.75	269.63	-1,853.13	5,768.13	-6.45	-998.05	998.07	0.00	671,164.45	642,908.45	
6,660.00	91.75	269.63	-1,850.39	5,765.39	-7.03	-1,088.01	1,088.03	0.00	671,163.87	642,818.49	
6,750.00	91.75	269.63	-1,847.65	5,762.65	-7.61	-1,177.96	1,177.99	0.00	671,163.29	642,728.54	
6,840.00	91.75	269.63	-1,844.91	5,759.91	-8.19	-1,267.92	1,267.95	0.00	671,162.71	642,638.58	
6,930.00	91.75	269.63	-1,842.16	5,757.16	-8.77	-1,357.88	1,357.90	0.00	671,162.13	642,548.62	
7,020.00	91.75	269.63	-1,839.42	5,754.42	-9.35	-1,447.83	1,447.86	0.00	671,161.55	642,458.67	
7,110.00	91.75	269.63	-1,836.68	5,751.68	-9.93	-1,537.79	1,537.82	0.00	671,160.97	642,368.71	
7,200.00	91.75	269.63	-1,833.94	5,748.94	-10.51	-1,627.74	1,627.78	0.00	671,160.39	642,278.76	
7,290.00	91.75	269.63	-1,831.19	5,746.19	-11.10	-1,717.70	1,717.74	0.00	671,159.80	642,188.80	
7,380.00	91.75	269.63	-1,828.45	5,743.45	-11.68	-1,807.66	1,807.70	0.00	671,159.22	642,098.84	
7,470.00	91.75	269.63	-1,825.71	5,740.71	-12.26	-1,897.61	1,897.65	0.00	671,158.64	642,008.89	
7,560.00	91.75	269.63	-1,822.97	5,737.97	-12.84	-1,987.57	1,987.61	0.00	671,158.06	641,918.93	
7,650.00	91.75	269.63	-1,820.22	5,735.22	-13.42	-2,077.53	2,077.57	0.00	671,157.48	641,828.97	
7,740.00	91.75	269.63	-1,817.48	5,732.48	-14.00	-2,167.48	2,167.53	0.00	671,156.90	641,739.02	
7,830.00	91.75	269.63	-1,814.74	5,729.74	-14.58	-2,257.44	2,257.49	0.00	671,156.32	641,649.06	
7,920.00	91.75	269.63	-1,812.00	5,727.00	-15.16	-2,347.40	2,347.44	0.00	671,155.74	641,559.10	
8,010.00	91.75	269.63	-1,809.25	5,724.25	-15.75	-2,437.35	2,437.40	0.00	671,155.15	641,469.15	
8,100.00	91.75	269.63	-1,806.51	5,721.51	-16.33	-2,527.31	2,527.36	0.00	671,154.57	641,379.19	

Apache Corp. Planning Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow federal 14H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site:	Crow federal 14H	MD Reference:	WELL @ 3915.00usft (Original Well Elev)
Well:	Job # 1210352	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan 1 4-25-2012	Database:	Compass5000

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft).	
8,190.00	91.75	269.63	-1,803.77	5,718.77	-16.91	-2,617.26	2,617.32	0.00	671,153.99	641,289.24	
8,280.00	91.75	269.63	-1,801.03	5,716.03	-17.49	-2,707.22	2,707.28	0.00	671,153.41	641,199.28	
8,370.00	91.75	269.63	-1,798.28	5,713.28	-18.07	-2,797.18	2,797.24	0.00	671,152.83	641,109.32	
8,460.00	91.75	269.63	-1,795.54	5,710.54	-18.65	-2,887.13	2,887.19	0.00	671,152.25	641,019.37	
8,550.00	91.75	269.63	-1,792.80	5,707.80	-19.23	-2,977.09	2,977.15	0.00	671,151.67	640,929.41	
8,640.00	91.75	269.63	-1,790.06	5,705.06	-19.81	-3,067.05	3,067.11	0.00	671,151.09	640,839.45	
8,730.00	91.75	269.63	-1,787.32	5,702.32	-20.39	-3,157.00	3,157.07	0.00	671,150.51	640,749.50	
8,820.00	91.75	269.63	-1,784.57	5,699.57	-20.98	-3,246.96	3,247.03	0.00	671,149.92	640,659.54	
8,910.00	91.75	269.63	-1,781.83	5,696.83	-21.56	-3,336.92	3,336.98	0.00	671,149.34	640,569.58	
9,000.00	91.75	269.63	-1,779.09	5,694.09	-22.14	-3,426.87	3,426.94	0.00	671,148.76	640,479.63	
9,090.00	91.75	269.63	-1,776.35	5,691.35	-22.72	-3,516.83	3,516.90	0.00	671,148.18	640,389.67	
9,180.00	91.75	269.63	-1,773.60	5,688.60	-23.30	-3,606.78	3,606.86	0.00	671,147.60	640,299.72	
9,270.00	91.75	269.63	-1,770.86	5,685.86	-23.88	-3,696.74	3,696.82	0.00	671,147.02	640,209.76	
9,360.00	91.75	269.63	-1,768.12	5,683.12	-24.46	-3,786.70	3,786.78	0.00	671,146.44	640,119.80	
9,450.00	91.75	269.63	-1,765.38	5,680.38	-25.04	-3,876.65	3,876.73	0.00	671,145.86	640,029.85	
9,540.00	91.75	269.63	-1,762.63	5,677.63	-25.62	-3,966.61	3,966.69	0.00	671,145.28	639,939.89	
9,630.00	91.75	269.63	-1,759.89	5,674.89	-26.21	-4,056.57	4,056.65	0.00	671,144.69	639,849.93	
9,720.00	91.75	269.63	-1,757.15	5,672.15	-26.79	-4,146.52	4,146.61	0.00	671,144.11	639,759.98	
9,810.00	91.75	269.63	-1,754.41	5,669.41	-27.37	-4,236.48	4,236.57	0.00	671,143.53	639,670.02	
9,900.00	91.75	269.63	-1,751.66	5,666.66	-27.95	-4,326.43	4,326.53	0.00	671,142.95	639,580.07	
9,990.00	91.75	269.63	-1,748.92	5,663.92	-28.53	-4,416.39	4,416.48	0.00	671,142.37	639,490.11	
10,080.00	91.75	269.63	-1,746.18	5,661.18	-29.11	-4,506.35	4,506.44	0.00	671,141.79	639,400.15	
10,170.00	91.75	269.63	-1,743.44	5,658.44	-29.69	-4,596.30	4,596.40	0.00	671,141.21	639,310.20	
10,260.00	91.75	269.63	-1,740.70	5,655.70	-30.27	-4,686.26	4,686.36	0.00	671,140.63	639,220.24	
10,350.00	91.75	269.63	-1,737.95	5,652.95	-30.86	-4,776.22	4,776.32	0.00	671,140.04	639,130.28	
10,440.00	91.75	269.63	-1,735.21	5,650.21	-31.44	-4,866.17	4,866.27	0.00	671,139.46	639,040.33	
10,530.00	91.75	269.63	-1,732.47	5,647.47	-32.02	-4,956.13	4,956.23	0.00	671,138.88	638,950.37	

Apache Corp. Planning Report

Company:	Apache Corporation	Local Co-ordinate Reference:	Site Crow federal 14H
Project:	Eddy County, NM	TVD Reference:	WELL @ 3915.00usft (Original Well Elev)
Site:	Crow federal 14H	MD Reference:	WELL @ 3915 00usft (Original Well Elev)
Well:	Job # 1210352	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan 1 4-25-2012	Database:	Compass5000

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
10,620.00	91.75	269.63	-1,729.73	5,644.73	-32.60	-5,046.09	5,046.19	0.00	671,138.30	638,860.41	
10,710.00	91.75	269.63	-1,726.98	5,641.98	-33.18	-5,136.04	5,136.15	0.00	671,137.72	638,770.46	
10,775.00	91.75	269.63	-1,725.00	5,640.00	-33.60	-5,201.01	5,201.12	0.00	671,137.30	638,705.49	
TD @ 10775.09' MD											
10,775.09	91.75	269.63	-1,725.00	5,640.00	-33.60	-5,201.10	5,201.21	0.00	671,137.30	638,705.40	

Formations											
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)						
3,542.60	3,541.00	San Andres		0.00							
2,782.60	2,781.00	Queen		0.00							
5,022.60	5,021.00	Glorieta		0.00							
5,651.37	5,633.00	BlineBry		0.00							
1,873.60	1,872.00	Yates		0.00							
701.90	701.00	T/Salt		0.00							
1,706.60	1,705.00	B/Salt		0.00							
530.48	530.00	Rustler		0.00							
5,076.60	5,075.00	Yeso Paddock		0.00							

Apache Corp. Planning Report

Company: Apache Corporation
Project: Eddy County, NM
Site: Crow federal 14H
Well: Job # 1210352
Wellbore: Wellbore #1
Design: Plan 1 4-25-2012

Local Co-ordinate Reference: Site Crow federal 14H
TVD Reference: WELL @ 3915.00usft (Original Well Elev)
MD Reference: WELL @ 3915.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass5000

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.00	200.00	0.00	0.00	Begin Nudge Build 2.00°/100'
400.16	400.00	-0.05	-6.98	Hold 4° Inc for 500.00'
900.16	898.78	-0.27	-41.86	Begin Drop @ -1.50°/100'
1,166.60	1,165.00	-0.33	-51.16	Vertical
5,404.80	5,403.20	-0.33	-51.16	KOP Build 15 00°/100'
6,016.47	5,785.00	-2.87	-444.79	LP @ 5785' TVD
10,775.00	5,640.00	-33.60	-5,201.01	TD @ 10775.09' MD

Checked By: _____ Approved By: _____ Date: _____

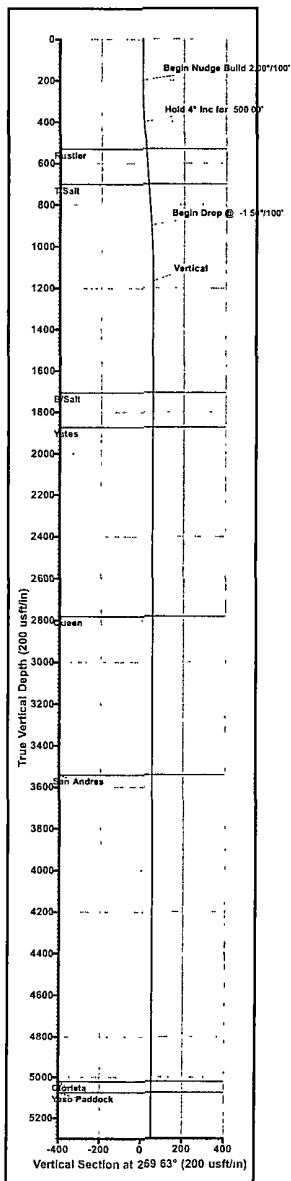


Apache Corporation

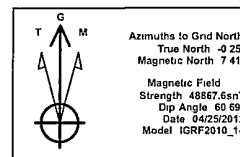
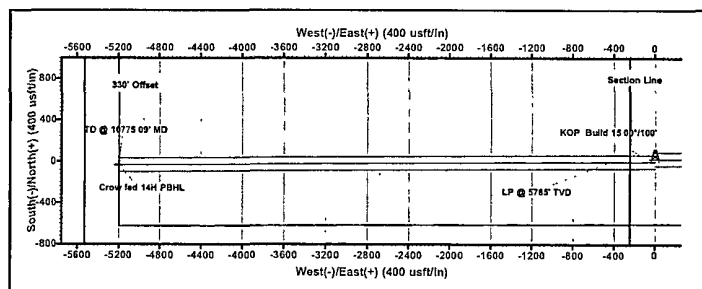
Project: Eddy County, NM
Site: Crow federal 14H
Well: Job # 1210352
Wellbore: Wellbore #1
Plan: Plan 1 4-25-2012

WELL DETAILS: Job # 1210352

Ground Level: 3915.00
Northing: 671170.90 Easting: 643906.50 Latitude: 32° 50' 39.3238 N Longitude: 103° 51' 53.1683 W

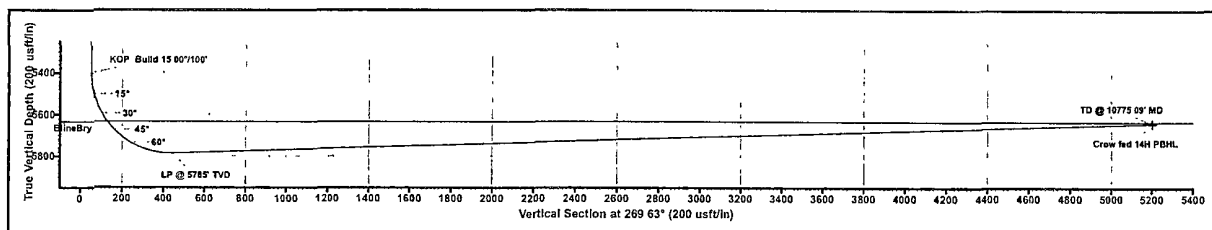
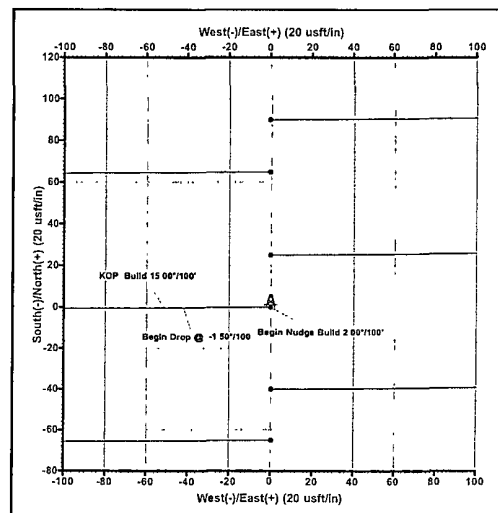
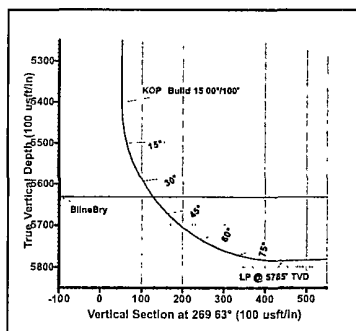


SECTION DETAILS									
MD	Inc	Azi	TVD	+N-S	+E-W	Dog	TFace	VSect	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
400.16	4.00	269.63	400.00	-0.05	-6.98	2.00	269.63	6.98	
900.16	4.00	269.63	898.78	-0.27	-41.98	0.00	0.00	41.98	
1165.60	0.00	0.00	1165.00	-0.33	-51.16	1.50	180.00	51.16	
5404.80	0.00	0.00	5403.20	-0.33	-51.16	0.00	0.00	51.16	
6016.47	91.75	269.63	5785.00	-2.87	-444.79	15.00	269.63	444.80	
6055.34	91.75	269.63	5783.81	-3.12	-483.64	0.01	-177.81	483.65	
10775.09	91.75	269.63	5640.00	-33.60	-5201.10	0.00	0.00	5201.21	Crow fed 14H PBHL

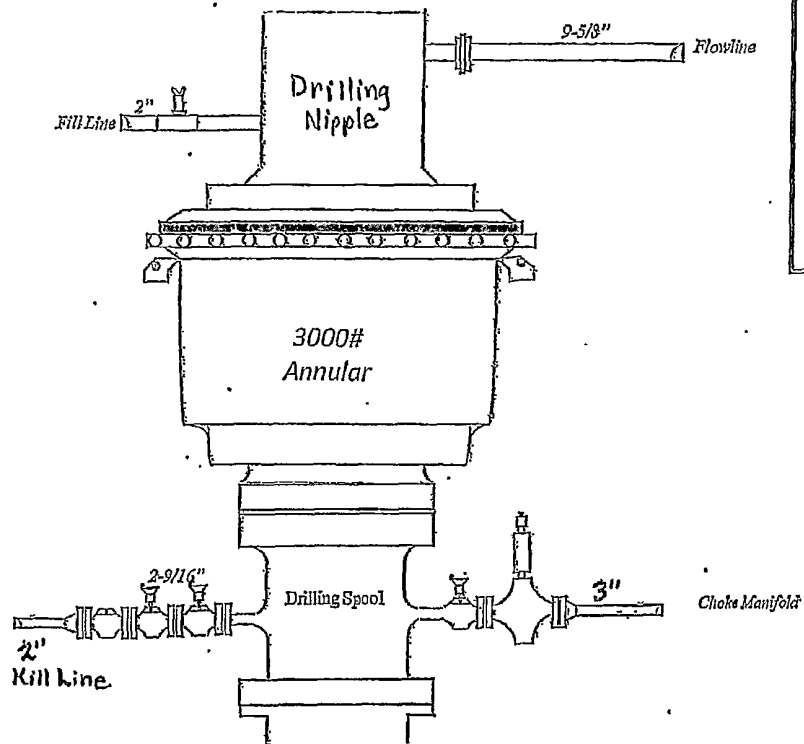


FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
530.00	530.48	Rustler	0.00	
781.00	781.90	T/Salt	0.00	
1785.00	1786.60	B/Salt	0.00	
1872.00	1873.60	Yates	0.00	
2781.00	2782.60	Queen	0.00	
3541.00	3542.60	San Andres	0.00	
5021.00	5022.60	Glorieta	0.00	
5075.00	5076.60	Yeso Paddock	0.00	
5633.00	5651.37	BlaineBry	0.00	

ANNOTATIONS		
TVD	MD	Annotation
200.00	200.00	Begin Nudge Build 2.00°/100'
400.00	400.16	Hold 4° Inc for 500.00'
898.78	900.16	Begin Drop @ -1.50°/100'
1165.00	1166.60	Vertical
5403.20	5404.80	KOP Build 15.00°/100'
5785.00	6016.47	LP @ 5785' TVD
5640.00	10775.00	TD @ 10775.09' MD



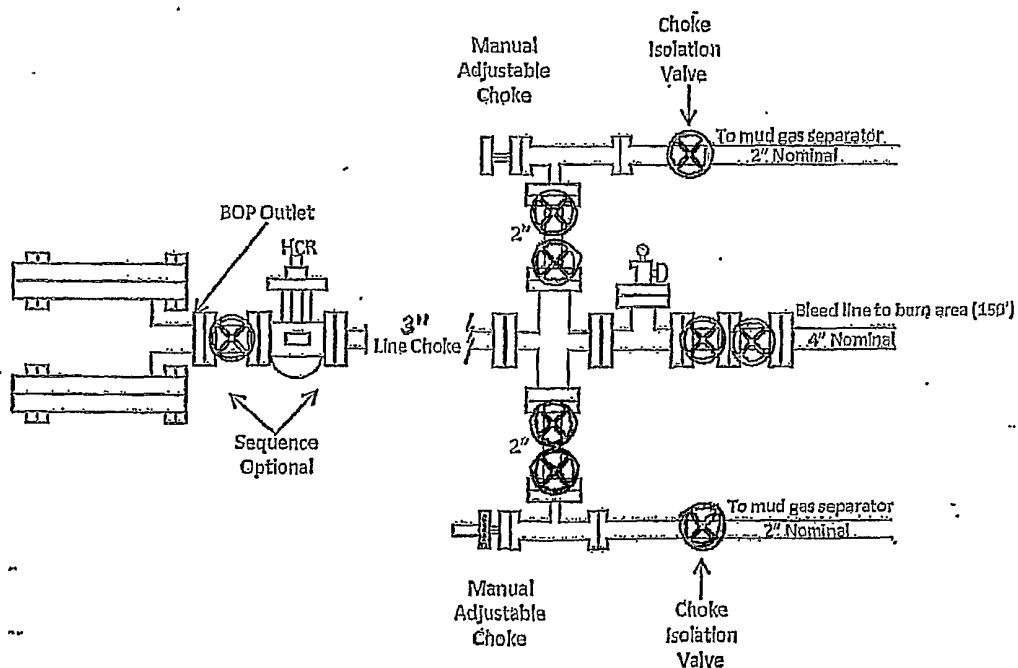
Created By: Jona Hernandez

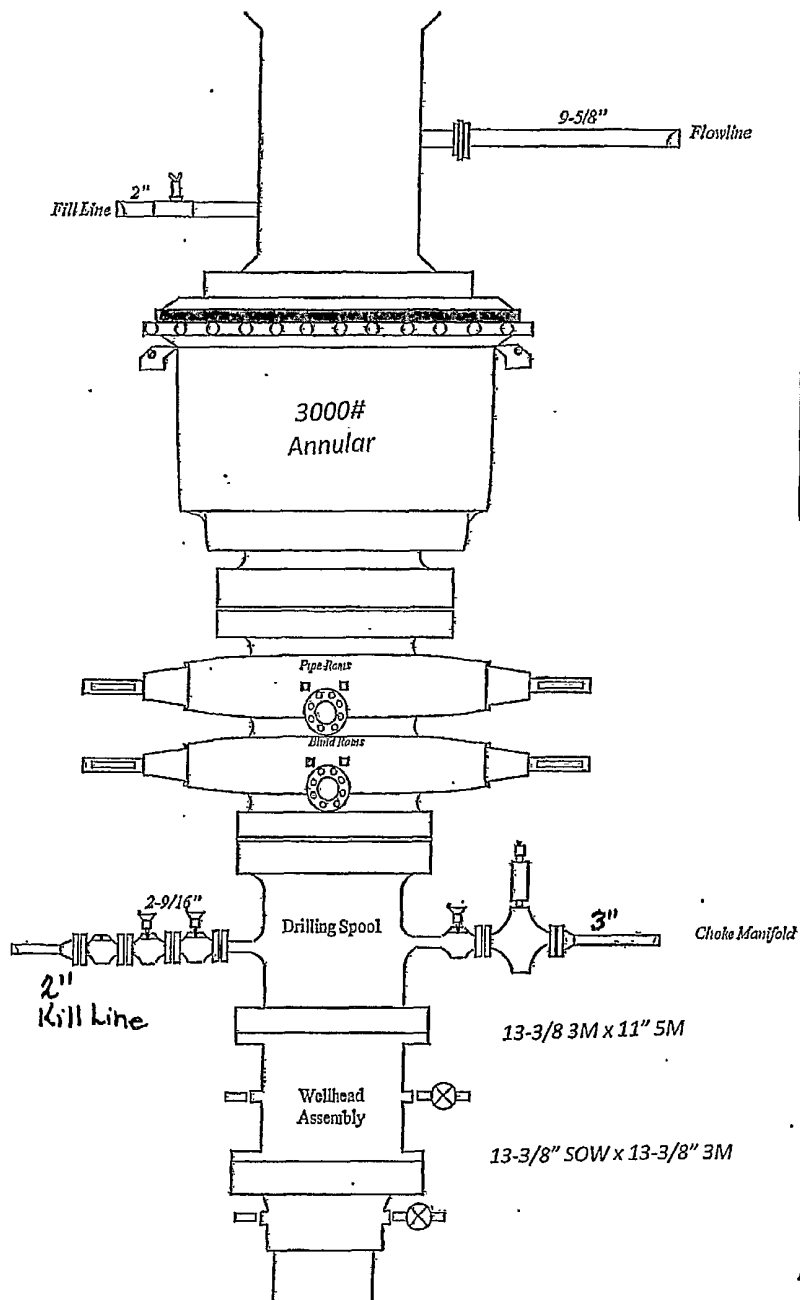


13-5/8" 3M psi BOPE & Choke Manifold

Exhibit 3

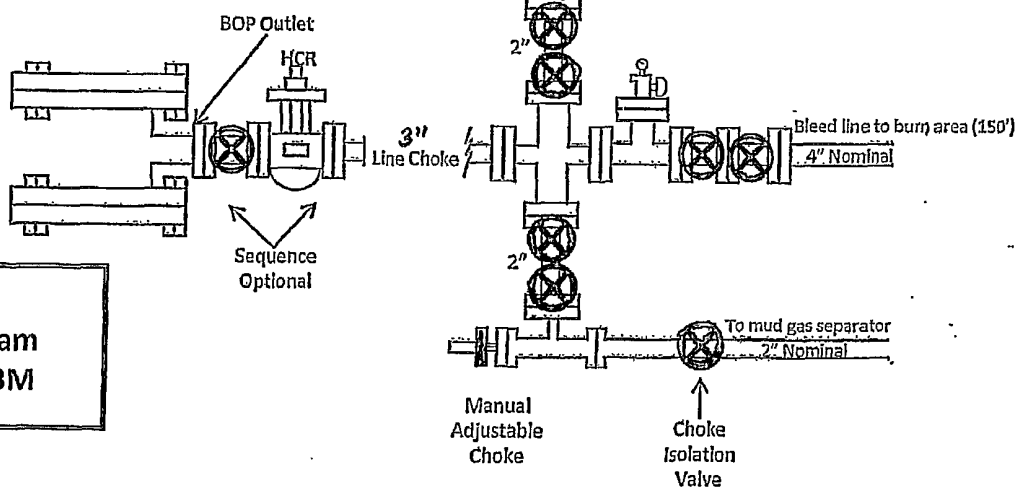
All valve & lines on choke manifold are 2" unless noted.
Exact manifold configuration may vary





**11' or 13-5/8" 5M psi
BOPE & Choke Manifold
EXHIBIT 3A**

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

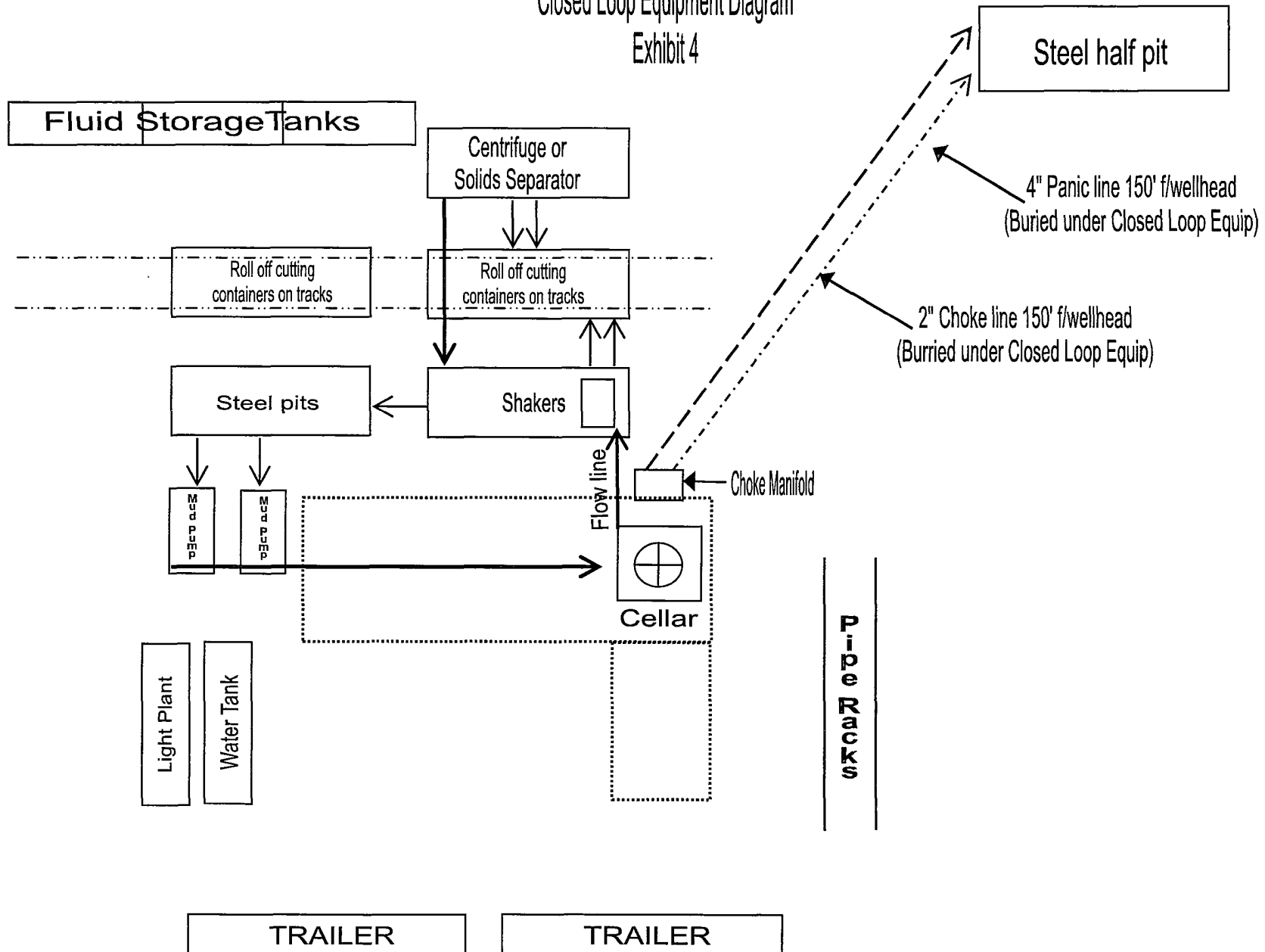


**Choke Manifold Diagram
5M Service tested to 3M**

Apache

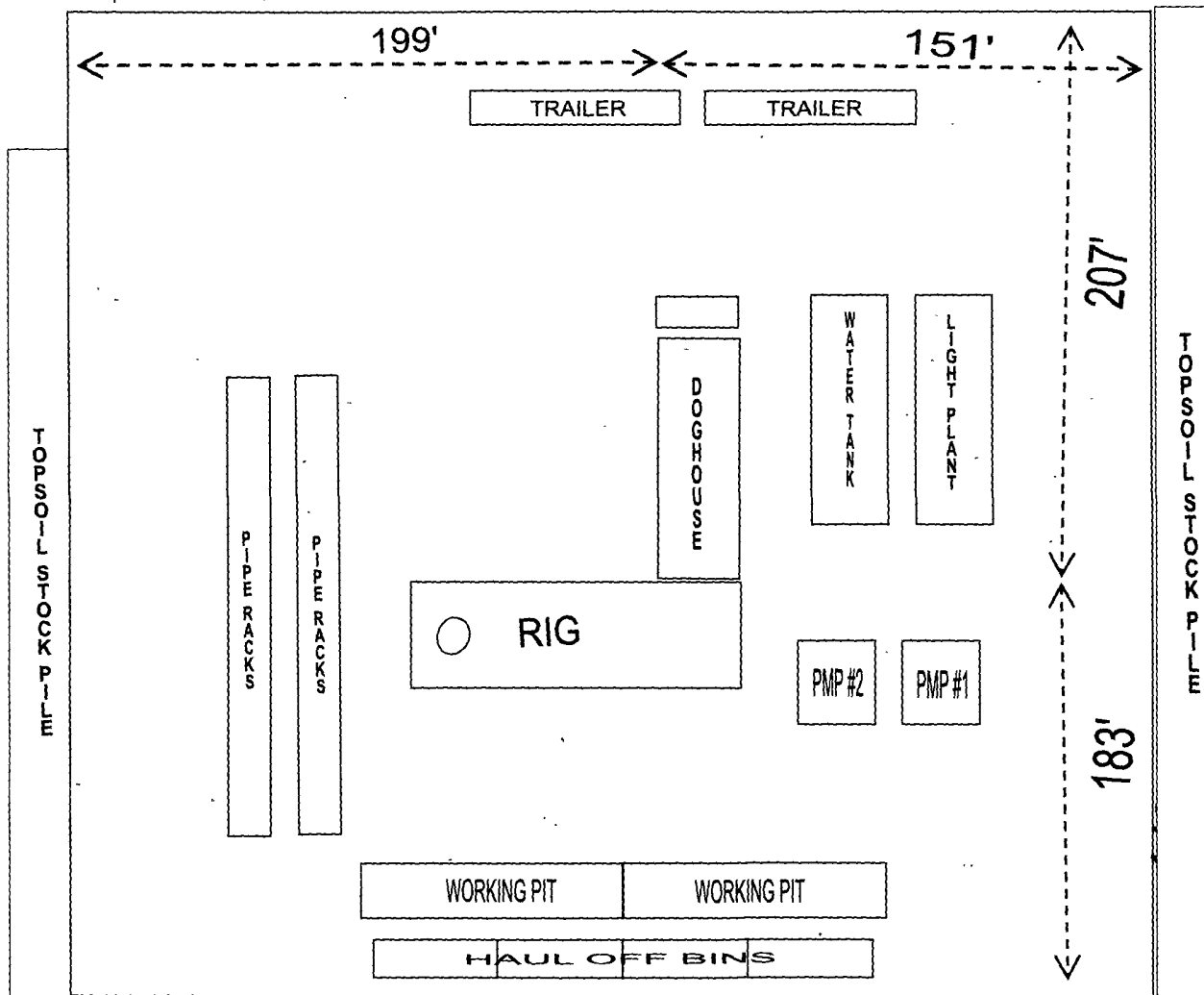
Closed Loop Equipment Diagram

Exhibit 4



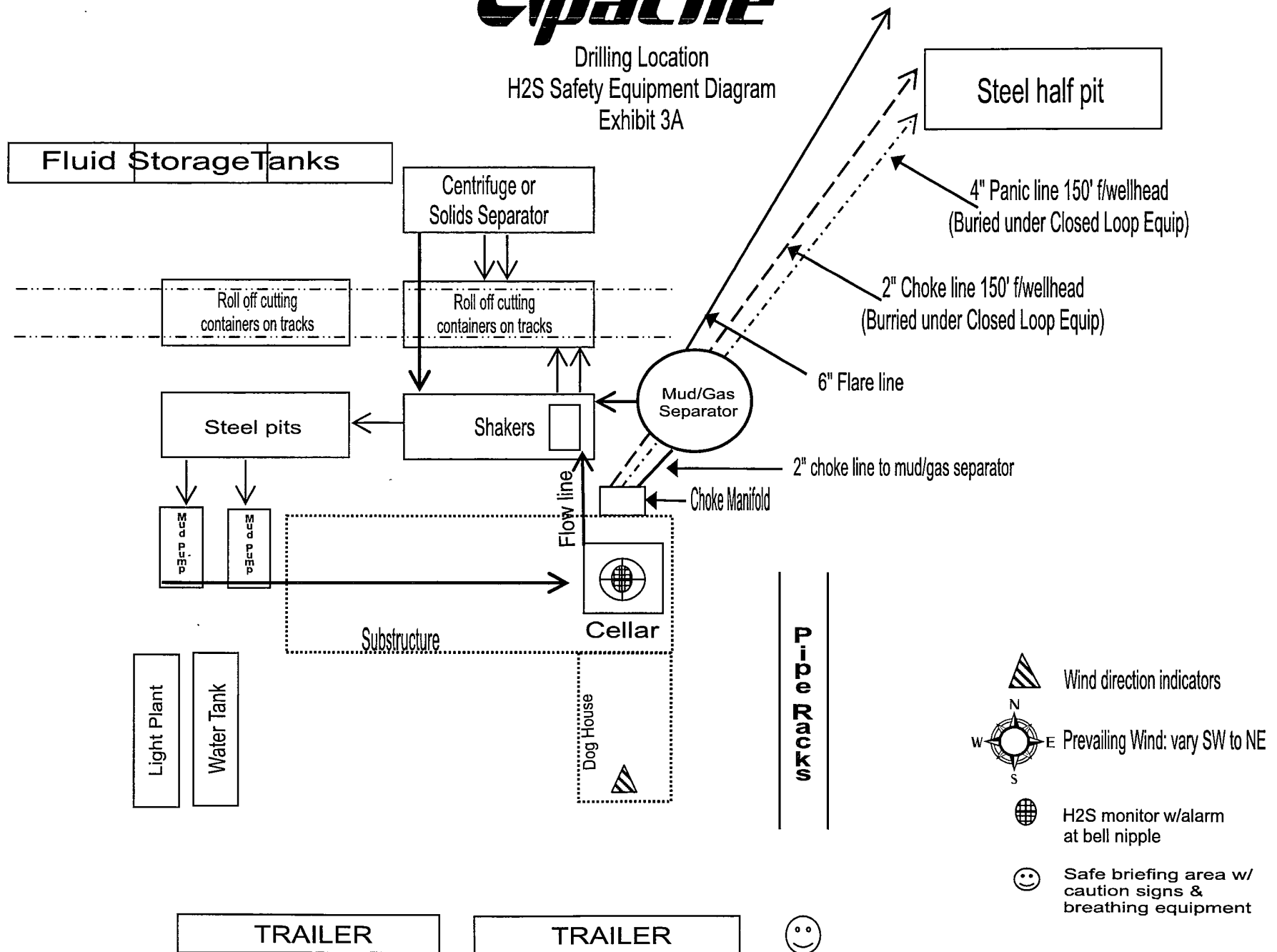
RIG ORIENTATION & LAYOUT
CROW FEDERAL #14H
EXHIBIT 5 (Revised)

Approx 122'
New Road



Apache

Drilling Location
H2S Safety Equipment Diagram
Exhibit 3A



HYDROGEN SULFIDE (H₂S) 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 (H₂S)
- The proper use and maintenance of personal protective equipment and life support systems.
- The proper use of H₂S 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 H₂S 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 H₂S Drilling Operations Plan

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500') and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S 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.

H₂S SAFETY EQUIPMENT AND SYSTEMS:

Well Control Equipment that will be available & installed if H₂S 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 Detection and Monitoring Equipment:

- Two portable H₂S monitors positioned on location for best coverage & response. These units have warning lights & audible sirens when H₂S levels of 20 ppm are reached.
- One portable H₂S 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 H₂S circulated to the surface. Proper mud weights, safe drilling practices & the use of H₂S scavengers will minimize hazards when penetrating H₂S bearing zones.
- A mud-gas separator and H₂S 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 H₂S service.
- All elastomers used for packing & seals shall be H₂S trim.

Communication:

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

HYDROGEN SULFIDE (H₂S) CONTINGENCY PLAN

Assumed 100 ppm ROE = 3000'

100 ppm H₂S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H₂S, 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 H₂S 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 H₂S, 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 (SO₂). 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 H₂S and SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H ₂ S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	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
Terry West – Drilling Engineer	432-818-1114	432-664-7254	
Bobby Smith – Drilling Manager	432-818-1020	432-556-7701	
Jeff Burt – EH&S Coordinator		432-631-9081	

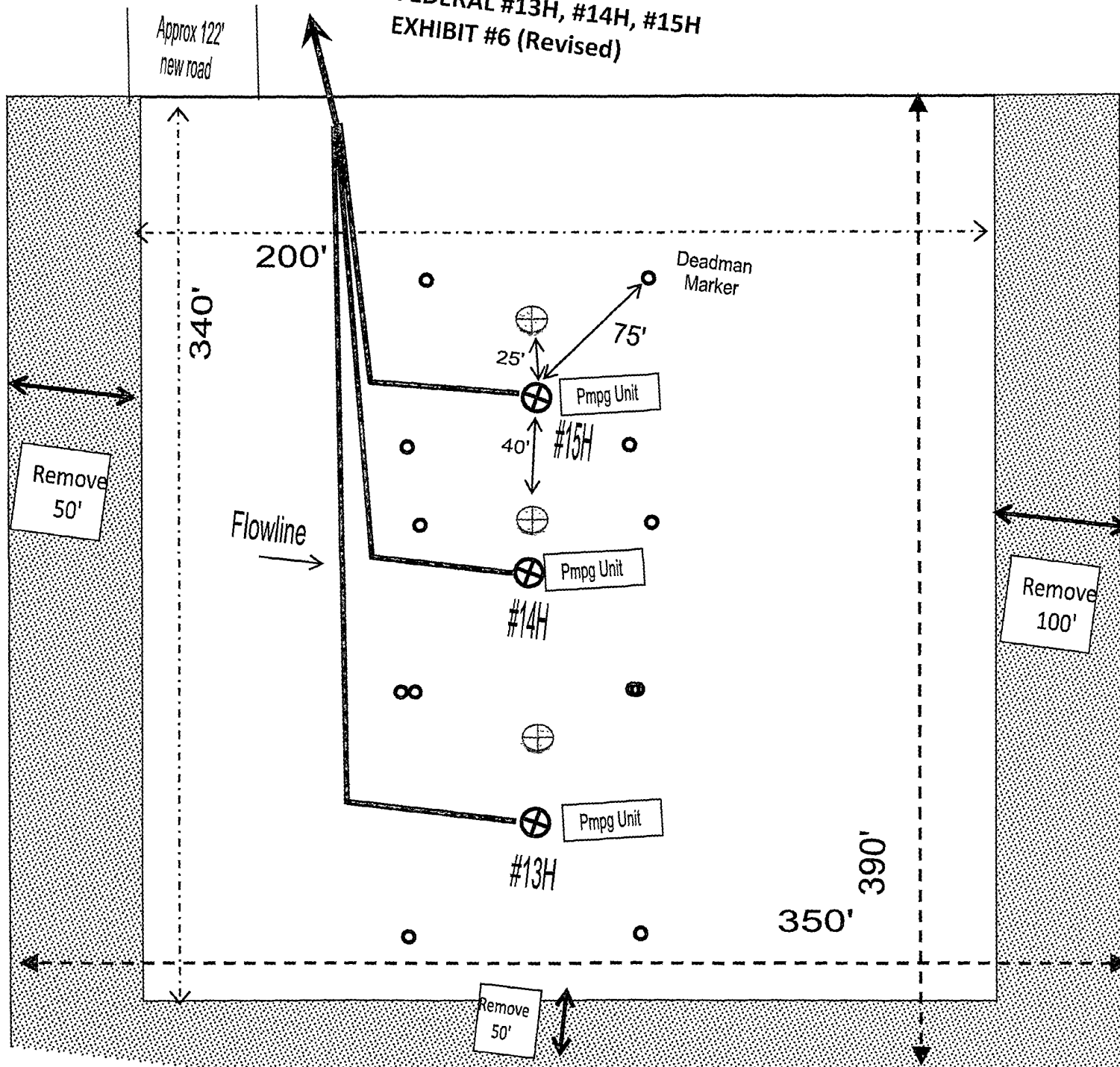
***This one phone call will free the Drilling Foreman to devote his full time to securing the safety of personnel & equipment. This call will initiate the process to mobilize the Well Control Emergency Response Team. Apache maintains an Emergency Telephone Conference Room in the Houston office. This 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

SRM RECLAMATION LAYOUT
CROW FEDERAL #13H, #14H, #15H
EXHIBIT #6 (Revised)



Crow Federal
wells
#10H, #11H, #12H

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Apache Corp
LEASE NO.:	LC029426B
WELL NAME & NO.:	14H Crow Federal
SURFACE HOLE FOOTAGE:	923' FSL & 250' FWL
BOTTOM HOLE FOOTAGE:	923' FSL & 330' FWL, Sec 9
LOCATION:	Section 10, T.17 S., R.31 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**
 - Well Pad Construction and Topsoil Stockpile
 - 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**
 - H₂S Requirements-Onshore Order #6
 - Logging Requirements
 - Waste Material and Fluids
- ☒ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines - Not approved with this APD
- ☐ **Interim Reclamation**
- ☒ **Final Abandonment & Reclamation**