12-1091

Form 3160-3
(April 2004)

OCD Artesia

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. **NMLC-029426B** TCS 3/4/2013

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. **CROW FEDERAL #23H <308711>**

2. Name of Operator **APACHE CORPORATION** <873>

9. API Well No. **30-015-** 41167

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

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

10. Field and Pool, or Exploratory <96831> **CEDAR LAKE;GLORIETA-YESO**

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface **1650' FNL & 10' FWL (UL: E)**
At proposed prod. zone **1650' FNL & 330' FEL (UL: H)**

11. Sec., T. R. M. or Blk. and Survey or Area **SEC: 9 T17S R31E**

14. Distance in miles and direction from nearest town or post office* **APPROX 7.8 MILES NORTHEAST OF 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 drig. unit line, if any) **10'**

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. **30'**

19. Proposed Depth TVD ~ 5765' MD ~ 10400'

20. BLM/BIA Bond No. on file **BLM - CO - 1463 / NMB000736**

21. Elevations (Show whether DF, KDB, RT, GL, etc.) **3870'**

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 10/17/12

Title **SUPV OF DRILLING SERVICES**

Approved by *(Signature)* /s/ Don Peterson — Name *(Printed/Typed)* — Date **FEB 28 2013**

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. 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

RECEIVED
MAR 04 2013
NMOCD ARTESIA

Approval Subject to General Requirements & Special Stipulations Attached

Witness Surface Casing Compliance Rule 5.9 TCS

SEE ATTACHED FOR CONDITIONS OF APPROVAL

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, New Mexico 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015- 41167	96831	Cedar Lake; Glorieta-Yeso

Property Code	Property Name	Well Number
308711	CROW FEDERAL	23H

OGRID No.	Operator Name	Elevation
873	APACHE CORPORATION	3870'

Surface Location

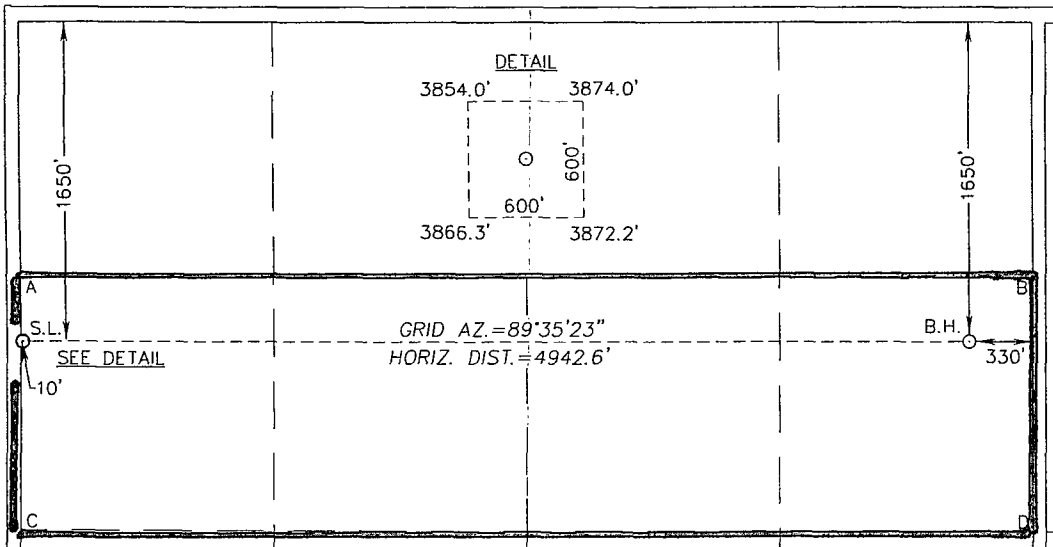
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	9	17-S	31-E		1650	NORTH	10	WEST	EDDY

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	9	17-S	31-E		1650	NORTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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



CORNER COORDINATES TABLE

A) Y=674172.6 N, X=638358.2 E

B) Y=674209.2 N, X=643639.5 E

C) Y=672852.6 N, X=638365.7 E

D) Y=672888.0 N, X=643646.5 E

GEODETIC COORDINATES
NAD 27 NME

SURFACE LOCATION
Y=673843.2 N
X=638370.1 E
LAT.=32.851668° N
LONG.=103.882758° W
LAT.=32° 51' 06" N
LONG.=103° 52' 58" W

BOTTOM HOLE LOCATION
Y=673878.5 N
X=643311.4 E

OPERATOR CERTIFICATION

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.

Sorina L Flores 8/30/12
Signature Date

Sorina L. Flores
Printed Name

sorina.flores@apachecorp.com
E-mail Address

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.

MAY 17, 2012
Date of Survey

Signature & Seal of Professional Surveyor:

GARY G. EIDSON NEW MEXICO 12641 REGISTERED PROFESSIONAL SURVEYOR

Certificate Number: Gary G. Eidson 12641
Ronald J. Eidson 3239

AF — WSC W.O.: 12.11.0472

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 3rd day of October, 2012

Well: CROW FEDERAL #23H

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 #23H

Lease #: NMLC-029426B Projected TVD: ~ 5765' MD: ~ 10400' GL: 3870'
SHL: 1650' FNL & 10' FWL UL: E BHL: 1650' FNL & 330' FEL UL: H
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	2740'
Rustler	529'	Grayburg	3155'
Salt Top	722'	San Andres	3490' (Oil)
Salt Bottom	1683'	Glorieta	4954'
Yates	1845'	Yeso (Paddock)	5036' (Oil)
Seven Rivers	2127'	TD	TVD: 5765' MD: 10400'

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 FW 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" @ ~ 5230'; 4-1/2" liner f/ 7" csg though build @ ~ 5238' TVD/MD holding @ ~ 5826' MD.

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

See COA

Does not Meet BLM min

STRING	HOLE SIZE	DEPTH	OD CSG	WEIGHT	COLLAR	GRADE	COLLAPSE	BURST	TENSION
Surface	17-1/2"	0' – ~~555'~~ 510'	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' – 5230'	7"	26#	LTC	J-55	1.0	1.21	1.8
Production Liner	6-1/8"	5130' – 10400'	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: 340 sx Class C w/4% Gel + 2% CaCL2 + 0.125#/sx CF + 0.25#/sx Defoamer *(13.5 wt, 1.75 yld)*
*Compressive Strengths : **12 hr** – 786 psi **24 hr** – 1213 psi*

Tail: 200 sx Class C w/ 1% CaCL2 (14.8 wt, 1.33 yld)
*Compressive Strengths: **12 hr** – 1565 psi **24 hr** – 2442 psi*

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

Lead: 710 sx Class C w/4% Gel + 2% CaCL2 + 0.125 #/sx CF + 0.25 #/sx Defoamer *(13.5 wt, 1.75 yld)*
*Compressive Strengths: **12 hr** – 709 psi **24 hr** – 1103 psi*

Tail: 380 sx Class C w/ 1% Retarder (14.8 wt, 1.33 yld)
*Compressive Strengths: **12 hr** – 1654 psi **24 hr** – 2256 psi*

(May use a DVT & modify cmt program for a 2 stage job, if a strong water flow is encountered)

C. Production (TOC: Surface) **35% excess cmt Cmt with:**

Lead: 240 sx Class C 50/50 Poz w/5% Salt + 10% Gel + 3 #/sx KOLSeal + 0.25% Defoamer + 0.125 #/sx CF *(11.9 wt, 2.46 yld)*
*Compressive Strengths: **12 hr** – 156 psi **24 hr** – 1081 psi*

Tail: 390 sx PVL w/1.3% Salt + 5% Expanding cmt + 0.5% Gel suppressing agent + 0.1% antisetting agent + 0.25% Defoamer + 0.2% Retarder *(13.0 wt, 1.48 yld)*
*Compressive Strengths: **12 hr** – 642 psi **24 psi** – 1016 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: 1000 sx Class C 50/50 w/5% Salt + 10% Gel + 3 #/sx KOL Seal + 0.25% Defoamer + 0.125 #/sx CF (11.9 wt, 2.46 yld)
Compressive Strengths: ***12 hr*** *– 156 psi* ***24 hr*** *– 1081 psi*

Tail: 390 sx PVL w/1.3% Salt + 5% Expanding cmt + 0.5% Gel suppressing agent + 0.1% antisetting agent + 0.25% Defoamer + 0.2% Retarder *(13.0 wt, 1.48 yld)*
Compressive Strengths: ***12 hr*** *– 642 psi* ***24 psi*** *– 1016 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). 9-5/8" string will only be ran if water flows are encountered. May have to use DVT & modify cmt program for a 2-stage job, if a strong water flow is encountered. Contingency cmt for production string will be used if intermediate string is not run. Intermediate string will only be run if water flows are encountered.

*** **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 TOC shall be determined 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 See COA

"EXHIBIT 3" shows a 13-5/8" 3M psi WP BOP consisting of at least annular bag type preventer. This BOP will be nippled 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 2536 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 of temperatures are expected in this well. No nearby wells have encountered any problems.

** Contingency: Apache respectfully requests a variance for using a flex hose contingent on type of rig used due to rig scheduling. If a flex hose is utilized, the company man will have all proper certified paperwork for that hose available on location. Possible flex hose specifications listed below:*

Flex Hose Variance Statement

Apache request a variance if Basic 44 is used to drill this well to use a co-flex line between the BOP & choke manifold.

Manufacturer: NRP Jones
Serial #: MJL001CK
Length: 26 Size: 3 Ends – Flanges / Clamps
WP rating: 10,000psi Anchors required by manufacturer – Yes / No

6. AUXILIARY WELL CONTROL EQUIPMENT / MONITORING EQUIPMENT:

13-3/8" & 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
13-3/8" & 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

7. PROPOSED MUD CIRCULATION SYSTEM: (Closed Loop System)

INTERVAL	MW (ppg)	VISC (sec/qt)	FLUID LOSS (cc)	MUD TYPE
0' – 555' 510'	8.6 – 8.8	28 - 30	NC	FW
510' 555' to 3500' *	9.8 – 10.2	28 – 34	NC	Brine
3500' – 5230'	8.6 – 9.1	28 – 36	NC	FW/Brine
5230' – 10400'	8.6 – 9.1	28 – 40	15 - NC	FW/Brine

** Contingency: If 9-5/8" string is not run, 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.***

8. LOGGING, CORING & TESTING PROGRAM:

- **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 last 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 H_2S in this area. If H_2S 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: 2536 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 after BLM approval and as soon as rig is 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 & potentialed as an oil well.

PHOENIX
TECHNOLOGY SERVICES

Apache Corporation

Eddy County, NM (Nad27)
Section 9, T17S - R31E
Crow Federal 23H
Wellbore #1

Plan: Plan #1 080812

Apache

08 August, 2012

PHOENIX
TECHNOLOGY SERVICES

Company:	Apache Corporation	Local Co-ordinate Reference:	Well Crow Federal 23H
Project:	Eddy County, NM (Nad27)	TVD Reference:	Well @ 3895.00usft (Original Well Elev + 25' KB)
Site:	Section 9, T17S - R31E	MD Reference:	Well @ 3895.00usft (Original Well Elev + 25' KB)
Well:	Crow Federal 23H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1 080812	Database:	GCR DB v5000

Project Eddy County, NM (Nad27)

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 Section 9, T17S - R31E

Site Position:		Northing:	671,957.60 usft	Latitude:	32° 50' 47.3419 N
From:	Map	Easting:	638,480.80 usft	Longitude:	103° 52' 56.7258 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.24 °

Well Crow Federal 23H

Well Position	+N/-S	0.00 usft	Northing:	673,843.20 usft	Latitude:	32° 51' 6.0047 N
	+E/-W	0.00 usft	Easting:	638,370.10 usft	Longitude:	103° 52' 57.9291 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,870.00 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	08/08/12	7.64	60.68	48,841

Design Plan #1 080812

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	89.59

Survey Tool Program Date 08/08/12

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	10,399.72	Plan #1 080812 (Wellbore #1)	MWD	MWD - Standard

Company:	Apache Corporation	Local Co-ordinate Reference:	Well Crow Federal 23H
Project:	Eddy County, NM (Nad27)	TVD Reference:	Well @ 3895.00usft (Original Well Elev + 25' KB)
Site:	Section 9, T17S - R31E	MD Reference:	Well @ 3895.00usft (Original Well Elev + 25' KB)
Well:	Crow Federal 23H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1 080812	Database:	GCR DB v5000

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	-3,895.00	0.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
100.00	0.00	0.00	-3,795.00	100.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
200.00	0.00	0.00	-3,695.00	200.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
300.00	0.00	0.00	-3,595.00	300.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
400.00	0.00	0.00	-3,495.00	400.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
500.00	0.00	0.00	-3,395.00	500.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
529.00	0.00	0.00	-3,366.00	529.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
Rustler										
600.00	0.00	0.00	-3,295.00	600.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
700.00	0.00	0.00	-3,195.00	700.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
722.00	0.00	0.00	-3,173.00	722.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
T/Salt										
800.00	0.00	0.00	-3,095.00	800.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
900.00	0.00	0.00	-2,995.00	900.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
1,000.00	0.00	0.00	-2,895.00	1,000.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
1,100.00	0.00	0.00	-2,795.00	1,100.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
1,200.00	0.00	0.00	-2,695.00	1,200.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
1,300.00	0.00	0.00	-2,595.00	1,300.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
1,400.00	0.00	0.00	-2,495.00	1,400.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
1,500.00	0.00	0.00	-2,395.00	1,500.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
1,600.00	0.00	0.00	-2,295.00	1,600.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
1,683.00	0.00	0.00	-2,212.00	1,683.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
B/Salt										
1,700.00	0.00	0.00	-2,195.00	1,700.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
1,800.00	0.00	0.00	-2,095.00	1,800.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
1,845.00	0.00	0.00	-2,050.00	1,845.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
Yates										
1,900.00	0.00	0.00	-1,995.00	1,900.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10

Company:	Apache Corporation	Local Co-ordinate Reference:	Well Crow Federal 23H
Project:	Eddy County, NM (Nad27)	TVD Reference:	Well @ 3895.00usft (Original Well Elev + 25' KB)
Site:	Section 9, T17S - R31E	MD Reference:	Well @ 3895.00usft (Original Well Elev + 25' KB)
Well:	Crow Federal 23H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1 080812	Database:	GCR DB v5000

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)
2,000.00	0.00	0.00	-1,895.00	2,000.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
2,100.00	0.00	0.00	-1,795.00	2,100.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
2,127.00	0.00	0.00	-1,768.00	2,127.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
Seven Rivers										
2,200.00	0.00	0.00	-1,695.00	2,200.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
2,300.00	0.00	0.00	-1,595.00	2,300.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
2,400.00	0.00	0.00	-1,495.00	2,400.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
2,500.00	0.00	0.00	-1,395.00	2,500.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
2,600.00	0.00	0.00	-1,295.00	2,600.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
2,700.00	0.00	0.00	-1,195.00	2,700.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
2,740.00	0.00	0.00	-1,155.00	2,740.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
Queen										
2,800.00	0.00	0.00	-1,095.00	2,800.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
2,900.00	0.00	0.00	-995.00	2,900.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
3,000.00	0.00	0.00	-895.00	3,000.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
3,100.00	0.00	0.00	-795.00	3,100.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
3,155.00	0.00	0.00	-740.00	3,155.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
Grayburg										
3,200.00	0.00	0.00	-695.00	3,200.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
3,300.00	0.00	0.00	-595.00	3,300.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
3,400.00	0.00	0.00	-495.00	3,400.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
3,490.00	0.00	0.00	-405.00	3,490.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
San Andres										
3,500.00	0.00	0.00	-395.00	3,500.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
3,600.00	0.00	0.00	-295.00	3,600.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
3,700.00	0.00	0.00	-195.00	3,700.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
3,800.00	0.00	0.00	-95.00	3,800.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10

Company:	Apache Corporation	**Local Co-ordinate Reference:**	Well Crow Federal 23H
Project:	Eddy County, NM (Nad27)	**TVD Reference:**	Well @ 3895.00usft (Original Well Elev + 25' KB)
Site:	Section 9, T17S - R31E	**MD Reference:**	Well @ 3895.00usft (Original Well Elev + 25' KB)
Well:	Crow Federal 23H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1 080812	**Database:**	GCR DB v5000

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)
3,900.00	0.00	0.00	5.00	3,900.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,000.00	0.00	0.00	105.00	4,000.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,100.00	0.00	0.00	205.00	4,100.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,200.00	0.00	0.00	305.00	4,200.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,300.00	0.00	0.00	405.00	4,300.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,400.00	0.00	0.00	505.00	4,400.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,500.00	0.00	0.00	605.00	4,500.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,600.00	0.00	0.00	705.00	4,600.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,700.00	0.00	0.00	805.00	4,700.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,800.00	0.00	0.00	905.00	4,800.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,900.00	0.00	0.00	1,005.00	4,900.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
4,954.00	0.00	0.00	1,059.00	4,954.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
Glorieta										
5,000.00	0.00	0.00	1,105.00	5,000.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
5,036.00	0.00	0.00	1,141.00	5,036.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
(Yeso) Paddock										
5,100.00	0.00	0.00	1,205.00	5,100.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
5,200.00	0.00	0.00	1,305.00	5,200.00	0.00	0.00	0.00	0.00	673,843.20	638,370.10
5,238.75	0.00	0.00	1,343.75	5,238.75	0.00	0.00	0.00	0.00	673,843.20	638,370.10
Start Build 15.00										
5,300.00	9.19	89.59	1,404.74	5,299.74	0.04	4.90	4.90	15.00	673,843.24	638,375.00
5,400.00	24.19	89.59	1,500.25	5,395.25	0.24	33.53	33.53	15.00	673,843.44	638,403.63
5,500.00	39.19	89.59	1,585.10	5,480.10	0.61	85.91	85.91	15.00	673,843.81	638,456.01
5,600.00	54.19	89.59	1,653.51	5,548.51	1.13	158.46	158.46	15.00	673,844.33	638,528.56
5,700.00	69.19	89.59	1,700.80	5,595.80	1.76	246.24	246.25	15.00	673,844.96	638,616.34
5,715.46	71.51	89.59	1,706.00	5,601.00	1.86	260.80	260.81	15.00	673,845.06	638,630.90
Blinebry										

Company:	Apache Corporation	Local Co-ordinate Reference:	Well Crow Federal 23H
Project:	Eddy County, NM (Nad27)	TVD Reference:	Well @ 3895.00usft (Original Well Elev + 25' KB)
Site:	Section 9, T17S - R31E	MD Reference:	Well @ 3895.00usft (Original Well Elev + 25' KB)
Well:	Crow Federal 23H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1 080812	Database:	GCR DB v5000

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)
5,800.00	84.19	89.59	1,723.76	5,618.76	2.45	343.28	343.28	15.00	673,845.65	638,713.38
5,826.69	88.19	89.59	1,725.54	5,620.54	2.64	369.90	369.91	15.00	673,845.84	638,740.00
Start 4573.80 hold at 5826.69 MD										
5,900.00	88.19	89.59	1,727.85	5,622.85	3.17	443.17	443.18	0.00	673,846.37	638,813.27
6,000.00	88.19	89.59	1,731.01	5,626.01	3.88	543.12	543.13	0.00	673,847.08	638,913.22
6,100.00	88.19	89.59	1,734.17	5,629.17	4.59	643.07	643.08	0.00	673,847.79	639,013.17
6,200.00	88.19	89.59	1,737.33	5,632.33	5.31	743.01	743.03	0.00	673,848.51	639,113.11
6,300.00	88.19	89.59	1,740.49	5,635.49	6.02	842.96	842.98	0.00	673,849.22	639,213.06
6,400.00	88.19	89.59	1,743.64	5,638.64	6.74	942.91	942.93	0.00	673,849.94	639,313.01
6,500.00	88.19	89.59	1,746.80	5,641.80	7.45	1,042.86	1,042.88	0.00	673,850.65	639,412.96
6,600.00	88.19	89.59	1,749.96	5,644.96	8.16	1,142.80	1,142.83	0.00	673,851.36	639,512.90
6,700.00	88.19	89.59	1,753.12	5,648.12	8.88	1,242.75	1,242.78	0.00	673,852.08	639,612.85
6,800.00	88.19	89.59	1,756.28	5,651.28	9.59	1,342.70	1,342.73	0.00	673,852.79	639,712.80
6,900.00	88.19	89.59	1,759.44	5,654.44	10.31	1,442.65	1,442.68	0.00	673,853.51	639,812.75
7,000.00	88.19	89.59	1,762.59	5,657.59	11.02	1,542.59	1,542.63	0.00	673,854.22	639,912.69
7,100.00	88.19	89.59	1,765.75	5,660.75	11.73	1,642.54	1,642.58	0.00	673,854.93	640,012.64
7,200.00	88.19	89.59	1,768.91	5,663.91	12.45	1,742.49	1,742.53	0.00	673,855.65	640,112.59
7,300.00	88.19	89.59	1,772.07	5,667.07	13.16	1,842.44	1,842.48	0.00	673,856.36	640,212.54
7,400.00	88.19	89.59	1,775.23	5,670.23	13.88	1,942.39	1,942.43	0.00	673,857.08	640,312.49
7,500.00	88.19	89.59	1,778.39	5,673.39	14.59	2,042.33	2,042.38	0.00	673,857.79	640,412.43
7,600.00	88.19	89.59	1,781.55	5,676.55	15.30	2,142.28	2,142.33	0.00	673,858.50	640,512.38
7,700.00	88.19	89.59	1,784.70	5,679.70	16.02	2,242.23	2,242.28	0.00	673,859.22	640,612.33
7,800.00	88.19	89.59	1,787.86	5,682.86	16.73	2,342.18	2,342.24	0.00	673,859.93	640,712.28
7,900.00	88.19	89.59	1,791.02	5,686.02	17.45	2,442.12	2,442.19	0.00	673,860.65	640,812.22
8,000.00	88.19	89.59	1,794.18	5,689.18	18.16	2,542.07	2,542.14	0.00	673,861.36	640,912.17
8,100.00	88.19	89.59	1,797.34	5,692.34	18.87	2,642.02	2,642.09	0.00	673,862.07	641,012.12
8,200.00	88.19	89.59	1,800.50	5,695.50	19.59	2,741.97	2,742.04	0.00	673,862.79	641,112.07

Company:	Apache Corporation	Local Co-ordinate Reference:	Well Crow Federal 23H
Project:	Eddy County, NM (Nad27)	TVD Reference:	Well @ 3895.00usft (Original Well Elev + 25' KB)
Site:	Section 9, T17S - R31E	MD Reference:	Well @ 3895.00usft (Original Well Elev + 25' KB)
Well:	Crow Federal 23H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1.080812	Database:	GCR DB v5000

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)
8,300.00	88.19	89.59	1,803.66	5,698.66	20.30	2,841.91	2,841.99	0.00	673,863.50	641,212.01
8,400.00	88.19	89.59	1,806.81	5,701.81	21.02	2,941.86	2,941.94	0.00	673,864.22	641,311.96
8,500.00	88.19	89.59	1,809.97	5,704.97	21.73	3,041.81	3,041.89	0.00	673,864.93	641,411.91
8,600.00	88.19	89.59	1,813.13	5,708.13	22.44	3,141.76	3,141.84	0.00	673,865.64	641,511.86
8,700.00	88.19	89.59	1,816.29	5,711.29	23.16	3,241.70	3,241.79	0.00	673,866.36	641,611.80
8,800.00	88.19	89.59	1,819.45	5,714.45	23.87	3,341.65	3,341.74	0.00	673,867.07	641,711.75
8,900.00	88.19	89.59	1,822.61	5,717.61	24.59	3,441.60	3,441.69	0.00	673,867.79	641,811.70
9,000.00	88.19	89.59	1,825.77	5,720.77	25.30	3,541.55	3,541.64	0.00	673,868.50	641,911.65
9,100.00	88.19	89.59	1,828.92	5,723.92	26.01	3,641.49	3,641.59	0.00	673,869.21	642,011.59
9,200.00	88.19	89.59	1,832.08	5,727.08	26.73	3,741.44	3,741.54	0.00	673,869.93	642,111.54
9,300.00	88.19	89.59	1,835.24	5,730.24	27.44	3,841.39	3,841.49	0.00	673,870.64	642,211.49
9,400.00	88.19	89.59	1,838.40	5,733.40	28.16	3,941.34	3,941.44	0.00	673,871.36	642,311.44
9,500.00	88.19	89.59	1,841.56	5,736.56	28.87	4,041.28	4,041.39	0.00	673,872.07	642,411.38
9,600.00	88.19	89.59	1,844.72	5,739.72	29.58	4,141.23	4,141.34	0.00	673,872.78	642,511.33
9,700.00	88.19	89.59	1,847.87	5,742.87	30.30	4,241.18	4,241.29	0.00	673,873.50	642,611.28
9,800.00	88.19	89.59	1,851.03	5,746.03	31.01	4,341.13	4,341.24	0.00	673,874.21	642,711.23
9,900.00	88.19	89.59	1,854.19	5,749.19	31.73	4,441.07	4,441.19	0.00	673,874.93	642,811.17
10,000.00	88.19	89.59	1,857.35	5,752.35	32.44	4,541.02	4,541.14	0.00	673,875.64	642,911.12
10,100.00	88.19	89.59	1,860.51	5,755.51	33.15	4,640.97	4,641.09	0.00	673,876.35	643,011.07
10,200.00	88.19	89.59	1,863.67	5,758.67	33.87	4,740.92	4,741.04	0.00	673,877.07	643,111.02
10,300.00	88.19	89.59	1,866.83	5,761.83	34.58	4,840.86	4,840.99	0.00	673,877.78	643,210.96
10,400.00	88.19	89.59	1,869.98	5,764.98	35.30	4,940.81	4,940.94	0.00	673,878.50	643,310.91
10,400.49	88.19	89.59	1,870.00	5,765.00	35.30	4,941.30	4,941.43	0.00	673,878.50	643,311.40
TD at 10400.49										

Company:	Apache Corporation	**Local Coordinate Reference:**	Well Crow Federal 23H
Project:	Eddy County, NM (Nad27)	**TVD Reference:**	Well @ 3895.00usft (Original Well Elev + 25' KB)
Site:	Section 9, T17S - R31E	**MD Reference:**	Well @ 3895.00usft (Original Well Elev + 25' KB)
Well:	Crow Federal 23H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1 080812	**Database:**	GCR DB v5000

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,036.00	5,036.00	(Yeso) Paddock			
722.00	722.00	T/Salt			
3,490.00	3,490.00	San Andres			
5,715.46	5,601.00	Blinebry			
4,954.00	4,954.00	Glorieta			
3,155.00	3,155.00	Grayburg			
1,845.00	1,845.00	Yates			
2,740.00	2,740.00	Queen			
1,683.00	1,683.00	B/Salt			
2,127.00	2,127.00	Seven Rivers			
529.00	529.00	Rustler			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,238.75	5,238.75	0.00	0.00	Start Build 15.00
5,826.69	5,620.54	2.64	369.90	Start 4573.80 hold at 5826.69 MD
10,400.49	5,765.00	35.30	4,941.30	TD at 10400.49

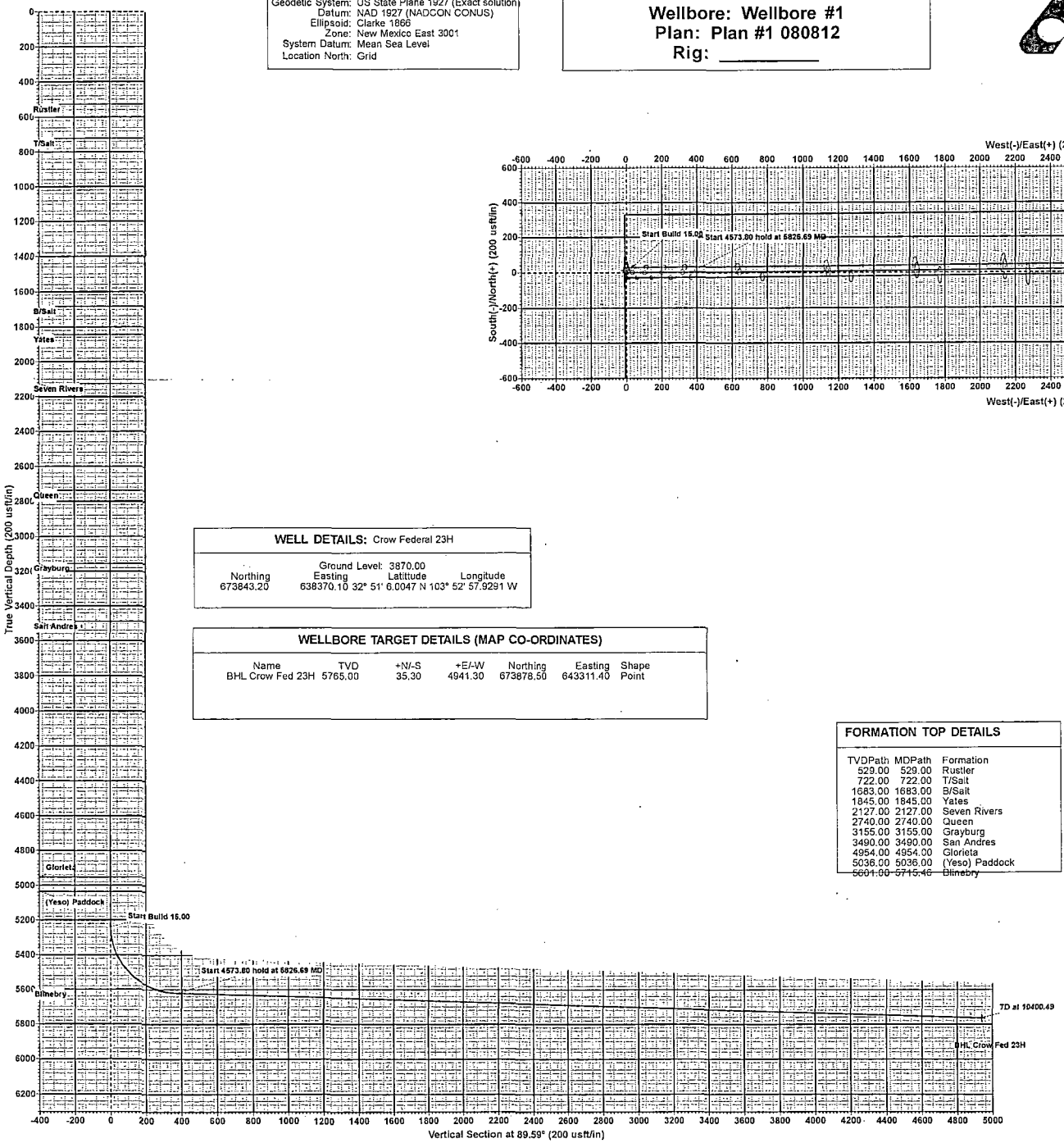
Checked By: _____ Approved By: _____ Date: _____

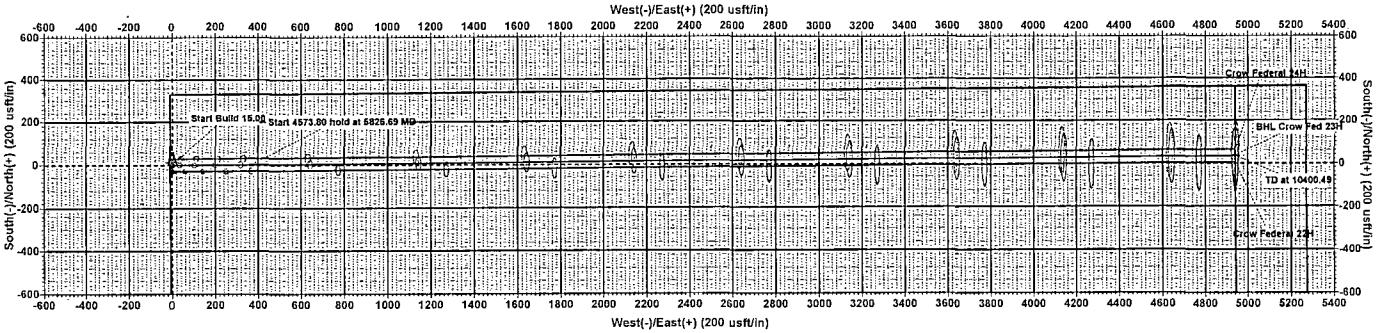
Apache Corporation

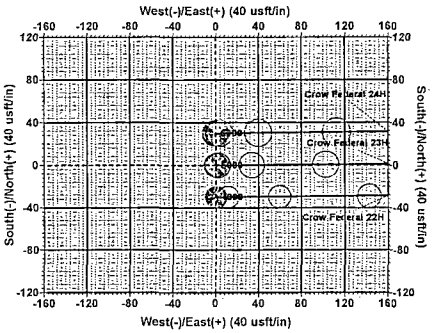
PHOENIX TECHNOLOGY SERVICES

Project: Eddy County, NM (Nad27)
Site: Section 9, T17S - R31E
Well: Crow Federal 23H
Wellbore: Wellbore #1
Plan: Plan #1 080812
Rig: _____

PROJECT DETAILS: Eddy County, NM (Nad27)	
Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	New Mexico East 3001
System Datum:	Mean Sea Level
Location North:	Grid







WELL DETAILS: Crow Federal 23H

Ground Level: 3870.00

Northing	Easting	Latitude	Longitude
673843.20	638370.10	32° 51' 6.0047 N	103° 52' 57.9291 W

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
BHL Crow Fed 23H	5765.00	35.30	4941.30	673878.50	643311.40	Point

FORMATION TOP DETAILS

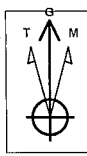
TVDPath	MDPath	Formation
529.00	529.00	Rustler
722.00	722.00	T/Salt
1683.00	1683.00	B/Salt
1845.00	1845.00	Yates
2127.00	2127.00	Seven Rivers
2740.00	2740.00	Queen
3155.00	3155.00	Grayburg
3490.00	3490.00	San Andres
4954.00	4954.00	Glorieta
5036.00	5036.00	(Yeso) Paddock
5601.00	5715.46	Blinebry

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5238.75	0.00	0.00	5238.75	0.00	0.00	0.00	0.00	0.00	
5826.69	88.19	89.59	5620.54	2.64	369.90	15.00	89.59	369.91	
10400.49	88.19	89.59	5765.00	35.30	4941.30	0.00	0.00	4941.43	BHL Crow Fed 23H

ANNOTATIONS

TVD	MD	Annotation
5238.75	5238.75	Start Build 15.00
5620.54	5826.69	Start 4573.80 hold at 5826.69 MD
5764.95	10399.00	TD at 10400.49

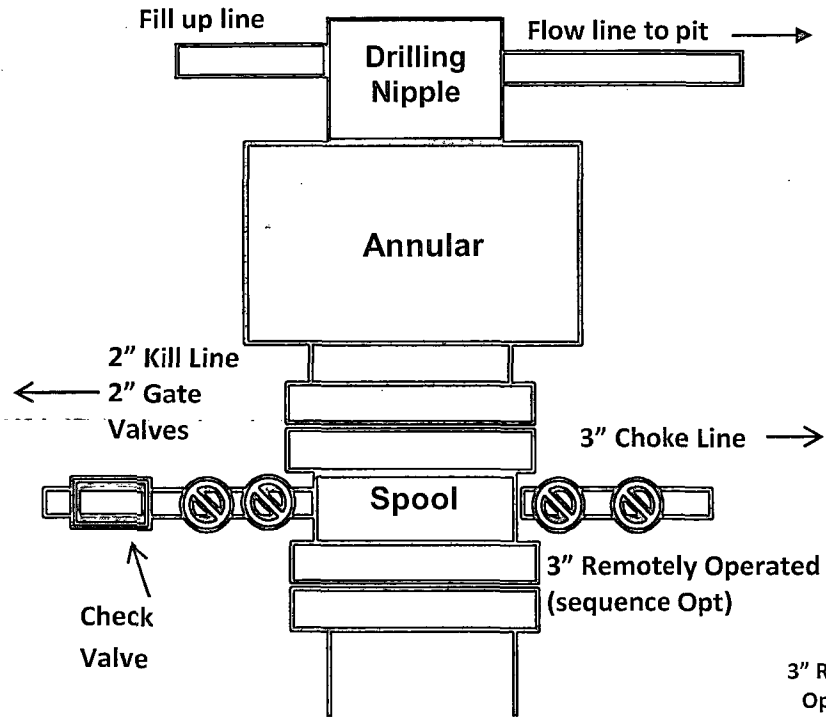


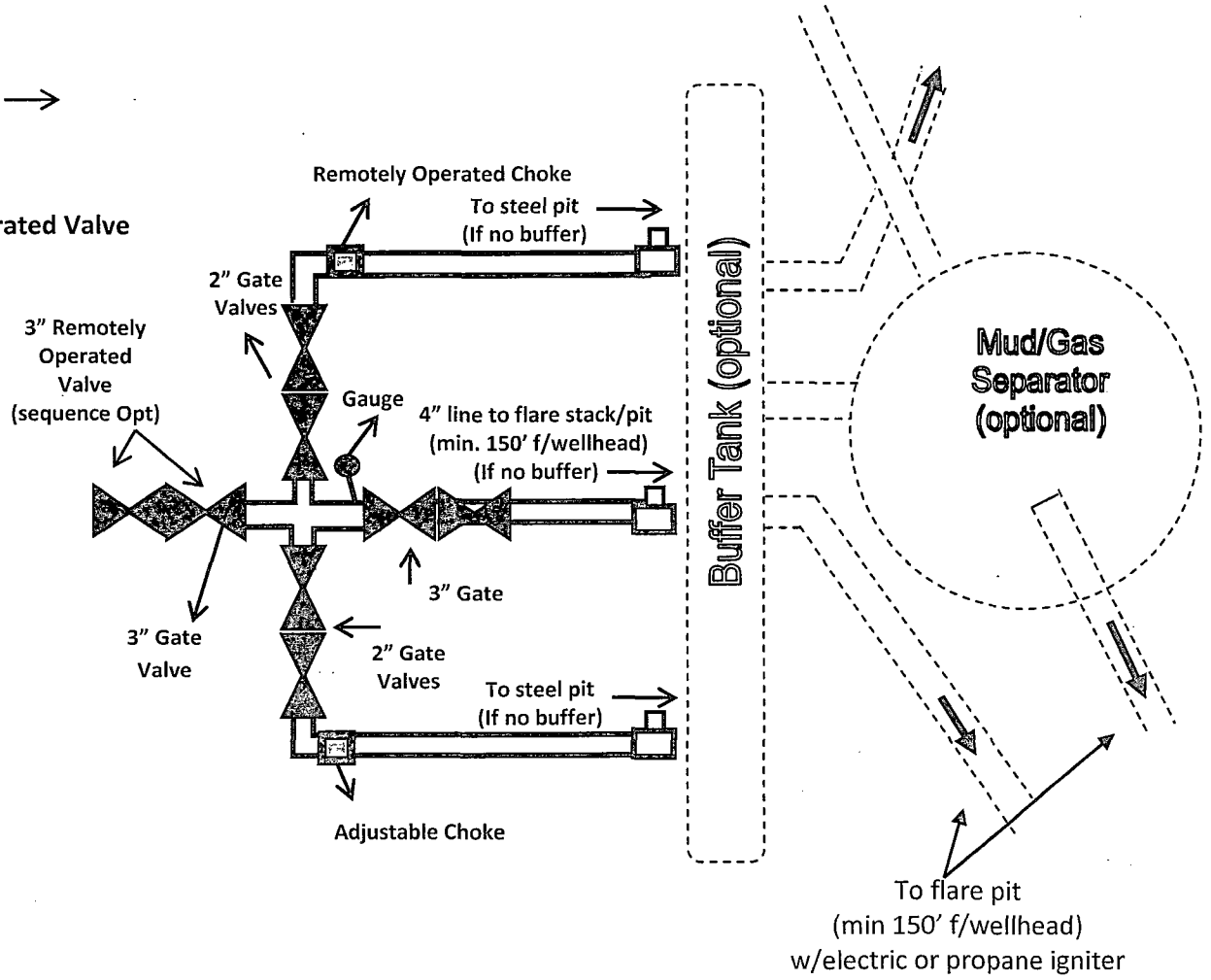
Azimuths to Grid North
True North: -0.24°
Magnetic North: 7.39°

Magnetic Field
Strength: 48841.4snT
Dip Angle: 60.68°
Date: 08/06/2012
Model: IGRF2010_14

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

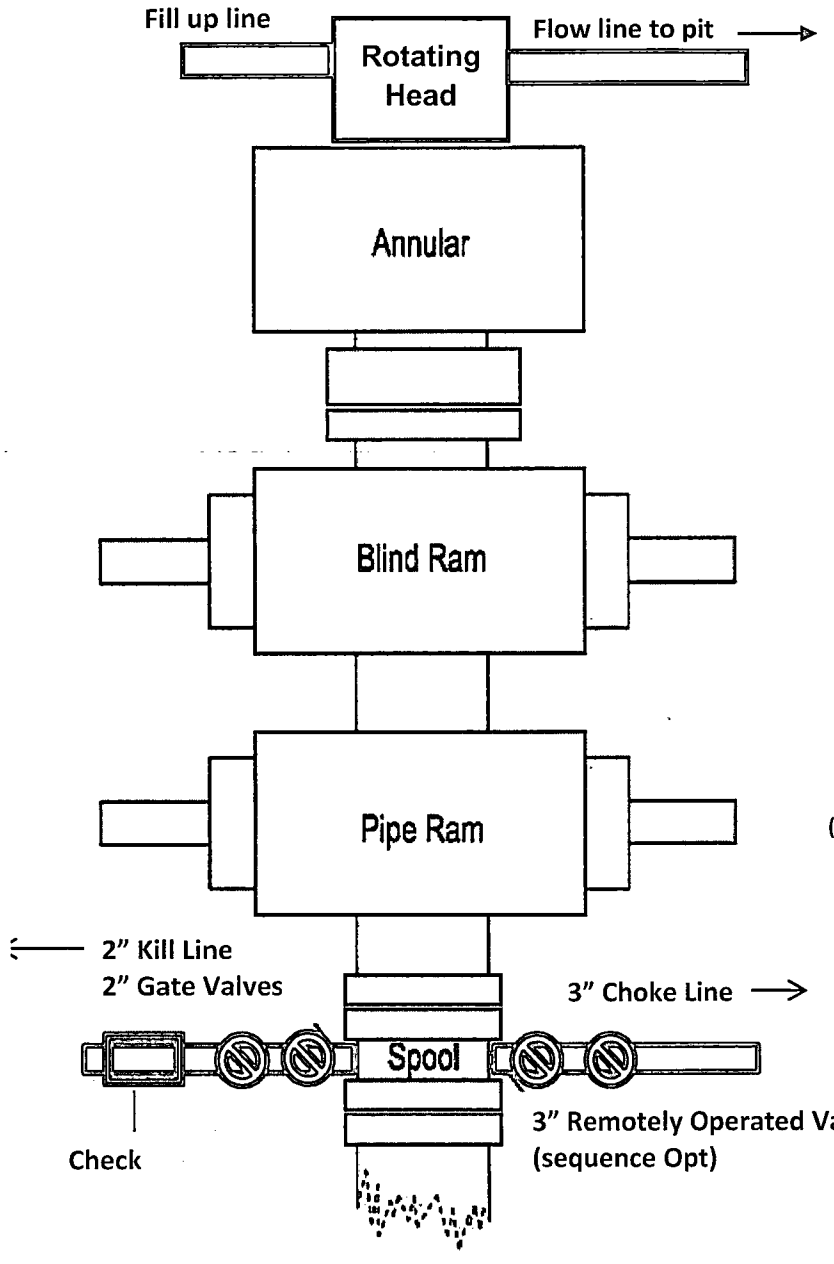
All valve & lines on choke manifold are 2" unless noted.
Exact manifold configuration may vary

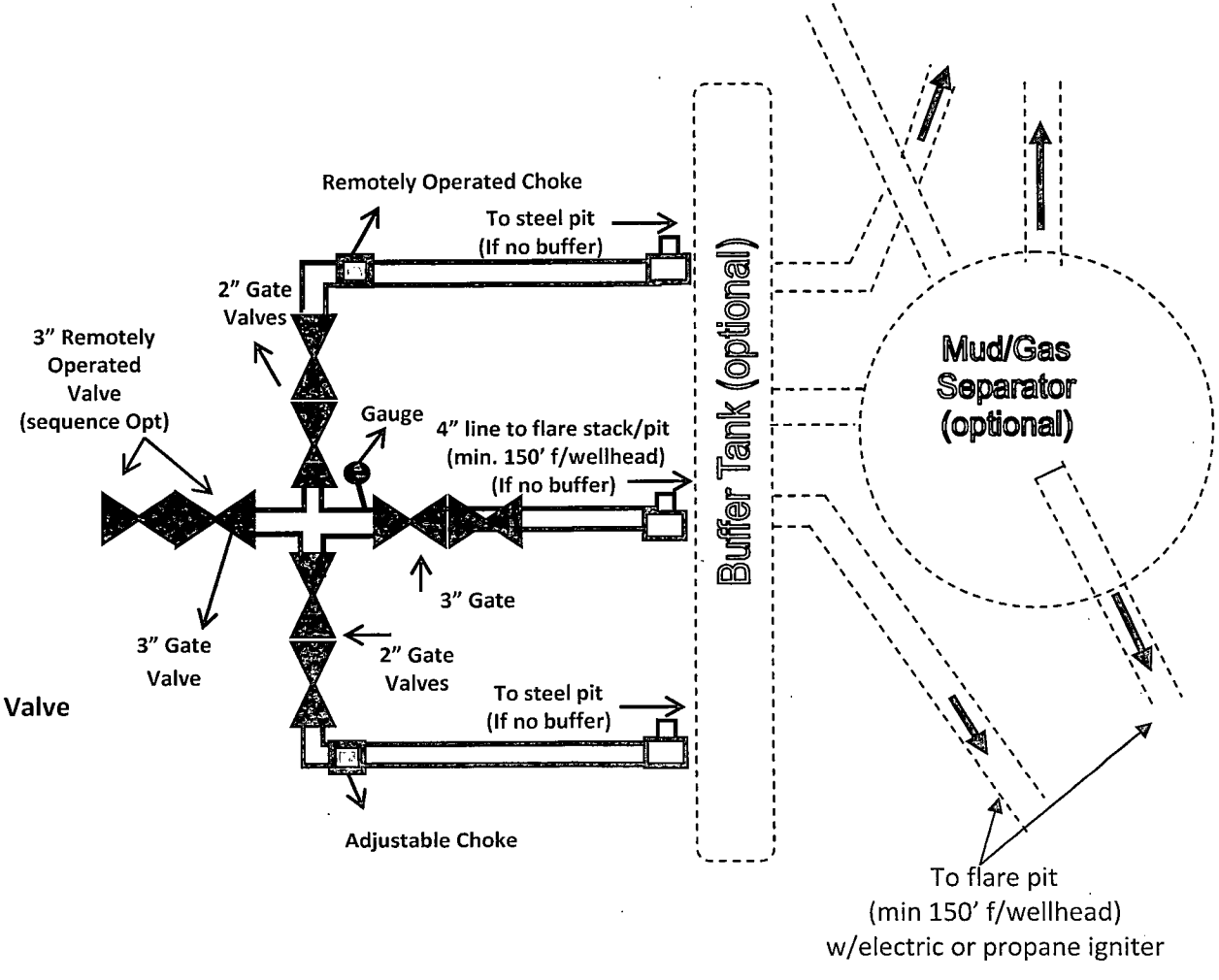


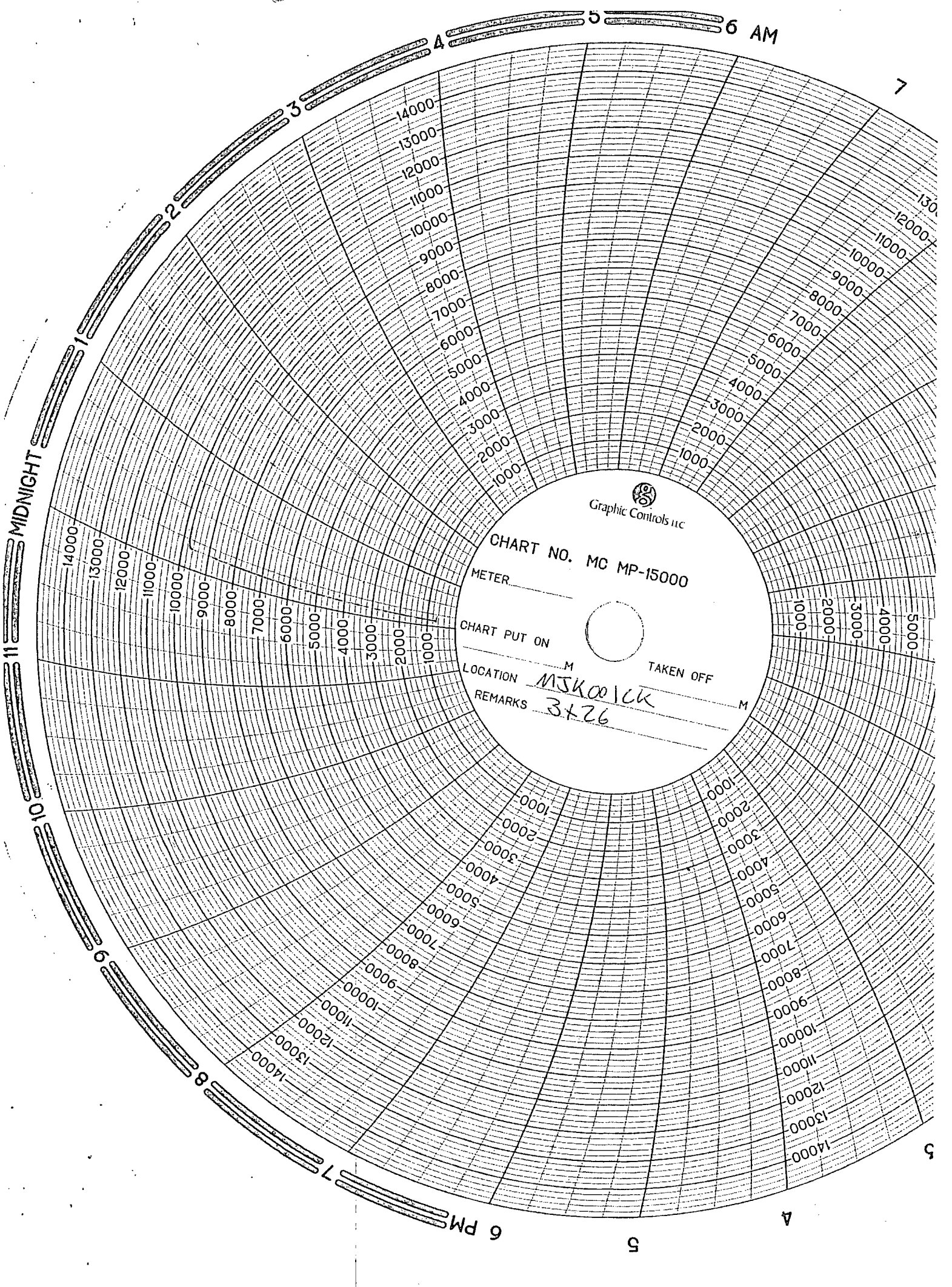


11" or 13-5/8" 5M psi BOPE & Choke Manifold EXHIBIT 3A

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






MIDNIGHT
1
2
3
4
5
6 AM
7
8
9
10
11
6 PM
Graphic Controls LLC
CHART NO. MC MP-15000
METER
CHART PUT ON
M
TAKEN OFF
LOCATION MJK001CK
M
REMARKS 3+26

Certificate of Conformance

DATE 10-1-12

SERIAL NO. MJK001CK **PART NO.** NA

SIZE 3 **LENGTH** 26

HYDROSTATICALLY TESTED AT 10,000 #

BY Rhett Saunders **Q.A.**

NEPHI RUBBER PRODUCTS CORP.

Corporate Office: P.O. Box 310 • LaPorte, Indiana 46352 • (800)348-8868 • (219)362-9908 • Fax Number (219)324-0815
Manufacturing: 255 West 11th North • Nephi, Utah 84648 • (800)453-1480 • (435)623-1740 • Fax Number (435)623-2638

DESIGN PLAN, OPERATING & MAINTENANCE PLAN, & CLOSURE PLAN FOR OCD FOR C-144

CROW FEDERAL #23H

DESIGN PLAN

Fluid & cuttings coming from drilling operations will pass over the Shale Shaker with the cuttings going to the Sundance Inc / CRI haul off bin and the cleaned fluid returning to the working steel pits.

Equipment includes:

2 – 500 bbl steel frac tanks (fresh water for drilling)
2 – 180 bbl steel working pits
3 – 75 bbl steel haul off bins
2 – Pumps (6-1/2" x 10" PZ 10 or equivalent)
1 – Shale shaker
1 – Mud cleaner – QMAX MudStripper

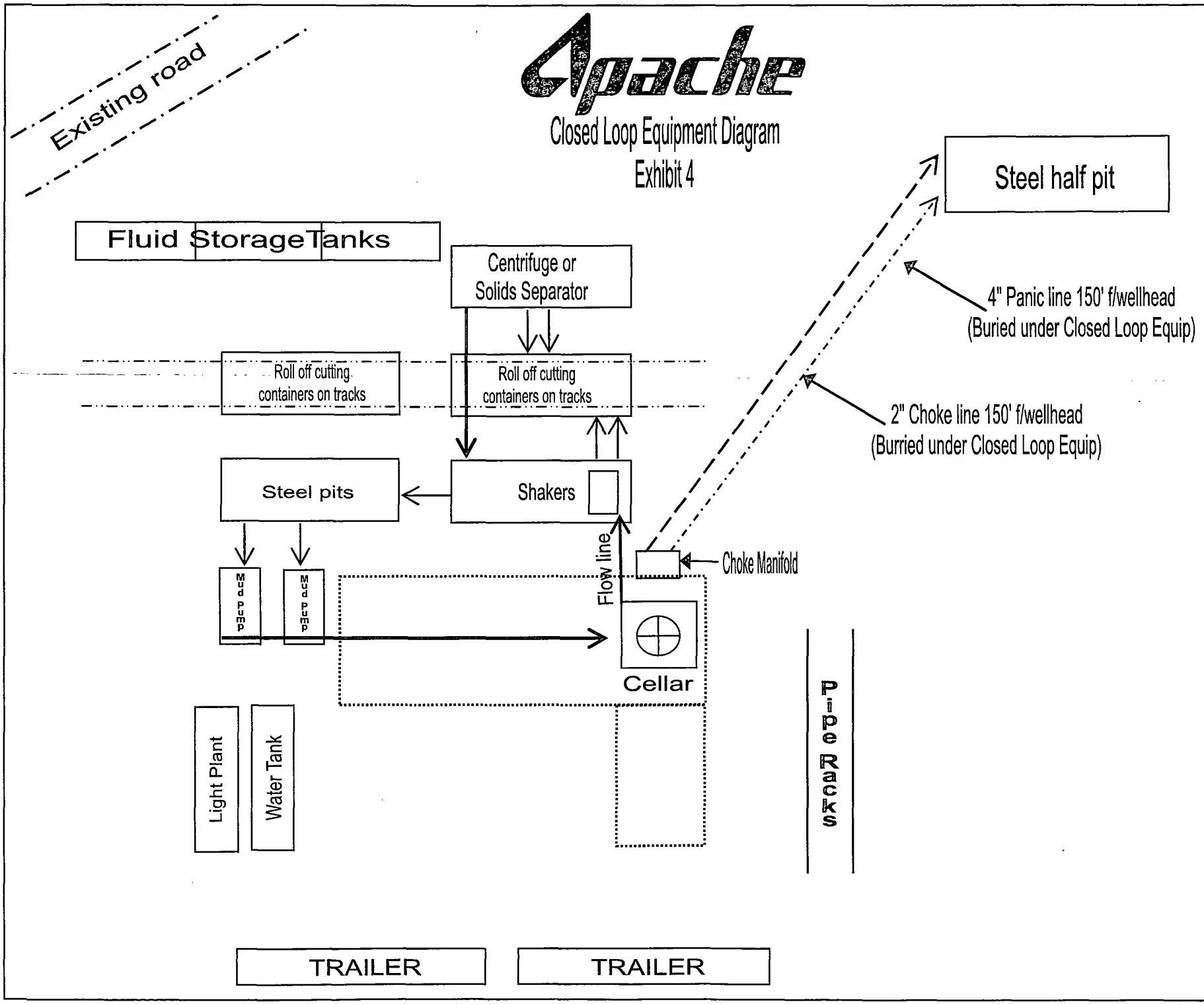
OPERATING AND MAINTENANCE PLAN

Inspection to occur every tour for proper operation of system and individual components. If any problems are found they will be repaired and/or corrected immediately.

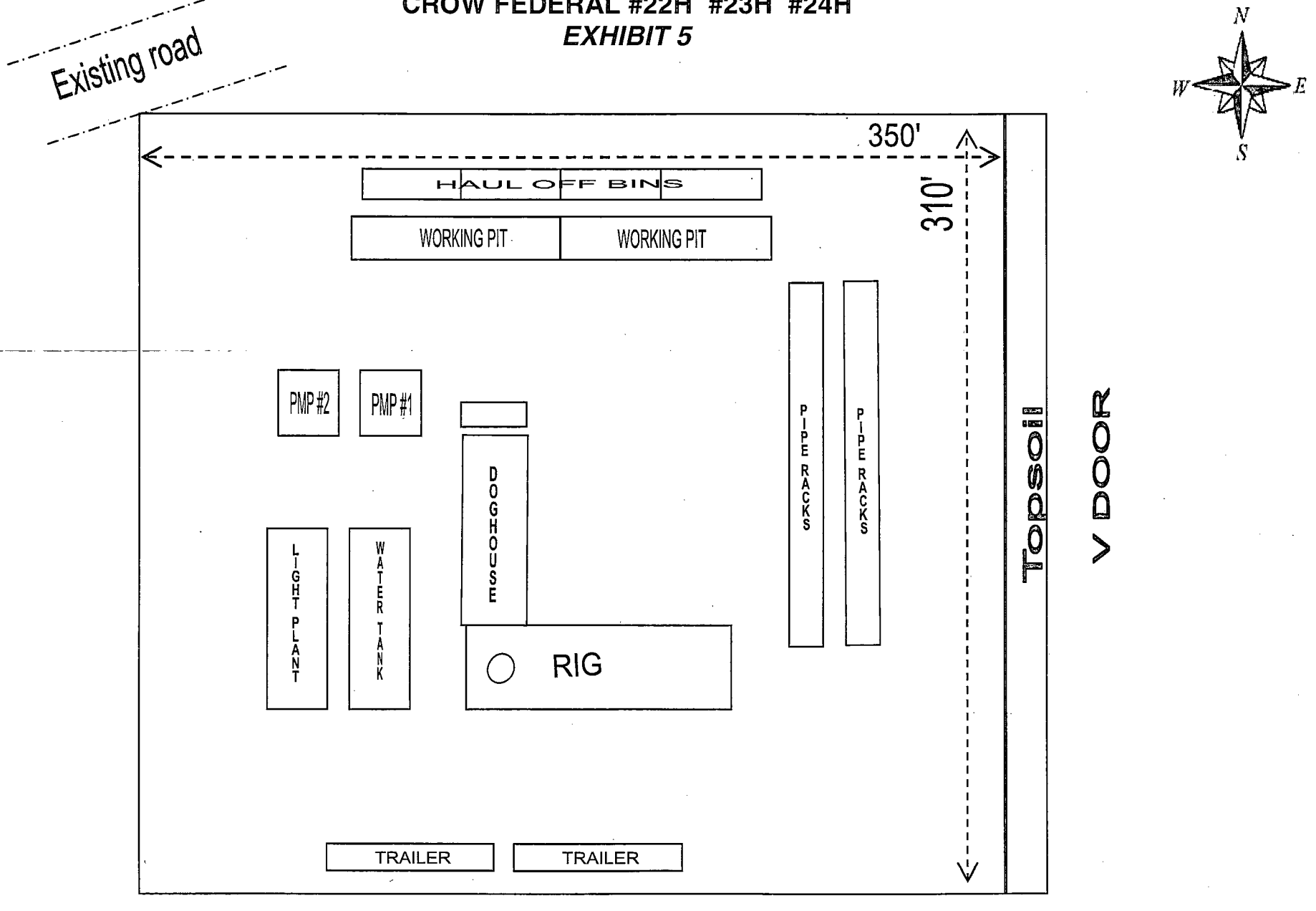
CLOSURE PLAN

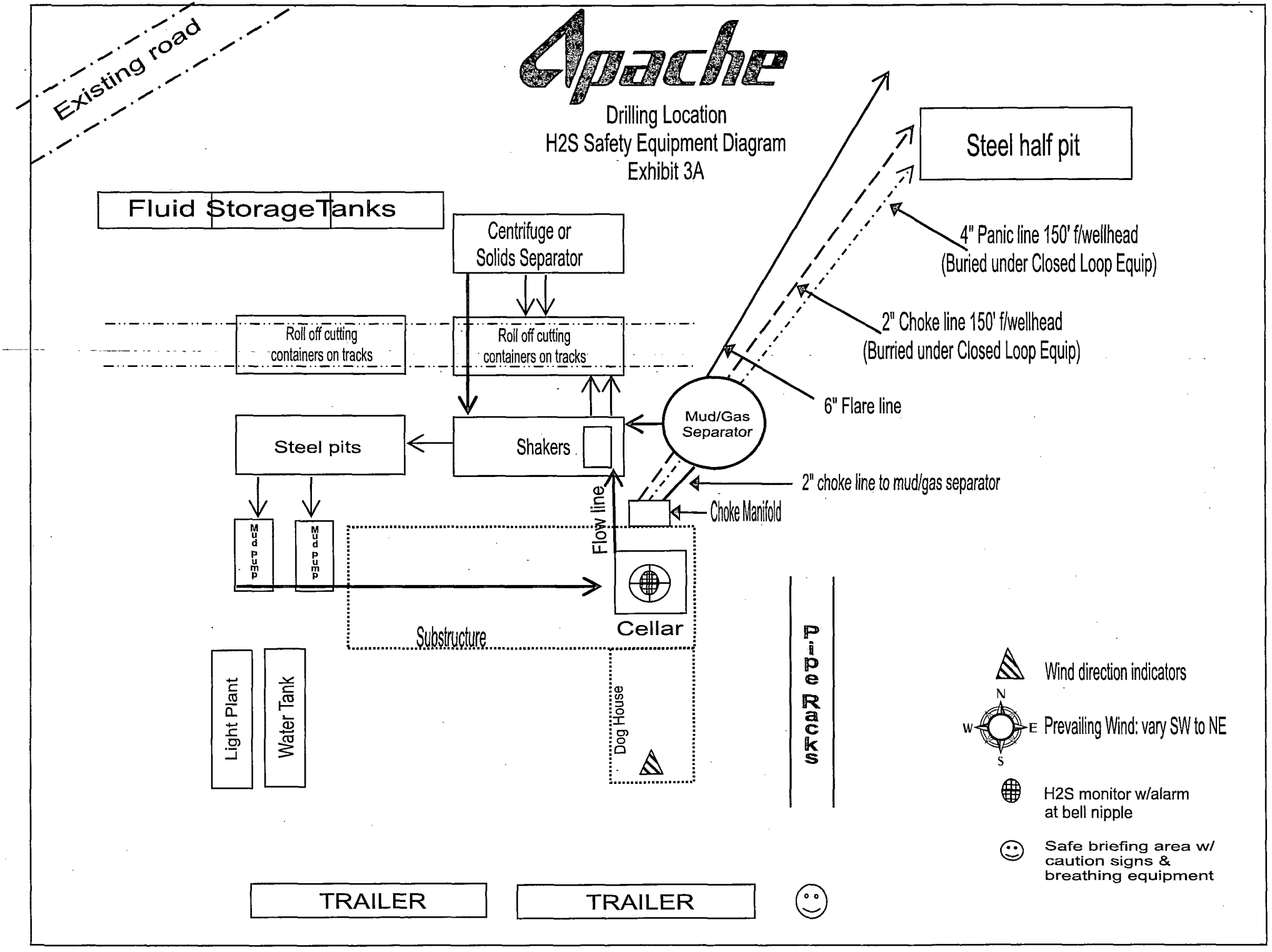
All haul bins containing cuttings will be removed from location and hauled to Sundance Incorporated (NM-01-0003) disposal site located 3 miles East of Eunice, NM on the Texas border / Controlled Recovery, Inc's (NM-01-0006) disposal site located near mile marker 66 on Highway 62/180.

Sorina L. Flores
Supv. of Drilling Services


Apache
Closed Loop Equipment Diagram
Exhibit 4
Existing road
Steel half pit
Fluid Storage Tanks
Centrifuge or
Solids Separator
4" Panic line 150' f/wellhead
(Buried under Closed Loop Equip)
Roll off cutting
containers on tracks
Roll off cutting
containers on tracks
2" Choke line 150' f/wellhead
(Burried under Closed Loop Equip)
Steel pits
Shakers
Flow line
Choke Manifold
Cellar
Light Plant
Water Tank
Pipe Racks
TRAILER
TRAILER

RIG ORIENTATION & LAYOUT
CROW FEDERAL #22H #23H #24H
EXHIBIT 5




Existing road
Apache
Drilling Location
H2S Safety Equipment Diagram
Exhibit 3A
Steel half pit
Fluid Storage Tanks
Centrifuge or Solids Separator
4" Panic line 150' f/wellhead (Buried under Closed Loop Equip)
2" Choke line 150' f/wellhead (Burried under Closed Loop Equip)
Roll off cutting containers on tracks
Roll off cutting containers on tracks
6" Flare line
Mud/Gas Separator
Steel pits
Shakers
2" choke line to mud/gas separator
Choke Manifold
Flow line
Mud Pump
Mud Pump
Substructure
Cellar
Pipe Racks
Light Plant
Water Tank
Dog House
Wind direction indicators
N
W
E
S
Prevailing Wind: vary SW to NE
H2S monitor w/alarm at bell nipple
Safe briefing area w/ caution signs & breathing equipment
TRAILER
TRAILER

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	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

EXHIBIT #7

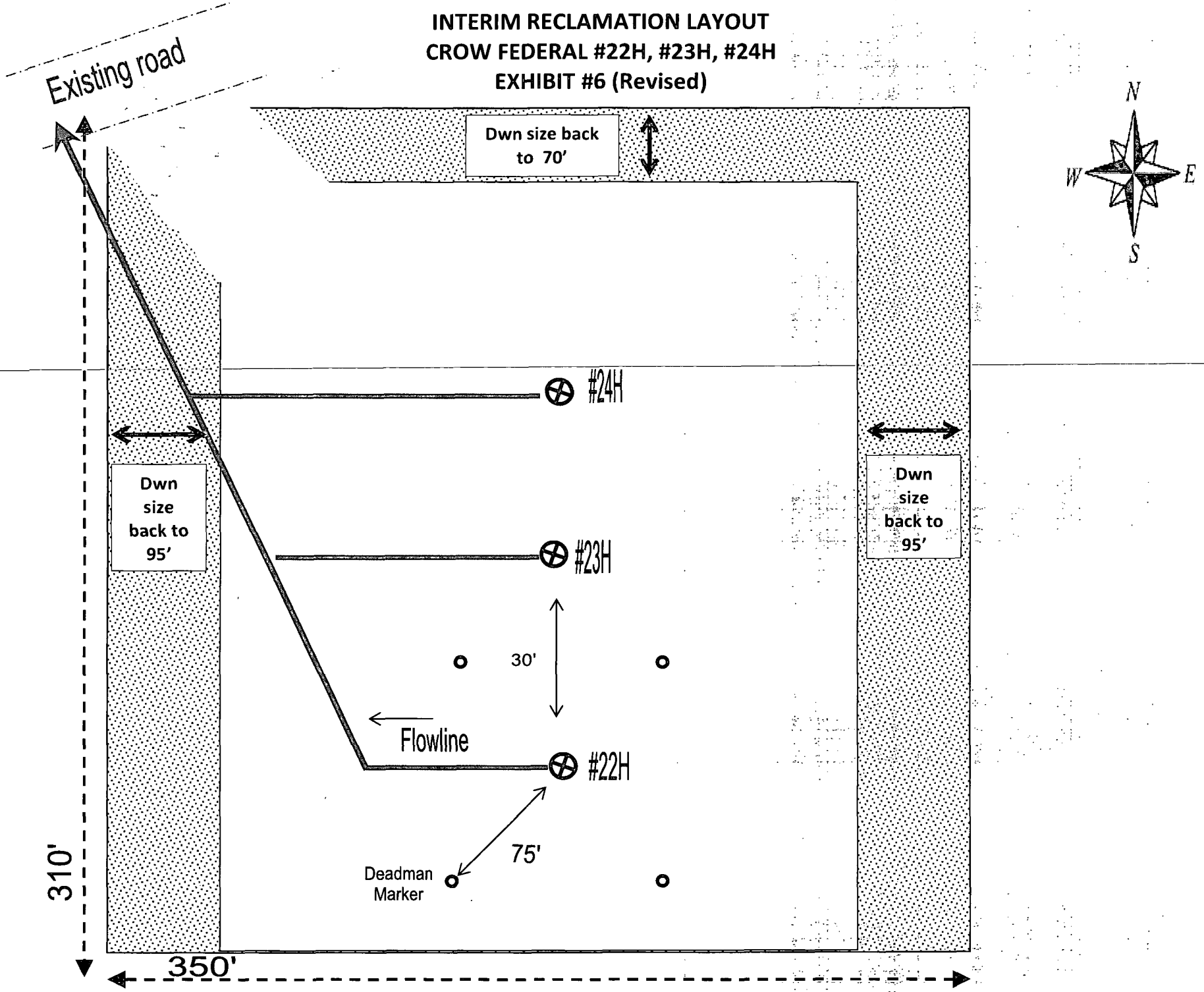
WARNING

YOU ARE ENTERING AN H_2S 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

INTERIM RECLAMATION LAYOUT
CROW FEDERAL #22H, #23H, #24H
EXHIBIT #6 (Revised)



PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**APACHE CORPORATION**
LEASE NO.:	**NMLC-029426b**
WELL NAME & NO.:	**Crow Federal 23H**
SURFACE HOLE FOOTAGE:	**1650' FNL & 0010' FWL**
BOTTOM HOLE FOOTAGE	**1650' FNL & 0330' FEL Sec 9, T. 17 S., R 31 E.**
LOCATION:	**Section 9, 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.

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)

Pipeline:
No pipeline is permitted with this APD. A right of way grant is needed prior to construction.

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.

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 stockpile the topsoil where present around the edges of the pad in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used 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. 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.

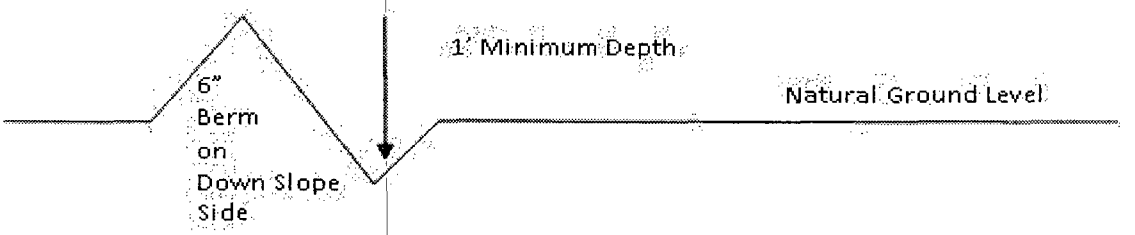
Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

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

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

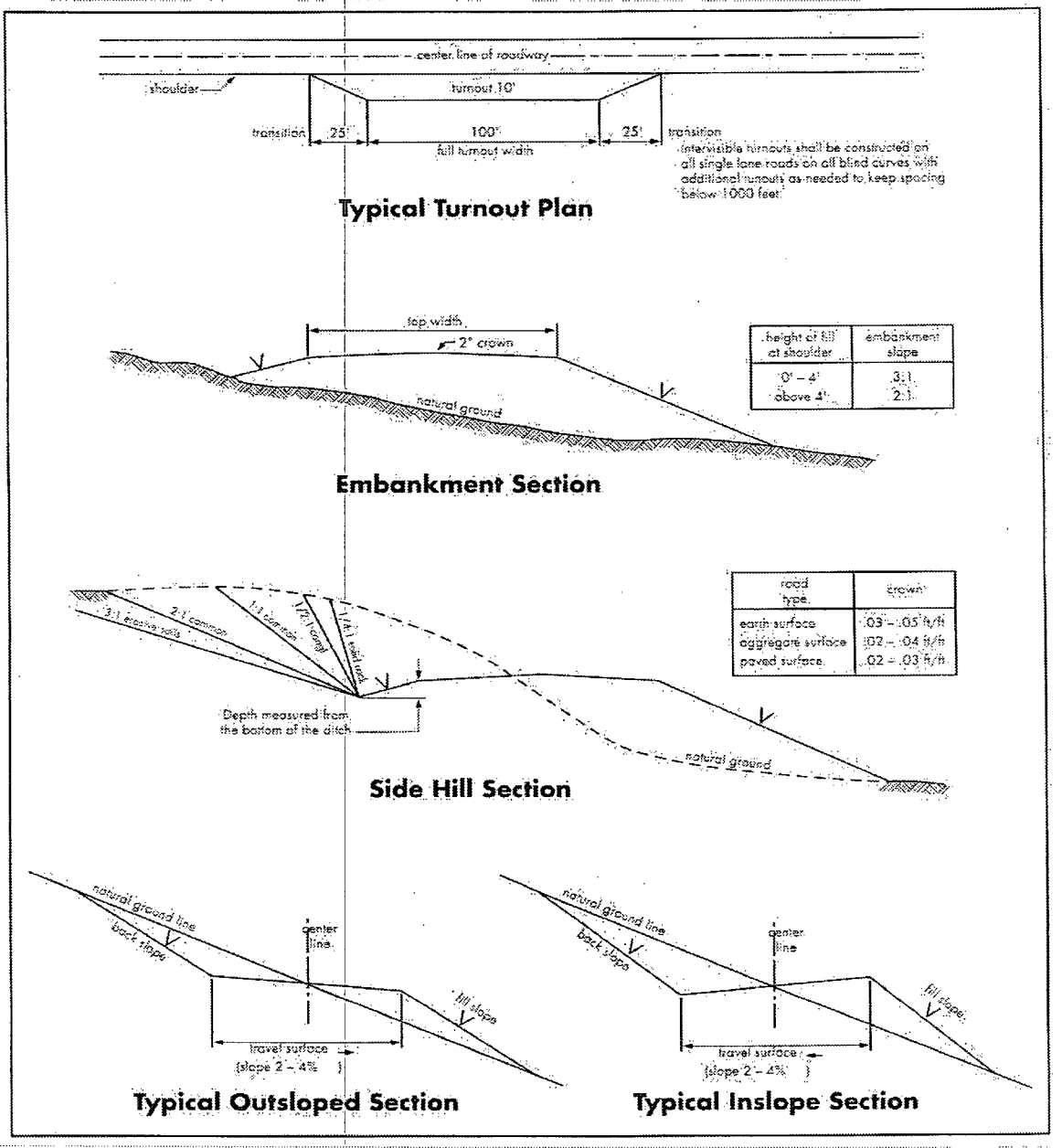
An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road 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 cattleguard(s) that are in place and are utilized during lease operations.

Public Access

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. A Hydrogen Sulfide (H2S) Drilling Plan should be activated 500 feet prior to drilling into the **Grayburg** 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. 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.).

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

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. 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. See individual casing strings for details regarding lead cement slurry requirements.

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

Possible water and brine flows in the Artesia and Salado Groups
Possibility of lost circulation in the Grayburg and San Andres formations

1. The **13-3/8** inch surface casing shall be set at approximately **510** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    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.

Contingency 9-5/8" Intermediate Casing:

Casing shall be kept liquid filled while running in the hole to meet BLM minimum collapse safety factor.

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

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

3. The minimum required fill of cement behind the **7** inch production casing is:

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

4. Cement not required on the **4-1/2"** casing. **Packer system being used.**

5. 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.

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 RP 53 Sec. 17.

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review**. If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

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 **(Operator installing 3M BOP system and testing as a 2M).**

   In the case where the only BOP installed is an annular preventer, it shall be tested to 2,000 psi due to an uncontrollable water flow on a previous well

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

    a. In a water basin, 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. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    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/BOPE. 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.

    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.

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VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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, Munsell Soil Color Chart # 5Y 4/2

B. PIPELINE

No pipeline is permitted with this APD. A right of way grant is needed prior to construction.

IX. 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 2, for Sandy 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
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

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