

12-79 12/13/14

OCD Artesia

This 3160-3 has been amended on 11/15/2011 to satisfy the deficiency notification dated 11/02/2011 regarding the APD. ATS-12-79

Form 3160-3 (August 2007)

RECEIVED
APR 4 2012
NMOCD ARTESIA

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

Lease Serial No.
NMNM 125141

1a. Type of work: ☒ DRILL ☐ REENTER

6. If Indian, Allottee, or Tribe Name

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

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

2. Name of Operator Marshall & Winston Incorporated

8. Lease Name and Well No.
Angel Ranch, Fed # 1H [39147]

3a. Address P.O. B 50880
Midland TX 79710-0880

3b. Phone No. (include area code)
(432) 260-8650

9. API Well No.
30-015-40146

4. Location of Well (Report location clearly and in accordance with any State requirements)
At surface SHL: 330' FSL & 660' FEL U/L P
At proposed prod. zone BHL: 330' FNL & 660' FEL U/L A

10. Field and Pool, or Exploratory
Wildcat Bone Springs [96403]

11. Sec., T. R. M. or Bk. and Survey or Area
A-10-T, 20 S., R. 27 E.

14. Distance in miles and direction from nearest town or post office
12 miles north of Carlsbad, NM and 6 miles south of Lakewood, NM

12. County or Parish
Eddy

13. State
NM

15. Distance from proposed location to nearest property or lease line, ft.
SHL is 330' north of sec 15, the BHL is 330' south of sec 34 of (Also to nearest drg. unit line, if any) T-20 S., R-27 E.

16. No. of acres in lease
320 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.
BHL 330' ft from P&A well.

19. Proposed Depth
Pilot: 8800' TVD 6200' MD: 10646

20. BLM/BIA Bond No. on file
NMB-000807

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3338' GL

22. Approximate date work will start*
01-15-2012

23. Estimated duration
30-45 days

24. Attachments

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

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

25. Signature *Vernon D. Dyer*

Name (Printed/Typed)
Vernon D. Dyer

Date
10-17-2011

Title
Agent. Please contact Mr. Dyer for any necessary amendments (575) 420-0355.

Approved by (Signature)
Is/ Don Peterson

Name (Printed/Typed)

Date
APR - 3 2012

Title
FIELD MANAGER

Office
CARLSBAD FIELD OFFICE

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

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

(Continued on page 2)
ROSWELL CONTROLLED WATER BASIN

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Lessee's or Operator's Representative and Certification

As required for APD approval in accordance to Onshore Orders 1,
I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route: that I am familiar with the conditions which currently exist; that the statements made in this plan are, the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by Marshall & Winston Incorporated and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of false statement.

Name and Title: Thurmon D. Dyer Agent Dated: 10-17-2011

RE: Angel Ranch # 10 - 1H, Section 10, T. 20 S., R. 27 E., Eddy Co., NM

October 17, 2011
Jim Amos
BLM CFO

Re: Marshall and Winston Inc., Angel Ranch 10-1, 11-1, Interim Restoration

Mr. Amos:

Marshall & Winston wishes to keep the original pad size on the Angel Ranch 10-1H located E/2 of Section 10, T.20S, R27E, Eddy County. The actual measured size is 331' x 292', commonly referred to as (I.e. 350' x 300'). We have no immediate plans for interim restoration regarding the removal of pad base material or caliche. The plans are to maintain the dimensions in order to sufficiently operate this well in addition to the Angel Ranch Fed Com 10-2H. This location shall be the central battery for both wells. The Angel Fed Com 10-2H is located on the same lease in the adjacent 160 acres to the west of the same section. The 10-2H locations will be cut down in size in regards to interim restoration as its storage and production facilities will be incorporated at the 10-1H site.

Utilizing a single battery production facility location for two or more wells will significantly reduce surface disturbance. Final restoration will be held at a minimum and prove more efficient for the operator and BLM as well. By consolidating production facilities and minimizing surface disturbance would be in the best interest to public lands and efficiency for operations and future restoration.

In reference to the well pad map, note there is 150' between the Heater Treater and any oil tank and the north and east sides of the location are open for workover operations. Should you have any further concerns, please contact me without any delay.

Sincerely,

Gary Gourley (575) 623-5880

Or

Vernon Dyer (575) 420-0355

See
COAs
+
SUPO
TEN
2/21/12

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

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

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

DISTRICT IV
11625 S. ST. FRANCIS DR., SANTA FE, NM 87505

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

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

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015- 40146	Pool Code 96403	Pool Name Wildcat Bone Springs
Property Code 39147	Property Name Angel Ranch Fed # 10 10	Well Number 1H
OGRID No. 014187	Operator Name MARSHALL & WINSTON, INC.	Elevation 3338'

Surface Location									
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	10	20-S	27-E		330	SOUTH	660	EAST	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
A	10	20-S	27-E		330	NORTH	660	EAST	EDDY

Dedicated Acres 160	Joint or Infill	Consolidation Code	Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p>GEODETIC COORDINATES: NAD 27 NME</p> <p>SURFACE LOCATION Y=575294.4 N X=522029.6 E</p> <p>LAT.=32.581570° N LONG.=104.261814° W</p> <p>BOTTOM HOLE LOCATION: Y=579915.9 N X=522056.5 E</p>	<p>DETAIL</p> <p>3340.2' 3347.7'</p> <p>600'</p> <p>3331.6' 3341.2'</p> <p>Penetration Point 660'FSL & 660'FEL</p> <p>SEE DETAIL</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or a mineral interest in the land including the proposed bottom hole location or has a right to drill this well in this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Vernon D. Dyer</i> 10-27-2011 Signature Date</p> <p>Vernon D. Dyer Printed Name</p> <p>Vdyeroil@cableone.com E-mail Address</p> <p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>AUGUST 25, 2011 Date of Survey</p> <p>Signature & Seal of Professional Surveyor: <i>Ronald J. Eidson</i> 8/25/2011 Certificate Number Gary Q. Eidson 12641 Ronald J. Eidson 3239</p> <p>LA. WSC W.O. 11.11.1857</p>
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DRILLING PROGRAM
Marshall & Winston Inc.
Angel Ranch 10 # 1H
SHL (P) to BHL (A),
Sec.10, T-20S, R-27E

1. Geological Name of Surface Formation:

- a. Permian Quaternary Alluvium Deposits

2. Anticipated Tops of Geological Markers & Depth of anticipated Fresh Water, Oil or Gas:

Surface water *	155'	
Queen	860'	n/a
San Andres	1900'	n/a
Delaware	2555'	n/a
Bone Springs	3920'	
Bone Springs 1 st Sand	6000'	oil
Bone Springs 2 nd Sand	6550'	
Bone Springs 3 rd Sand	7935'	
Wolfcamp	8550'	n/a
TD (pilot hole)	8800'	
TVD	6100'	6200

No other formations are anticipated to yield oil, gas or water in measureable volumes.

*According to the state engineer, the closest water well is two miles to the east in the SE/4 of sec 9. It has a depth of 155 ft. and is used for stock. There is no record if the well is still making water or the output of water capacity known.

There is no indication of the "Rustler" Anhydrite layer in the vicinity offsets. Although mixtures of anhydrite, shale, dolomite, sandstone and limestone conglomerates exist from surface throughout.

3. Casing Program:

All casing is new and API approved. The minimum safety factors required are:
Collapse 1.125, Burst 1.0, Tension 1.8. The casing design factors for this string are:

Hole	Casing	Depth	Wt.	Grade	Type	PSI			Safety Factors		
						Collapse	Burst	Jt.Yield	Cllps.	Brst.	Jt.Yld.
17 1/2	13 3/8	450'	48	H-40	STC	740	1730	322 kips	3.36	2.5	15
12 1/4	9 5/8	3100'	36	J-55	LTC	2020	3520	423 "	1.22	1.8	3.75
8 3/4	7.0	6400'	26	N-80	LTC	5410	7249	519 "	1.77	5.14	3.12
7 7/8	5 1/2	10616'	17	P-110	LTC	7560	10,690	279 "	2.47	3.79	3.8

Summary of drilling program:

Drill a 17 1/2" hole and set 13 3/8" casing at 450' and circulate cement to surface according to Baker Hughes' recommendations.

Drill 12 1/4" hole and set 9 5/8" intermediate casing string to 3100' and circulate cement to surface according to Baker Hughes' recommendations.

Rig up H2S equipment.

Drill 8 3/4" hole to approximately 8800'. Possible DST in the Bone Spring carbonate. Run Open Hole logs from 8800' to intermediate casing.

TIH with DP displace pilot hole with 9.0 ppg laden mud, set open hole cement plug #1 from 8800' (TD) to 8315' to cover the Wolfcamp. WOC, tag. After tagged successfully, set open hole cement plug # 2 from ~~6100'~~ ^{6315'} to ~~5600'~~ ^{6100'} as the BLM requires. WOC, tag, ~~Drill back down kick-off point.~~ An open-hole whipstock will be set at an anticipated 5722' depending on log interpretation. Open hole and pilot hole plug design and setting depths were discussed with Mike Whittaker, NMOCD Hobbs, and Paul Swartz BLM CFO. Plug composition in cementing section.

TOH and make up 8 3/4" directional BHA to build curve. TIH, drill curve and land curve at 6200' TVD, 6472' TMD, adjusting in accordance to the logs. TOOH and pick up 7 7/8" bit with lateral assembly. Drill the 7 7/8" hole to TD at 10,616' TMD. After drilling hole to TD, will install the 5 1/2" casing from TD to 6402', then run 7" from 6400' (with a crossover sub covering 6400'-6402') to surface. Circulate cement to surface according to Baker Hughes' recommendations. There are no plans to anticipate an alternative casing string at this time.

4.1 Cementing Program:

a. 13 3/8" Surface Casing:

The 13 3/8" surface casing shall be set at 450', and sufficient amount of cement will be circulated back to the surface (TOC at 0'). The lead mixture consist of Class C cement + 2% bwoc Calcium Chloride + 0.25lbs/sk Cello Flake + 0.0005 gps FP-6L + 4% bwoc Bentonite + 81.3% fresh water. The anticipated quantity is 290 sacks, (506 cu ft.), Weight 13.50 ppg, Yield 1.75 cf/sk., with 102% excess.

The tail slurry will consist of Class C cement + 0.005% Static Free + 2% bwoc Calcium Chloride + 0.25lbs/sack Cello Flake + 0.005 gps FP-6L + 56.2 Fresh Water. The anticipated quantity is 120 sacks (162 cu ft), Weight 14.80 ppg, Yield 1.35 cf/sk., with 102% volume excess.

b. 9 5/8" Intermediate Casing String:

The 9 5/8" intermediate casing string shall be set at 3100' with sufficient amount of cement circulated back to surface (TOC at 0'). The lead slurry shall consist of (50:50) Poz (Fly Ash) Class C cement + 0.005% bwoc Static Free + 5% bwoc Sodium Chloride + 0.125 lbs/sack Cello Flake + 0.2% bwoc FL-52 + 0.005 gps FP-6L + 6% bwoc Bentonite + 0.2% bwoc Sodium Metasilicate + 107.8% Fresh Water. The anticipated quantity is 550 sacks (1123 cu ft), Weight 12.5 ppg, Yield 2.05 cf/sk., with 51% volume excess.

The tail slurry will consist of Class C cement + 1% bwoc Calcium Chloride + 0.25 lbs/sk Cello Flake + 56.1% fresh water. The anticipated quantity is 225 sacks (310 cu ft), Weight 13.80 ppg, Yield 1.38 cf/sk., with 51% volume excess.

c. 7.0 " XO 5 1/2" Production Casing String:

The lead slurry will consist of 35:65 Poz Fly Ash Class C Cement + 0.005% bwoc Static Free + 3% bwoc Sodium Chloride + 0.125% bwoc Cello Flake + 3 lbs/sack LCM-1 + 0.45% bwoc FP-6L + 6% bwoc Bentonite + 102.5% fresh water. The anticipated quantity is 535 sacks (1073 cu ft), Weight 12.50 ppg, Yield 2.01 cf/sk., + 150 sx (30% excess), for a total sack quantity of 650 sx.

The tail slurry will consist of Class C Cement + 0.005% bwoc Static Free + 5% bwoc Sodium Chloride + 0.3% bwoc CD-32 + 0.5% bwoc FL-52 + 0.005 gps FP-6L + 0.45% bwoc Sodium Metasilicate + 57.4% Fresh Water. The anticipated quantity is 995 sacks (1271 cu ft), Weight 14.20 ppg, Yield 1.28 cf/sk., + 250 sx (25% excess), for a total sack quantity of 1145 sx.

d. The Pilot Hole Plugs:

Plug # 1 shall consist of Class H cement, + .2% bwoc R-3, .005% bwoc Static Free, .005 gps FP6L, 46.3 % fresh water. The anticipated quantity is 172 sacks, + 50 sx (29% excess), a total 222 sx, a weight of 15.6 ppg, Yield 1.18 cu'/sx and will be set from 8800-8315 ft.

Plug # 2 shall consist of Class H cement, 1% bwoc CD 32, .005% bwoc Static Free, .005 gps FP6L and 26.3% fresh water. The anticipated quantity is 335 sacks, + 83 sx (25% excess), a total of 419 sx, a weight of 18.0 ppg, Yield 0.89 cu'/sx. The plug shall cover from 6100 to 5600 ft. as to BLM requirements.

5. Pressure Control:

A 13 $\frac{5}{8}$ " BOPE rated at 3,000 psi will be installed on the 13 $\frac{3}{8}$ " surface casing. Upon completing the cementing job and prior to drilling out of the surface casing, the 3M annular shall be tested to 1500psi and held for 30 minutes. The double ram preventors shall be tested to 3M and held for 30 minutes. The 13 $\frac{3}{8}$ " casing shall be tested to 1200 psi and held for 30 minutes. Test shall be performed by a third party and the BLM will be notified at least 48 hours prior to testing.

An 11" 5M BOP shall be installed on the 9 $\frac{5}{8}$ " intermediate casing. Upon completing the cementing job and prior to drilling out of the intermediate casing, the 5M annular shall be tested to 2500 psi and held for 30 minutes. The double ram preventors shall be tested to 5,000 psi and held for 30 minutes. The 5M BOPE will remain throughout the drilling of this well. The 9 $\frac{5}{8}$ " casing shall be tested to 1500 psi and held for 30 minutes. Test shall be performed by a third party and the BLM will be notified at least 48 hours prior to testing. All BOPE test shall be conducted in accordance with BLM Onshore Oil and Gas Order No. 02.

Additional BOP accessories include an upper and lower kelly cock with the locking handle readily available on the rig floor at all times, the choke operating controls and floor safety valves are on the rig floor and pit fluid level sensors are used to monitor pit levels. H2S sensors are installed by the third party H2S safety company and gas indicators are mounted at the return flow line by the mud logging unit.

6. Drilling Fluid Program:

0' - 450'	Fresh water	8.4 – 8.6 ppg
450' - 3100'	Brine water	10.0 – 10.1 ppg (For optimum hole stability)
3100' - 10,616'	Fresh water and brine	8.8 - 9.2 ppg

7. Auxillary Equipment:

No additional accessories are anticipated other than the equipment listed under the pressure control section.

8. Logging Agenda: *See IOA*

The mud logging 2 man unit will begin monitoring at 450' to TD.

Electrical logs: CNL / LDT / CAL / GR from TD to intermediate casing,
DLL/ GR from 8800' to surface.

A DST is probable in the Bone Springs formation depending upon logging results.

9. Potential Hazards

No abnormal pressures or temperatures are anticipated. BHP is estimated to be 3872 psi with a pressure gradient of .44 at 8800 ft. The Bone Springs at 6400 ft is anticipated to have a BHP of 2816 psi, with a BHT of 175° F. An H2S contingency plan will be incorporated by a third party prior to drilling out of the intermediate 9 $\frac{5}{8}$ " shoe in accordance with Onshore Orders. This includes:

- All personnel will be H2S trained and qualified.
- H2S alarms and detection systems will be utilized.
- A windsock will be visible at all times.
- Flags or warning signs will be visible for road traffic.
- The H2S contingency plan is attached.

10. Anticipated Start Date:

Patterson Rigs are scheduled for November 30, 2011. We ask the BLM-CFO to please expedite application with any request to prevent missing deadline for the Angel Ranch # 10-1H. We anticipate 45 to 55 days to drill and approximately 18 to 24 days for completion.

11. Surface & Minerals Ownership:

The surface is USA, Lease No. NMNM125141, a 320 acre lease covering the E/2 of Section 10. The subsurface minerals are USA and managed by the Bureau of Land Management of New Mexico.

COMPANY PERSONNEL:

Shorty Sweeden (Wellsite Supervisor) (432) 634-8722 (c)

Gabe Herrera (Marshall & Winston – Engineer) (432) 684-6373 (o)
(432) 260-8650 (c)


Tom Brandt (Marshall & Winston – Operations) (432) 684-6373 (o)
(432) 553-9747 (c)

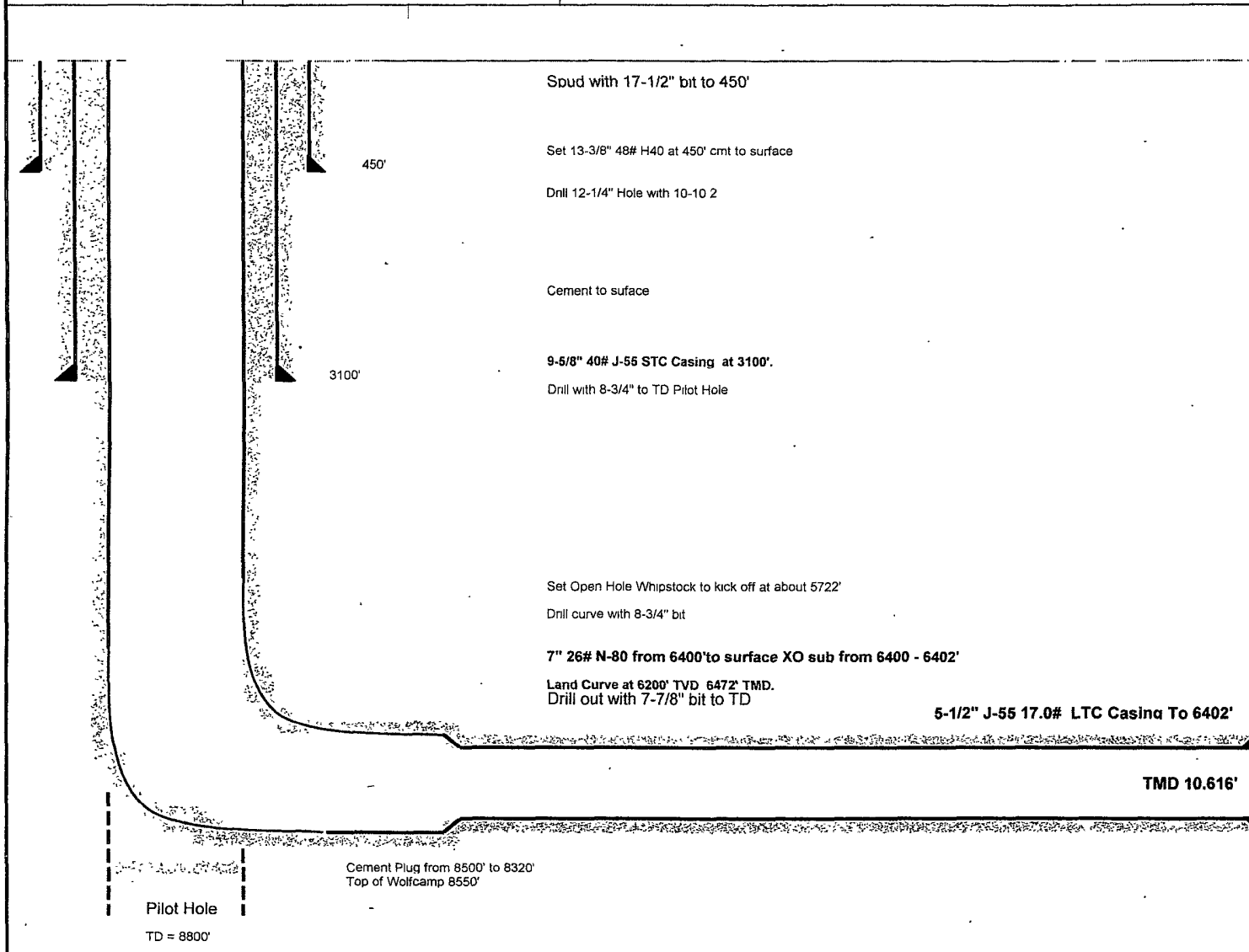
George Watters (Marshall & Winston – Geologist) (432) 684-6373 (o)
(432) 631-2051 (c)

Brent May (Marshall & Winston – Geologist) (432) 684-6373 (o)
(432) 254-3525 (c)

Marshall & Winston, Inc.
P.O. Box 50880
Midland, Tx. 79710-0880

(432) 684-6373 Office
(432) 687-2684 Fax

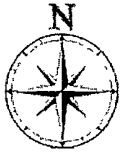
AFE No.	 Angel Ranch Fed - 10-1H Eddy County, NM Proposed Wellbore Sketch	AFE Information
API #		Dry Hole: Days:
Permit No.		Proposed TD: 10,616' TMD 6,200' TVD
Project No.		v



Well Information

Surface Location. Eddy County, T20S R27E Section 10 330' FSL & 660' FEL

Plan: Plan #1 092611 (Angel Ranch Fed Com 10 1H/Wellbore #1)



WELL DETAILS: Angel Ranch Fed 10 1H

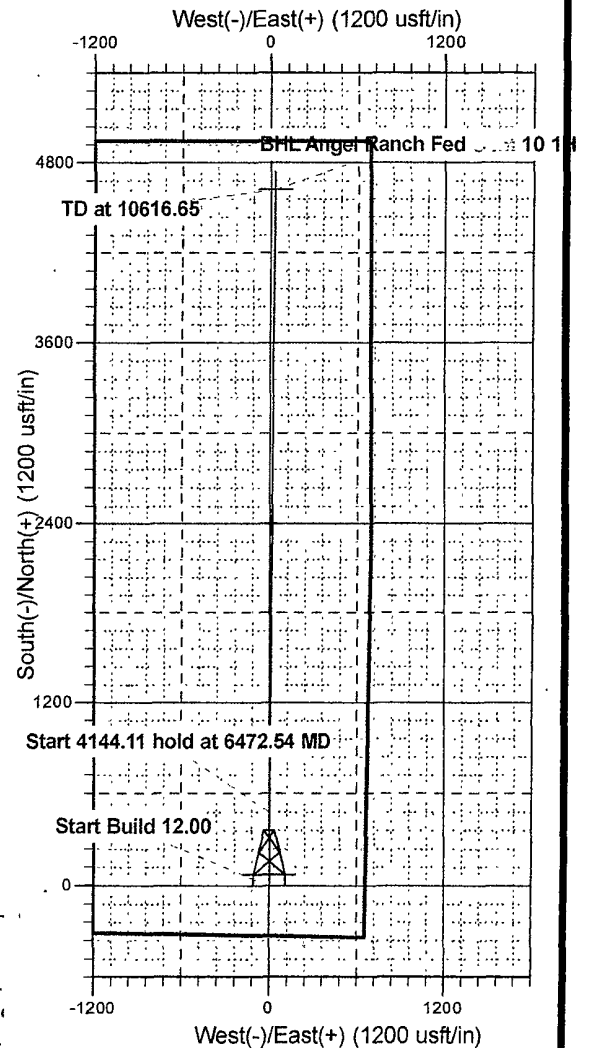
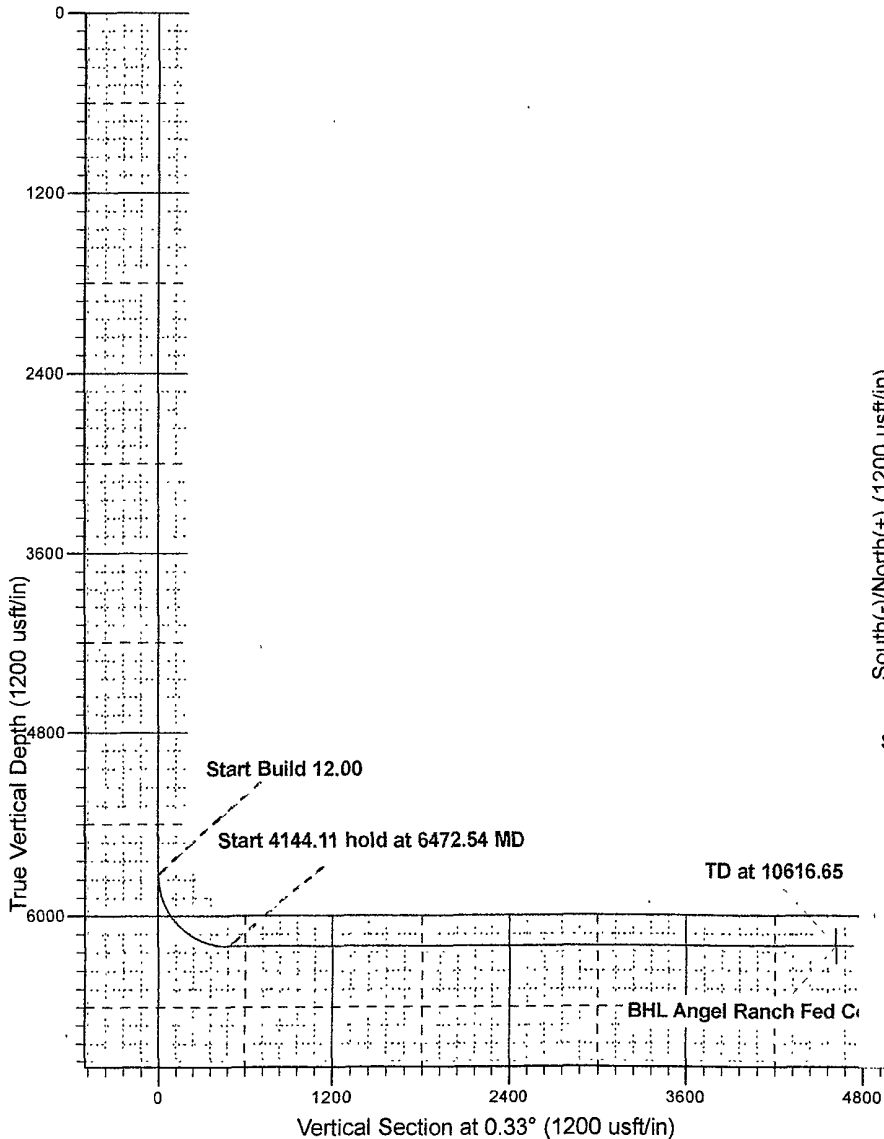
Ground Level: 3338.00
 Northing 575294.40 Easting 522029.60 Latitude 32° 34' 53.653 N Longitude 104° 15' 42.530 W

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape Point
BHL Angel Ranch Fed Com 10 1H	6200.00	4621.50	26.90	

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5722.54	0.00	0.00	5722.54	0.00	0.00	0.00	0.00	0.00	
6472.54	90.00	0.33	6200.00	477.46	2.78	12.00	0.33	477.46	
10616.65	90.00	0.33	6200.00	4621.50	26.90	0.00	0.00	4621.58	BHL Angel Ranch Fed Com 10 1H





Phoenix Technology Services
Marshall & Winston Inc



Company:	Marshall & Winston Inc	Local Co-ordinate Reference:	Well Angel Ranch Fed 10 1H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3357.00usft (Original Well Elev + 19' KB)
Site:	Angel Ranch Federal 10	MD Reference:	WELL @ 3357.00usft (Original Well Elev + 19' KB)
Well:	Angel Ranch Fed 1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1 092611	Database:	GCR DB v5000

Project:	Eddy County, NM (Nad27)	System Datum:	Mean Sea Level
Map System:	US State Plane 1927 (Exact solution)		
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Angel Ranch Federal Corn 10		
Site Position:		Northing:	575,294.40 usft
From:	Map	Easting:	522,029.60 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 34' 53.653 N
		Longitude:	104° 15' 42.530 W
		Grid Convergence:	0.04 "

Well:	Angel Ranch Fed Corn 10 1H		
Well Position	+N/-S 0.00 usft	Northing:	575,294.40 usft
	+E/-W 0.00 usft	Easting:	522,029.60 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 34' 53.653 N
		Longitude:	104° 15' 42.530 W
		Ground Level:	3,338.00 usft

Wellbore:	Wellbore #1		
Magnetics:	Model Name	Sample Date	Declination
	IGRF2010_14	9/26/2011	7.89
			Dip Angle
			60.39
			Field Strength
			48,727

Design:	Plan #1 092611		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	0.00	0.00	0.00
			Direction
			0.33

Survey Tool Program	Date	9/26/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	10,616.65	Plan #1 092611 (Wellbore #1)		



Phoenix Technology Services
Marshall & Winston Inc.



Company:	Marshall & Winston Inc.	Local Co-ordinate Reference:	Well Angel Ranch Fed 10 1H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3357.00usft (Original Well Elev + 19' KB)
Site:	Angel Ranch Federal 10	MD Reference:	WELL @ 3357.00usft (Original Well Elev + 19' KB)
Well:	Angel Ranch Fed 10 1H	North Reference:	Gnd
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1 092611	Database:	GCR DB v5000

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	INS (usft)	E/W (usft)	V. Sec (usft)	DLog (1/100usft)	Northing (usft)	Easting (usft)
0 00	0 00	0 00	-3,357.00	0 00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
100 00	0 00	0 00	-3,257.00	100 00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
200 00	0 00	0 00	-3,157.00	200 00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
300 00	0 00	0 00	-3,057.00	300 00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
400 00	0 00	0 00	-2,957.00	400 00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
500 00	0 00	0 00	-2,857.00	500 00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
600 00	0 00	0 00	-2,757.00	600 00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
700 00	0 00	0 00	-2,657.00	700 00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
800 00	0 00	0 00	-2,557.00	800 00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
900 00	0 00	0 00	-2,457.00	900 00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
1,000.00	0 00	0 00	-2,357.00	1,000.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
1,100 00	0 00	0 00	-2,257.00	1,100.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
1,200.00	0 00	0 00	-2,157.00	1,200.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
1,300 00	0 00	0 00	-2,057.00	1,300.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
1,400 00	0 00	0 00	-1,957.00	1,400.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
1,500 00	0 00	0 00	-1,857.00	1,500.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
1,600 00	0 00	0 00	-1,757.00	1,600.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
1,700 00	0 00	0 00	-1,657.00	1,700.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
1,800 00	0 00	0 00	-1,557.00	1,800.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
1,900 00	0 00	0 00	-1,457.00	1,900.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
2,000 00	0 00	0 00	-1,357.00	2,000.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
2,100 00	0 00	0 00	-1,257.00	2,100.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
2,200 00	0 00	0 00	-1,157.00	2,200.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
2,300.00	0 00	0 00	-1,057.00	2,300.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
2,400.00	0 00	0 00	-957.00	2,400.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
2,500 00	0 00	0 00	-857.00	2,500.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60
2,600 00	0 00	0 00	-757.00	2,600.00	0 00	0 00	0 00	0 00	575,294.40	522,029.60



Phoenix Technology Services
Marshall & Winston Inc.



Company:	Marshall & Winston Inc.	Local Co-ordinate Reference:	Well Angel Ranch Fed 10.1H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3357.00usft (Original Well Elev + 19' KB)
Site:	Angel Ranch Fed 10.1H	MD Reference:	WELL @ 3357.00usft (Original Well Elev + 19' KB)
Well:	Angel Ranch Fed 10.1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1 092611	Database:	GCR DB v5000

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLog (usft/usft)	Northing (usft)	Easting (usft)
2,700.00	0.00	0.00	-657.00	2,700.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
2,800.00	0.00	0.00	-557.00	2,800.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
2,900.00	0.00	0.00	-457.00	2,900.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
3,000.00	0.00	0.00	-357.00	3,000.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
3,100.00	0.00	0.00	-257.00	3,100.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
3,200.00	0.00	0.00	-157.00	3,200.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
3,300.00	0.00	0.00	-57.00	3,300.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
3,400.00	0.00	0.00	43.00	3,400.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
3,500.00	0.00	0.00	143.00	3,500.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
3,600.00	0.00	0.00	243.00	3,600.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
3,700.00	0.00	0.00	343.00	3,700.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
3,800.00	0.00	0.00	443.00	3,800.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
3,900.00	0.00	0.00	543.00	3,900.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
4,000.00	0.00	0.00	643.00	4,000.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
4,100.00	0.00	0.00	743.00	4,100.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
4,200.00	0.00	0.00	843.00	4,200.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
4,300.00	0.00	0.00	943.00	4,300.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
4,400.00	0.00	0.00	1,043.00	4,400.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
4,500.00	0.00	0.00	1,143.00	4,500.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
4,600.00	0.00	0.00	1,243.00	4,600.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
4,700.00	0.00	0.00	1,343.00	4,700.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
4,800.00	0.00	0.00	1,443.00	4,800.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
4,900.00	0.00	0.00	1,543.00	4,900.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
5,000.00	0.00	0.00	1,643.00	5,000.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
5,100.00	0.00	0.00	1,743.00	5,100.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
5,200.00	0.00	0.00	1,843.00	5,200.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
5,300.00	0.00	0.00	1,943.00	5,300.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60



Phoenix Technology Services
Marshall & Winston Inc.



Company:	Marshall & Winston Inc.	Local Co-ordinate Reference:	Well Angel Ranch Fed n 10 1H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3357 00usft (Original Well Elev + 19' KB)
Site:	Angel Ranch Federal n 10 1H	MD Reference:	WELL @ 3357 00usft (Original Well Elev + 19' KB)
Well:	Angel Ranch Fed n 10 1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1 092611	Database:	GCR DB v5000

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V/Sec (usft)	Dog (°/100usft)	Northing (usft)	Easting (usft)
5,400.00	0.00	0.00	2,043.00	5,400.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
5,500.00	0.00	0.00	2,143.00	5,500.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
5,600.00	0.00	0.00	2,243.00	5,600.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
5,700.00	0.00	0.00	2,343.00	5,700.00	0.00	0.00	0.00	0.00	575,294.40	522,029.60
5,722.54	0.00	0.00	2,365.54	5,722.54	0.00	0.00	0.00	0.00	575,294.40	522,029.60
Start Build 12 00										
5,800.00	9.30	0.33	2,442.66	5,799.66	6.27	0.04	6.27	12.00	575,300.67	522,029.64
5,900.00	21.30	0.33	2,538.94	5,895.94	32.60	0.19	32.60	12.00	575,327.00	522,029.79
6,000.00	33.30	0.33	2,627.64	5,984.64	78.38	0.46	78.38	12.00	575,372.78	522,030.08
6,100.00	45.30	0.33	2,704.89	6,061.89	141.59	0.82	141.59	12.00	575,435.99	522,030.42
6,200.00	57.30	0.33	2,767.31	6,124.31	219.49	1.28	219.49	12.00	575,513.89	522,030.88
6,300.00	69.30	0.33	2,812.16	6,169.16	308.65	1.80	308.66	12.00	575,603.05	522,031.40
6,400.00	81.30	0.33	2,837.50	6,194.50	405.20	2.36	405.21	12.00	575,699.60	522,031.96
6,472.54	90.00	0.33	2,843.00	6,200.00	477.46	2.78	477.46	12.00	575,771.86	522,032.38
Start 4144.11 hold at 6472.54 MD										
6,500.00	90.00	0.33	2,843.00	6,200.00	504.92	2.94	504.93	0.00	575,799.32	522,032.54
6,600.00	90.00	0.33	2,843.00	6,200.00	604.92	3.52	604.93	0.00	575,899.32	522,033.12
6,700.00	90.00	0.33	2,843.00	6,200.00	704.92	4.10	704.93	0.00	575,999.32	522,033.70
6,800.00	90.00	0.33	2,843.00	6,200.00	804.92	4.69	804.93	0.00	576,099.32	522,034.29
6,900.00	90.00	0.33	2,843.00	6,200.00	904.91	5.27	904.93	0.00	576,199.31	522,034.87
7,000.00	90.00	0.33	2,843.00	6,200.00	1,004.91	5.85	1,004.93	0.00	576,299.31	522,035.45
7,100.00	90.00	0.33	2,843.00	6,200.00	1,104.91	6.43	1,104.93	0.00	576,399.31	522,036.03
7,200.00	90.00	0.33	2,843.00	6,200.00	1,204.91	7.01	1,204.93	0.00	576,499.31	522,036.61
7,300.00	90.00	0.33	2,843.00	6,200.00	1,304.91	7.60	1,304.93	0.00	576,599.31	522,037.20
7,400.00	90.00	0.33	2,843.00	6,200.00	1,404.91	8.18	1,404.93	0.00	576,699.31	522,037.78
7,500.00	90.00	0.33	2,843.00	6,200.00	1,504.90	8.76	1,504.93	0.00	576,799.30	522,038.36
7,600.00	90.00	0.33	2,843.00	6,200.00	1,604.90	9.34	1,604.93	0.00	576,899.30	522,038.94



Phoenix Technology Services
Marshall & Winston Inc.



Company:	Marshall & Winston Inc.	Local Co-ordinate Reference:	Well Angel Ranch Fed - T-10 1H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3357.00usft (Original Well Elev + 19' KB)
Title:	Angel Ranch Federal - T-10	MD Reference:	WELL @ 3357.00usft (Original Well Elev + 19' KB)
Well:	Angel Ranch Fed - T-10 1H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1 092611	Database:	GCR DB y5000

MD (usft)	Inc. (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (+/-100usft)	Northing (usft)	Eastng (usft)
7,700.00	90.00	0.33	2,843.00	6,200.00	1,704.90	9.92	1,704.93	0.00	576,999.30	522,039.52
7,800.00	90.00	0.33	2,843.00	6,200.00	1,804.90	10.51	1,804.93	0.00	577,099.30	522,040.11
7,900.00	90.00	0.33	2,843.00	6,200.00	1,904.90	11.09	1,904.93	0.00	577,199.30	522,040.69
8,000.00	90.00	0.33	2,843.00	6,200.00	2,004.90	11.67	2,004.93	0.00	577,299.30	522,041.27
8,100.00	90.00	0.33	2,843.00	6,200.00	2,104.89	12.25	2,104.93	0.00	577,399.29	522,041.85
8,200.00	90.00	0.33	2,843.00	6,200.00	2,204.89	12.83	2,204.93	0.00	577,499.29	522,042.43
8,300.00	90.00	0.33	2,843.00	6,200.00	2,304.89	13.42	2,304.93	0.00	577,599.29	522,043.02
8,400.00	90.00	0.33	2,843.00	6,200.00	2,404.89	14.00	2,404.93	0.00	577,699.29	522,043.60
8,500.00	90.00	0.33	2,843.00	6,200.00	2,504.89	14.58	2,504.93	0.00	577,799.29	522,044.18
8,600.00	90.00	0.33	2,843.00	6,200.00	2,604.89	15.16	2,604.93	0.00	577,899.29	522,044.76
8,700.00	90.00	0.33	2,843.00	6,200.00	2,704.88	15.74	2,704.93	0.00	577,999.28	522,045.34
8,800.00	90.00	0.33	2,843.00	6,200.00	2,804.88	16.33	2,804.93	0.00	578,099.28	522,045.93
8,900.00	90.00	0.33	2,843.00	6,200.00	2,904.88	16.91	2,904.93	0.00	578,199.28	522,046.51
9,000.00	90.00	0.33	2,843.00	6,200.00	3,004.88	17.49	3,004.93	0.00	578,299.28	522,047.09
9,100.00	90.00	0.33	2,843.00	6,200.00	3,104.88	18.07	3,104.93	0.00	578,399.28	522,047.67
9,200.00	90.00	0.33	2,843.00	6,200.00	3,204.88	18.65	3,204.93	0.00	578,499.28	522,048.25
9,300.00	90.00	0.33	2,843.00	6,200.00	3,304.87	19.24	3,304.93	0.00	578,599.27	522,048.84
9,400.00	90.00	0.33	2,843.00	6,200.00	3,404.87	19.82	3,404.93	0.00	578,699.27	522,049.42
9,500.00	90.00	0.33	2,843.00	6,200.00	3,504.87	20.40	3,504.93	0.00	578,799.27	522,050.00
9,600.00	90.00	0.33	2,843.00	6,200.00	3,604.87	20.98	3,604.93	0.00	578,899.27	522,050.58
9,700.00	90.00	0.33	2,843.00	6,200.00	3,704.87	21.56	3,704.93	0.00	578,999.27	522,051.16
9,800.00	90.00	0.33	2,843.00	6,200.00	3,804.87	22.15	3,804.93	0.00	579,099.27	522,051.75
9,900.00	90.00	0.33	2,843.00	6,200.00	3,904.86	22.73	3,904.93	0.00	579,199.26	522,052.33
10,000.00	90.00	0.33	2,843.00	6,200.00	4,004.86	23.31	4,004.93	0.00	579,299.26	522,052.91
10,100.00	90.00	0.33	2,843.00	6,200.00	4,104.86	23.89	4,104.93	0.00	579,399.26	522,053.49
10,200.00	90.00	0.33	2,843.00	6,200.00	4,204.86	24.47	4,204.93	0.00	579,499.26	522,054.07
10,300.00	90.00	0.33	2,843.00	6,200.00	4,304.86	25.06	4,304.93	0.00	579,599.26	522,054.66



Phoenix Technology Services
Marshall & Winston Inc



Company:	Marshall & Winston Inc.	Local Co-ordinate Reference:	Well Angel Ranch Fed 110.1H
Project:	Eddy County, NM (Nad27)	TVD Reference:	WELL @ 3357.00usft (Original Well Elev + 19' KB)
Site:	Angel Ranch Federal 110	MD Reference:	WELL @ 3357.00usft (Original Well Elev + 19' KB)
Well:	Angel Ranch Fed 110.1H	North Reference:	Gnd
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1 092611	Database:	GCR DB v5000

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (1/100usft)	Northing (usft)	Easting (usft)
10,400.00	90.00	0.33	2,843.00	6,200.00	4,404.86	25.64	4,404.93	0.00	579,899.26	522,055.24
10,500.00	90.00	0.33	2,843.00	6,200.00	4,504.85	26.22	4,504.93	0.00	579,799.25	522,055.82
10,800.00	90.00	0.33	2,843.00	6,200.00	4,604.85	26.80	4,604.93	0.00	579,899.25	522,056.40
10,616.65	90.00	0.33	2,843.00	6,200.00	4,621.50	26.90	4,621.58	0.00	579,915.90	522,056.50
TD at 10616.65										

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		N/S (usft)	E/W (usft)	
5,722.54	5,722.54	0.00	0.00	Start Build 12.00
6,472.54	6,200.00	477.46	2.78	Start 4144.11 hold at 6472.54 MD
10,616.65	6,200.00	4,621.50	26.90	TD at 10616.65

Checked By _____ Approved By: _____ Date: _____

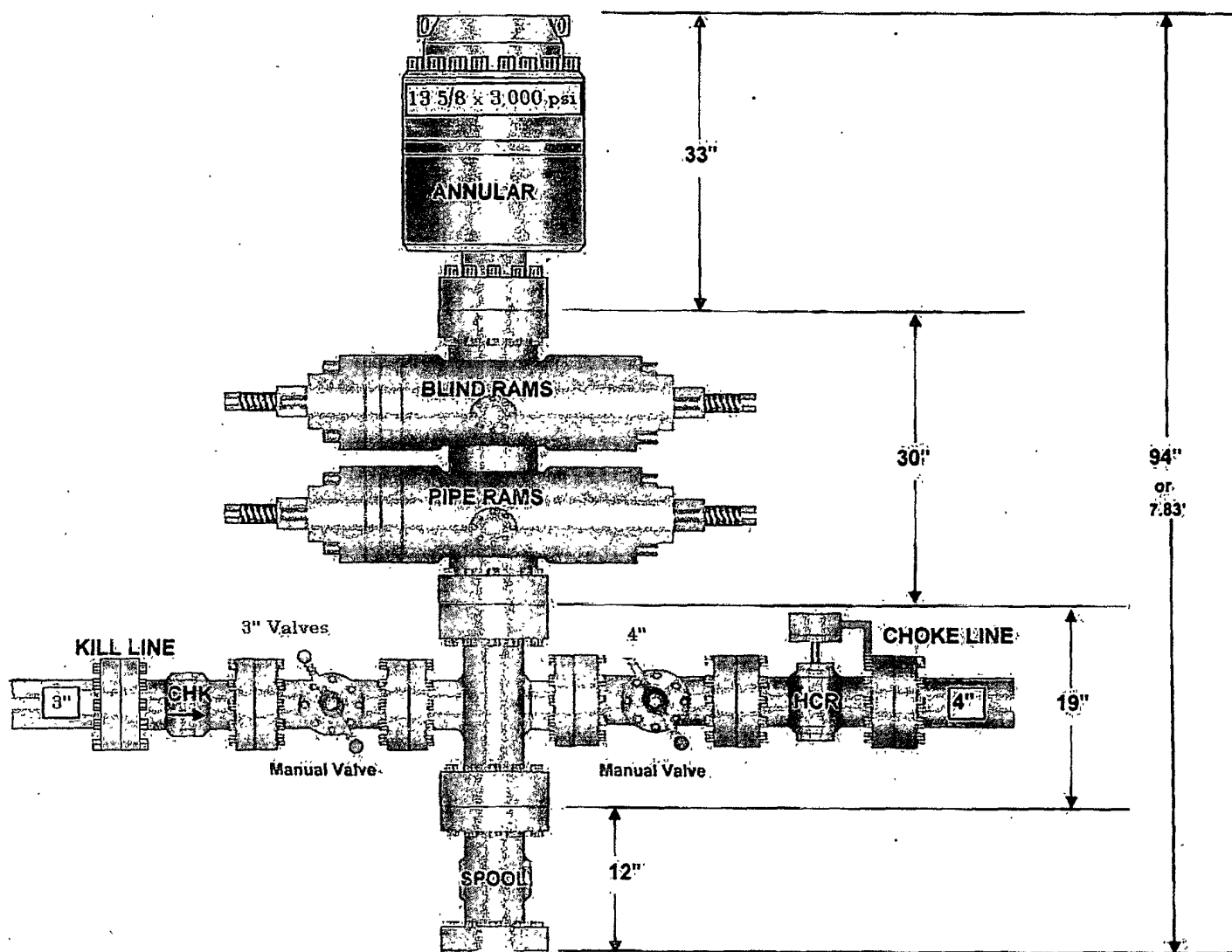


Exhibit 2
 $13\frac{5}{8} \text{ inch} \times 3\text{M BOPE}$
 stacking configuration

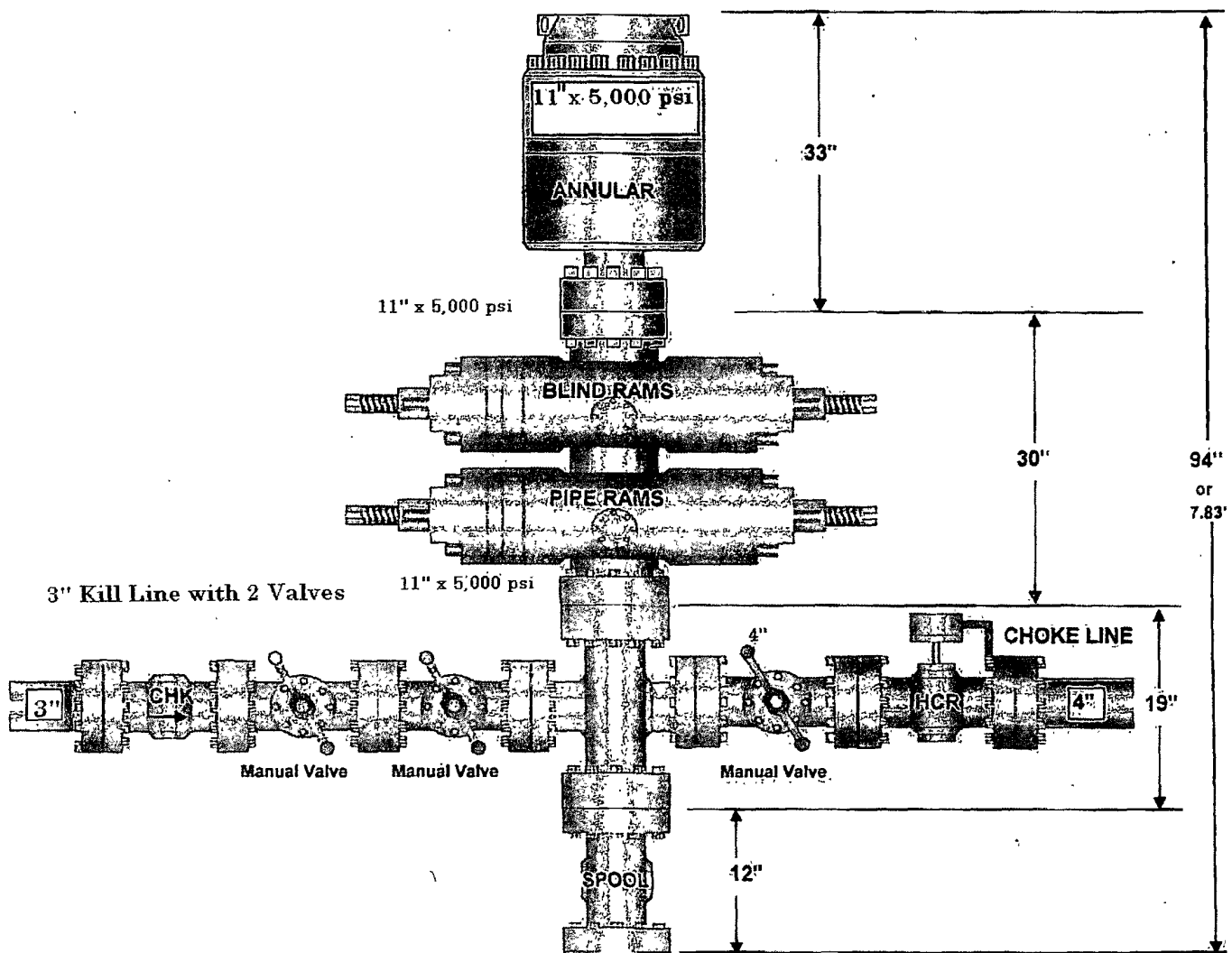


Exhibit 2.2
 11" x 5M BOPE
 stacking configuration

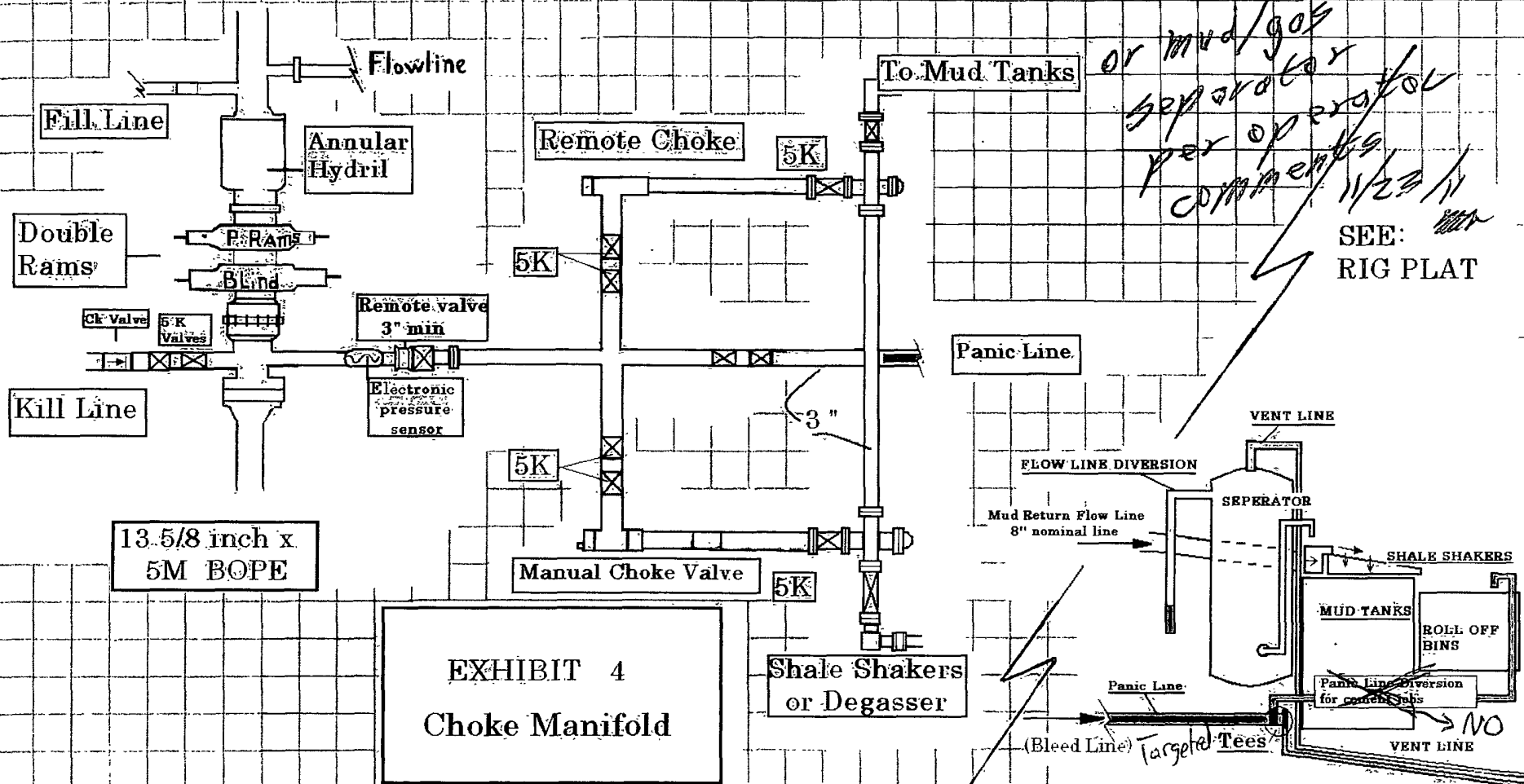


EXHIBIT 4
Choke Manifold

Panic Line end
Minimum 150'
from wellbore
(with electric or
propane ignitor)

Schematic Flow Diagram

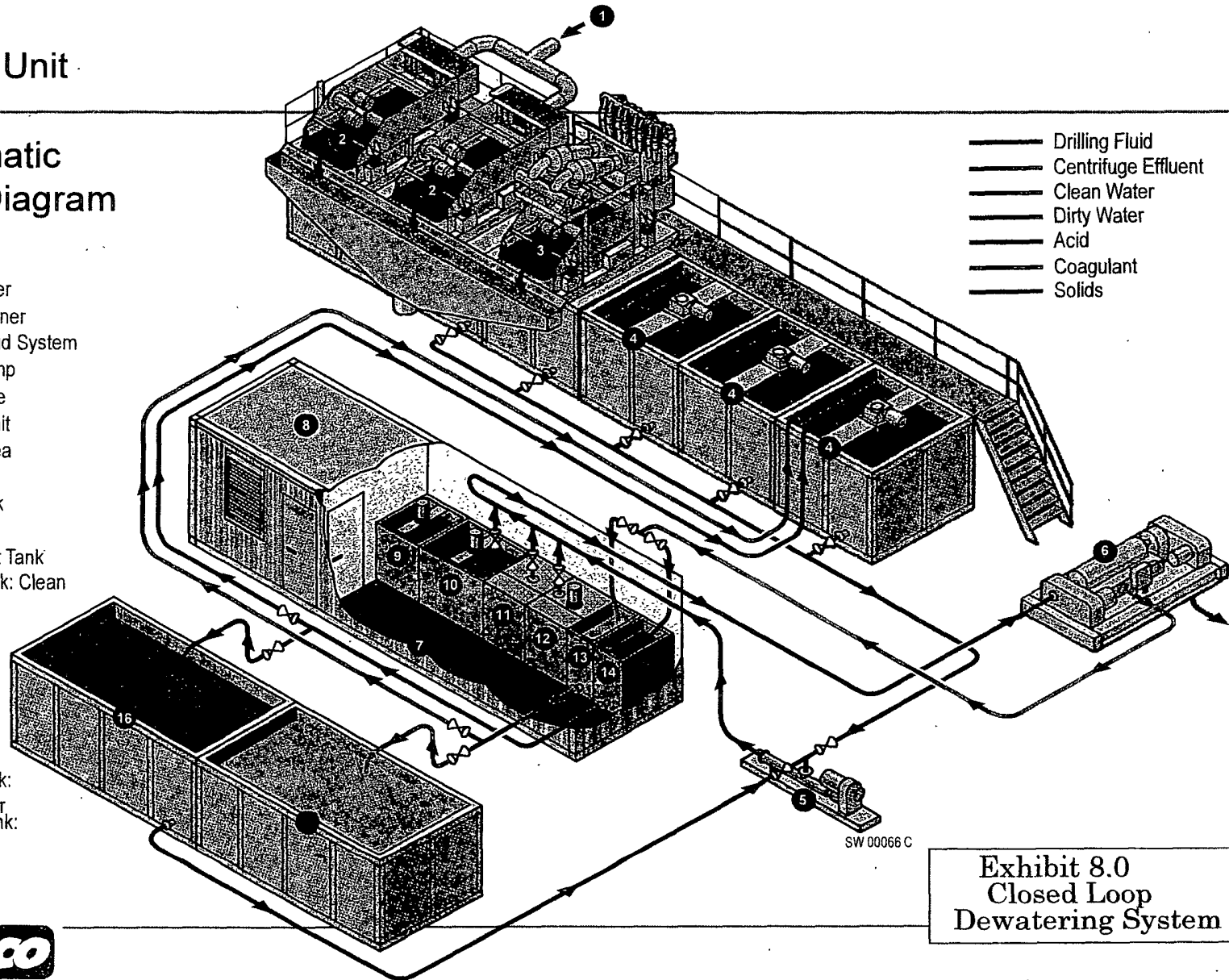


Exhibit 8.0 Closed Loop Dewatering System

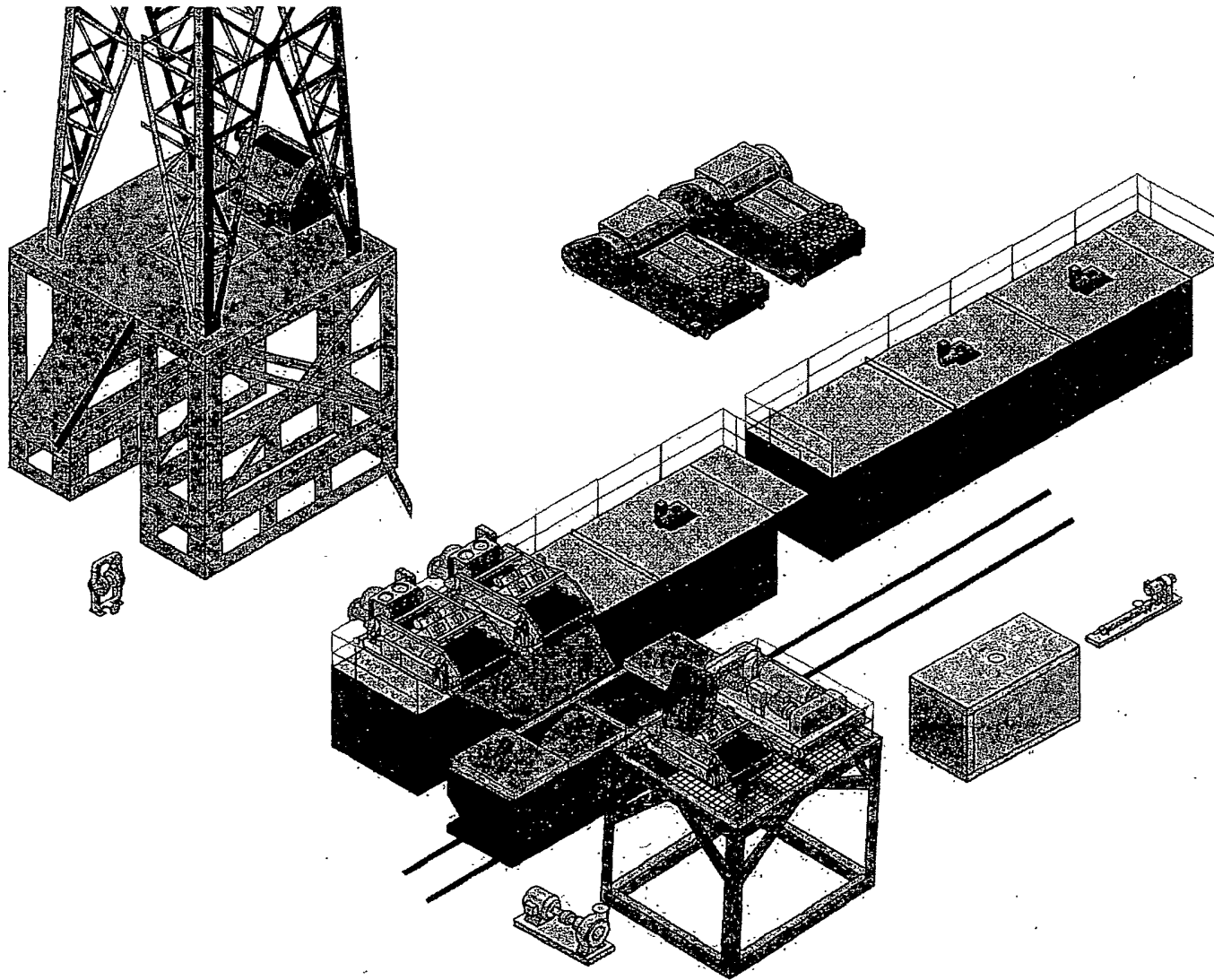
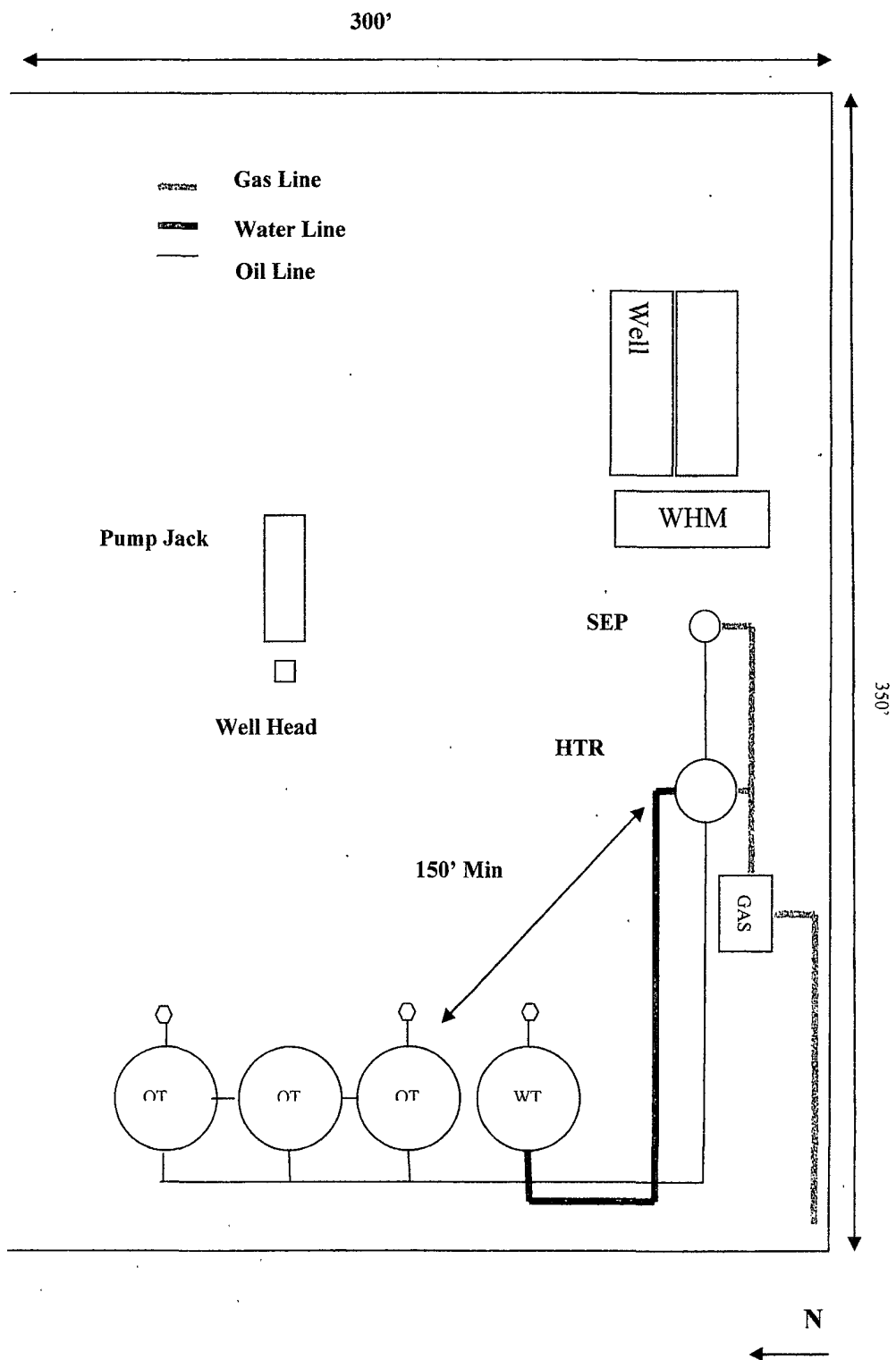


Exhibit 9
Closed Loop/Roll-Off Bins

MI SWACO

SITE FACILITY DIAGRAM



H2S Emergency Procedures

In the case 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. Additionally the first responder(s) must evacuate any public places encompassed by the 100 ppm ROE. First responder(s) must take care not to injure themselves during this operation. Marshall and Winston Inc. and/or local officials must be contacted to aid in this operation. Evacuation of the public should be beyond the 100 ppm ROE.

All responders must have training in the detection of H₂S, measures for protection against the gas, equipment used for protection and emergency response. Additionally, responders must be equipped with H₂S monitors and air packs in order to control the release. Use the "buddy system" to ensure no injuries during the 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 there 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 = 1.0	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21 Air = 1.0	2 ppm	N/A	1000 ppm

Contacting Authorities

Marshall and Winston Inc.'s 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. The following call list of essential and potential responders has been prepared for use during a release. Marshall and Winston Inc.'s response must be in coordination with the State of New Mexico's Hazardous Materials Emergency Response Plan (HMERP).

Marshall & Winston, Incorporated.

P.O. Box 50880 Midland, TX., 79710-0880

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HYDROGEN SULFIDE DRILLING OPERATIONS PLAN PERMIAN BASIN

This Hydrogen Sulfide Drilling Operations Plan shall be implemented prior to drilling out from under casing (surface or intermediate) set above potential H₂S bearing formations.

I. Hydrogen Sulfide Training

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H₂S).
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H₂S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H₂S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H₂S Drilling Operations Plan and the Public Protection Plan.

All personnel entering a location posted with the potential of Hydrogen Sulfide shall be required to carry documentation that they have received the proper training. (Training certificate typically valid for 1 year after training)

II. Site Specific Information:

Upon installation of H₂S Safety Equipment and Systems on a well, and prior to drilling out of casing above potential Hydrogen Sulfide bearing formations a briefing with all personnel on location shall be held. The briefing should include a review of H₂S Drilling Operations Plan and the Public Protection Plan. This briefing should include site specific elements such as:

- Identification of the briefing areas.
- Discussion of rig orientation and prevailing wind direction.

- Identification of access roads, including secondary egress.
- Confirmation that all personnel have current training.
- Formation tops of potential H₂S bearing formations.

The H₂S Drilling Operations Plan and the Public Protection Plan shall be available at the well site.

III. H₂S Safety Equipment and Systems

1. Well Control Equipment that will be installed prior to drilling out of casing above potential Hydrogen Sulfide bearing formations:
 - A. Choke manifold with a minimum of one adjustable choke.
 - B. At least one choke line must be directed away from the drilling unit and secured at the end. (For closed-loop operations this should be directed to containment bin at the back edge of the location.)
 - C. Blind rams and pipe rams to accommodate all pipe sizes
 - D. Annular preventor
 - E. Properly sized closing unit.
- 1.1 Well control equipment to be available to install as needed should H₂S be encountered;
 - A. Flare line with electronic igniter or continuous pilot.
 - B. Mud gas separator
 - C. Flare gun with flares.
 - D. One portable SO₂ monitor positioned near flare line.
2. Protective equipment for essential personnel:
 - A. 30-minute air pack units located in the dog house and at briefing areas.
3. H₂S detection and monitoring equipment:
 - A. Two portable H₂S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H₂S levels of 20 ppm are reached.
4. Visual warning systems:
 - A. Wind direction indicators.
 - B. 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.

5. Mud program:

- A. The mud program shall be designed to minimize the volume of H_2S circulated to the surface. Proper mud weight, safe drilling practices, and the use of H_2S scavengers will minimize hazards when penetrating H_2S -bearing zones.
- B. A mud-gas separator and an H_2S gas buster will be utilized as required if H_2S is encountered.

6. Metallurgy:

- A. All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H_2S service.
- B. All elastomers used for packing and seals shall be H_2S trim.

7. Communication:

- A. Communications shall be available on the rig site and in company vehicles. Communications equipment may include one or more of the following; land lines, satellite phones, cellular telephone and 2-way radios.

Emergency Phone Numbers

Artesia	State Police	(575) 746-2703
Artesia	City Police	(575) 746-2703
Artesia	Sheriff's Office	(575) 746-9888
Artesia	Ambulance	911
Artesia	Fire Department	(575) 746-2701
Artesia	LEPC (Local Emergency Planning Committee)	(575) 746-2122
Artesia	NMOCD	(575) 748-1283

Carlsbad	State Police	(575) 885-3137
Carlsbad	City Police	(575) 885-2111
Carlsbad	Sheriff's Office	(575) 887-7551
Carlsbad	AMBULANCE	911
Carlsbad	Fire Department	(575) 885-2111
Carlsbad	LEPC (Local Emergency Planning Committee)	(575) 887-3798
Carlsbad	US Bureau of Land Management	(575) 887-6544

Santa Fe	N.M. Emergency Response Commission	(505) 476-9600
24 Hr.	" " " "	(505) 827-9126
Santa Fe	N.M. State Emergency Operations Center	(505) 476-9635
Washington D.C.	National Emergency Response Center	1-(800) 424-8802

Other Services :

Houston	Boots & Coots IWC	1-800-256-9688 or (281) 931-8884
Odessa	Cudd Pressure Control	(915) 699-0139 or (915) 563-3356
Artesia	Halliburton	(575) 746-2757
Artesia	B.J. Services	(575) 746-3569

Air Ambulance

Lubbock, Tx	Flight For Life, 4000 24th St.	(806) 743-8911
Lubbock, TX	Aerocare, Rt 3 Box49-F	(806) 747-8923
Albuquerque, NM	Med Flight Air Amb, 2301 Yale Blvd SE #D3,	(505) 842-4433
Albuquerque, NM	S B Air Med Svc, 2505 Clark Carr Loop SE,	(505) 842-4949

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Marshall & Winston Incorporated
LEASE NO.:	NMNM125141
WELL NAME & NO.:	Angel Ranch Fed 10 1H
SURFACE HOLE FOOTAGE:	330' FSL & 660' FEL
BOTTOM HOLE FOOTAGE	330' FNL & 660' FEL
LOCATION:	Section 10, T. 20 S., R. 27 E., NMPM
COUNTY:	Eddy County, New Mexico

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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.

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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)

Fence Requirement:

If the fence paralleling the highway is disturbed in any way by the construction, maintenance or removal of the pipeline, the fence will be repaired immediately or remedied by the operator causing the damage.

Cattleguard Requirement:

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. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

Access Road Requirement:

The new access road shall be constructed entirely upon the existing two-track road when the survey stakes follow the two-track road, even when it parallels the buried pipeline.

Pipeline Requirement:

The pipeline shall be installed no farther than 6 feet from and parallel to the existing access road from the well to the tank battery. The fence line shall not be disturbed during installation.

Cave and Karst

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

Cave/Karst Surface Mitigation

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

Construction:

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

No Blasting:

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

Pad Berming:

The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

Tank Battery Liners and Berms:

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

Leak Detection System:

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

Automatic Shut-off Systems:

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

Cave/Karst Subsurface Mitigation

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

Rotary Drilling with Fresh Water:

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

Directional Drilling:

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

Lost Circulation:

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

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

Abandonment Cementing:

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

Pressure Testing:

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

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5972 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 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 (20) feet.

Surfacing

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

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

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

Ditching

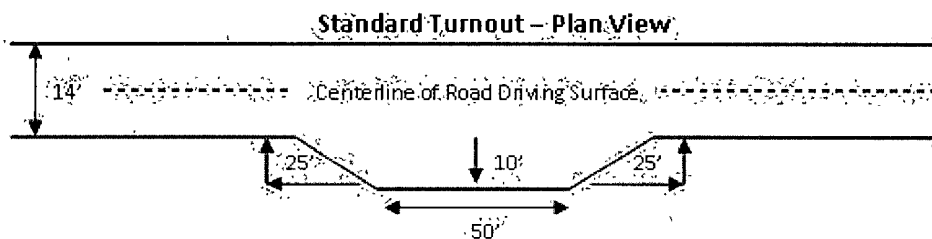
Both sides of the road shall be ditched.

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.

Turnouts

Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

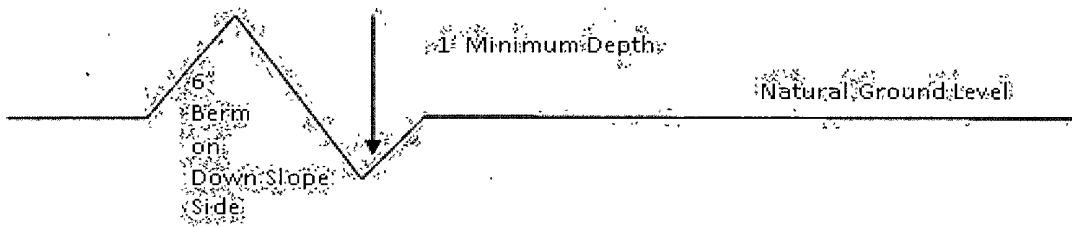


Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing 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:

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

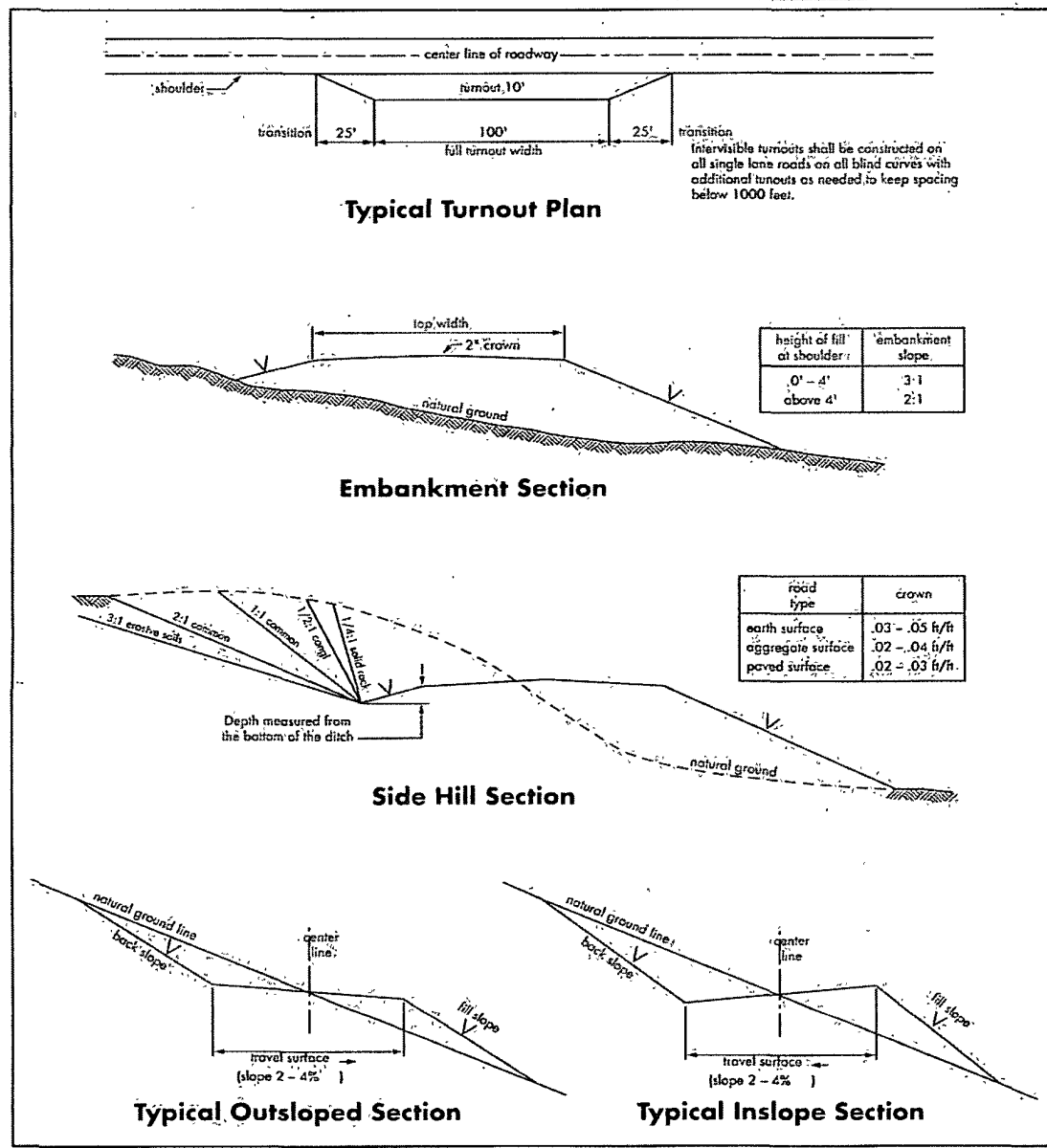
Culvert Installations

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

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. **Although Hydrogen Sulfide has not been reported in this section, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts 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.**

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.

High Cave/Karst

Possible lost circulation in the Grayburg, San Andres, Delaware and Bone Spring.

1. The **13-3/8** inch surface casing shall be set at approximately **450** feet and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
 - ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

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

The pilot hole plugging procedure is approved as written, contact the BLM (575-361-2822) prior to tagging plugs.

3. The minimum required fill of cement behind the **7 X 5-1/2** inch production casing is:

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

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

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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.

a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 9-5/8 inch intermediate casing shoe shall be **5000 (5M)** psi. **5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

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**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- c. The results of the test shall be reported to the appropriate BLM office.
- d. 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.**
- e. 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.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

E. DRILL STEM TEST

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

F. 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.

CRW 040212

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

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

Containment Structures

The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

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. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

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

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

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

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.)

Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

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

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

- a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
- b. Activities of other parties including, but not limited to:
 - (1) Land clearing.
 - (2) Earth-disturbing and earth-moving work.
 - (3) Blasting.
 - (4) Vandalism and sabotage.
- c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any responsibility as provided herein.

6. The pipeline shall be routed no farther than 6 feet from and parallel to existing roads. The authorized right-of-way width will be 20 feet. 14 feet of the right-of-way width will consist of existing disturbance (existing lease roads) and the remaining 6 feet will consist of area adjacent to the disturbance. All construction and maintenance activity will be confined to existing roads.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline will be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

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

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource

management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

16. 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, powerline 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.

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).

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:

<u>Species</u>	<u>lb/acre</u>
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sand love grass (<i>Eragrostis trichodes</i>)	1.0
Plains bristlegrass (<i>Setaria macrostachya</i>)	2.0

*Pounds of pure live seed:

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