AFS-10-113

R-111-POTASH

RECEIVED
AUG 11 2010
NMOCD ARTESIA

OCD-ARTESIA

Form 3160-3
(April 2004)

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.
NM-025559

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
Irwin 13 Federal No. 4H (38097)

2. Name of Operator
Cimarex Energy Co. of Colorado (162683)

9. API Well No
30-015- 38101

3a Address
600 N. Marienfeld St., Ste. 600; Midland, TX 79701

3b. Phone No *(include area code)*
432-571-7800

10. Field and Pool, or Exploratory
Hackberry; Bone Spring, NW (97020)

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

At Surface (P) 1300 FSL & 380 FEL Non-Standard Location

At proposed prod. Zone 330 FNL & 2310 FWL *Horizontal Bone Spring test*

11. Sec., T. R M. or Blk and Survey or Area
13-19S-30E

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

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) 20'	16. No of acres in lease NM-025559 - 640 acres	17 Spacing Unit dedicated to this well E2SE, NWSE, W2NE, NENW 240 acres
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 689'	19 Proposed Depth Pilot Hole 9000' MD 13068' TVD 8699'	20. BLM/BIA Bond No on File NM-2575
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3407' GR	22. Approximate date work will start* 06.01.10	23 Estimated duration 25-30 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 Zeno Farris	Name *(Printed/Typed)* Zeno Farris	Date 03.23.10

Title
Manager Operations Administration

Approved By *(Signature)* /s/ Linda S.C. Rundell	Name (Printed/Typed)	Date AUG 6 2010
Title STATE DIRECTOR	Office NM STATE 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.S 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)*

Capitan Controlled Water Basin

KZ

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

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
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised October 15, 2009

Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-38101	97020	Hackberry; Bone Spring, NW

Property Code	Property Name	Well Number
38097	IRWIN "13" FEDERAL	4H

OGRID No.	Operator Name	Elevation
162683	CIMAREX ENERGY CO. OF COLORADO	3407'

Surface Location

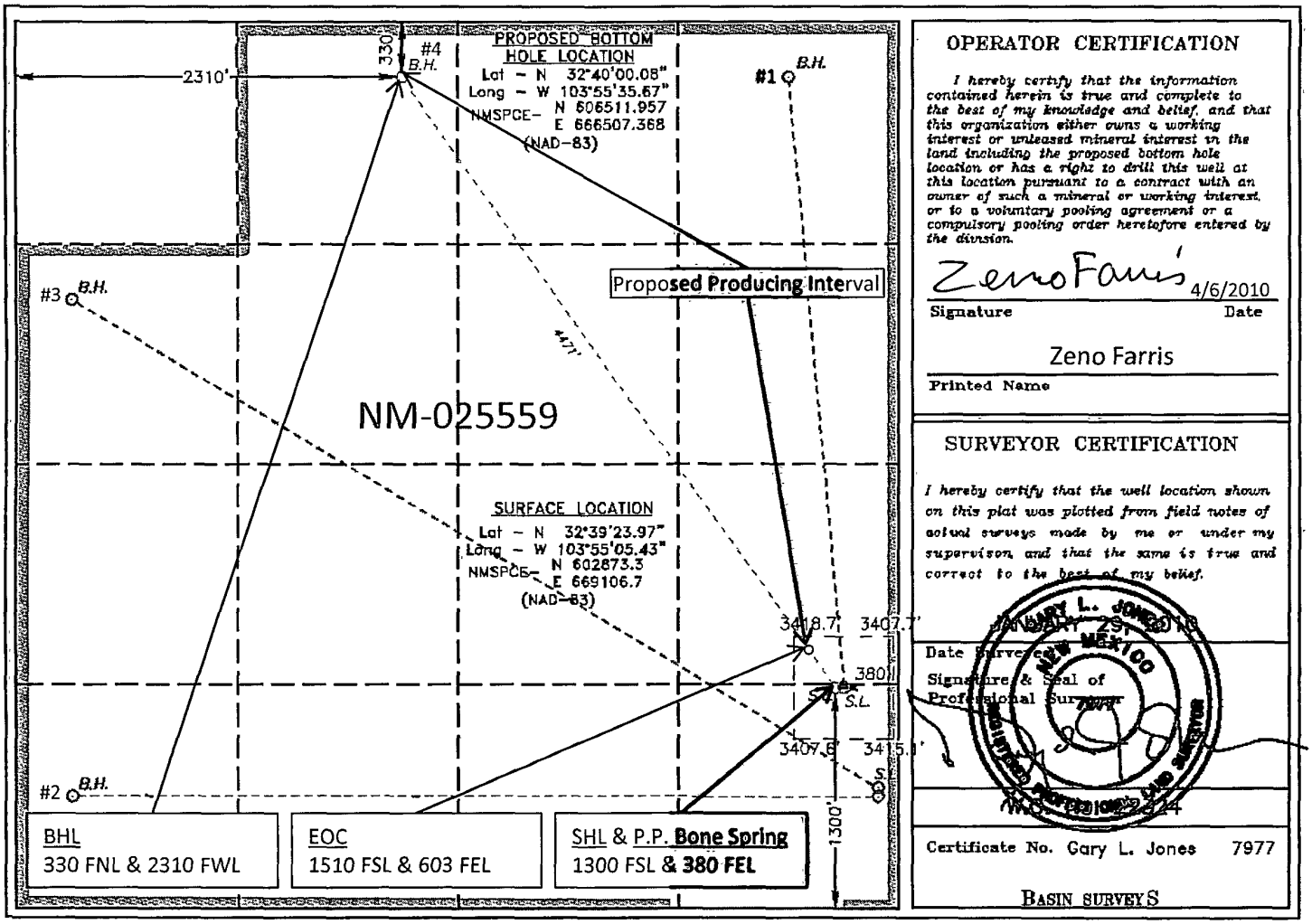
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	13	19 S	30 E		1300	SOUTH	380	EAST	EDDY

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
C	13	19 S	30 E		330	NORTH	2310	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
600			NSL Pending

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



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Zeno Farris 4/6/2010
Signature Date

Zeno Farris
Printed Name

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 supervison, and that the same is true and correct to the best of my belief.

GARY L. JONES
NEW MEXICO
7977
REGISTERED PROFESSIONAL SURVEYOR

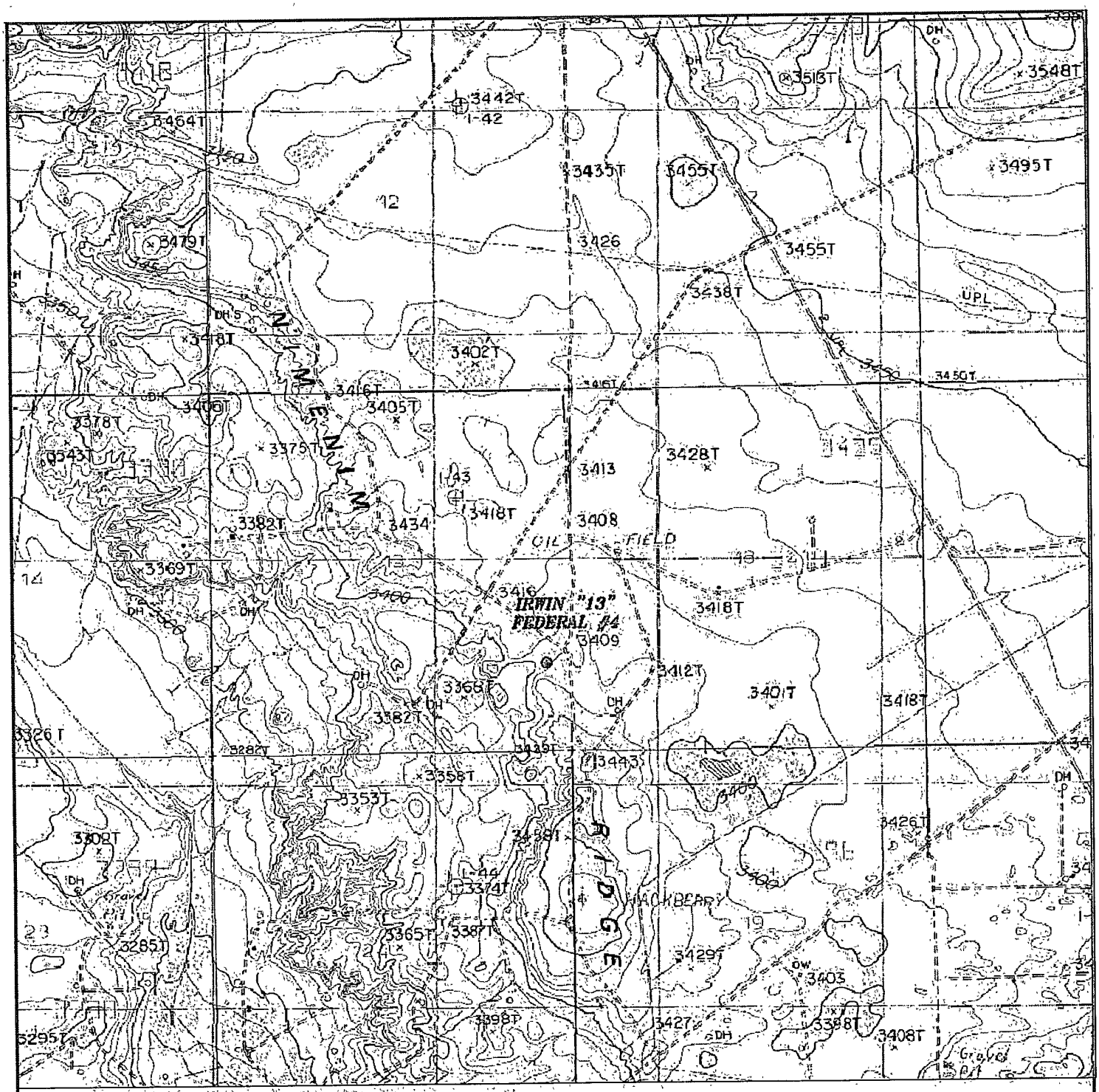
JANUARY 29, 2010
Date Surveyed

Signature & Seal of Professional Surveyor

NM PE/PS 7977

Certificate No. Gary L. Jones 7977

BASIN SURVEYS



IRWIN "13" FEDERAL #4
Located 1300' FSL and 380' FEL
Section 13, Township 19 South, Range 30 East,
N.M.P.M., Eddy County, New Mexico.

basin surveys
focused on excellence in the oilfield

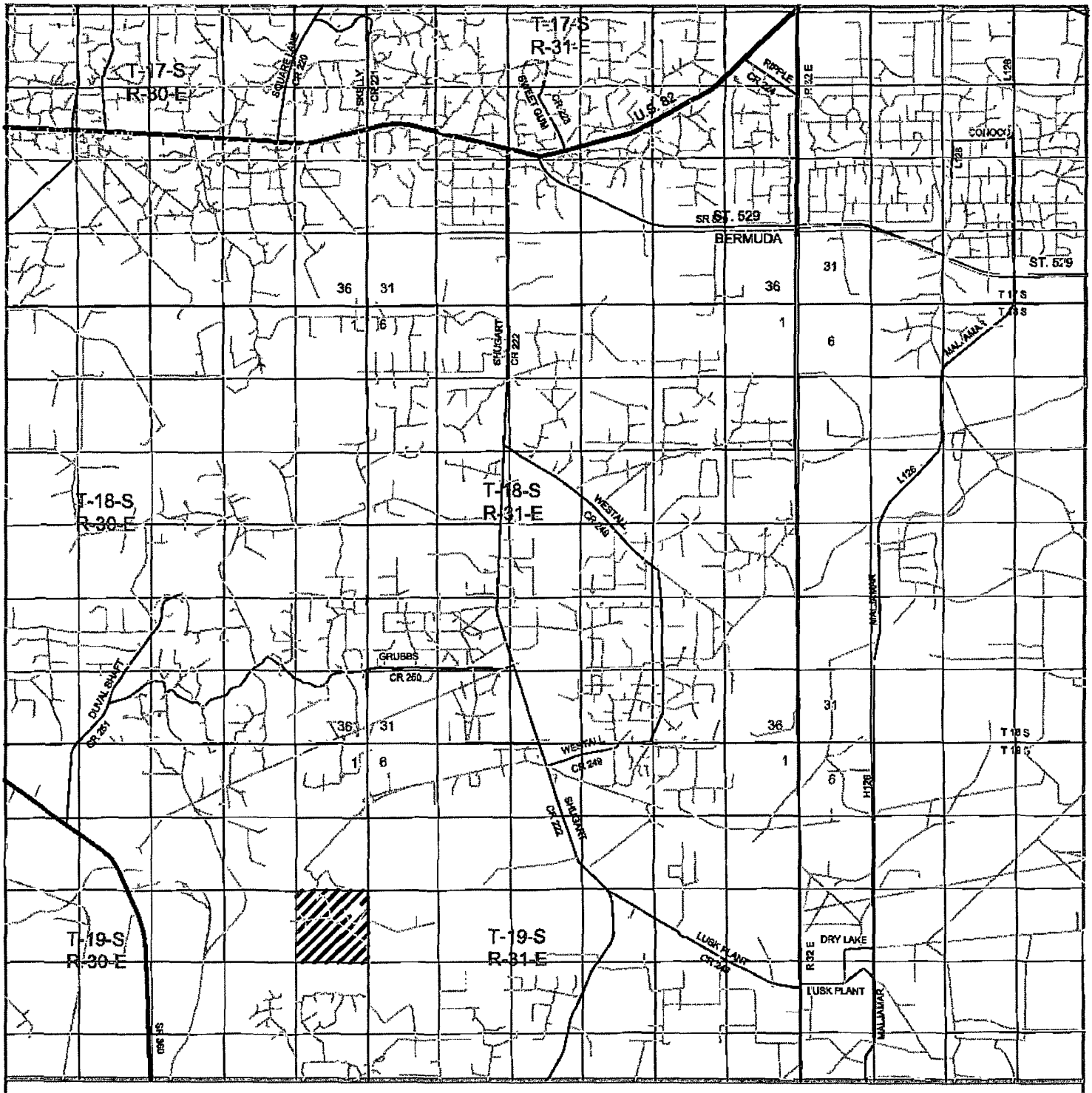
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

W.O. Number:	JMS 22324
Survey Date:	01-29-2010
Scale:	1" = 2000'
Date:	02-02-2010

N

CIMAREX ENERGY CO. OF COLORADO

Exhibit C



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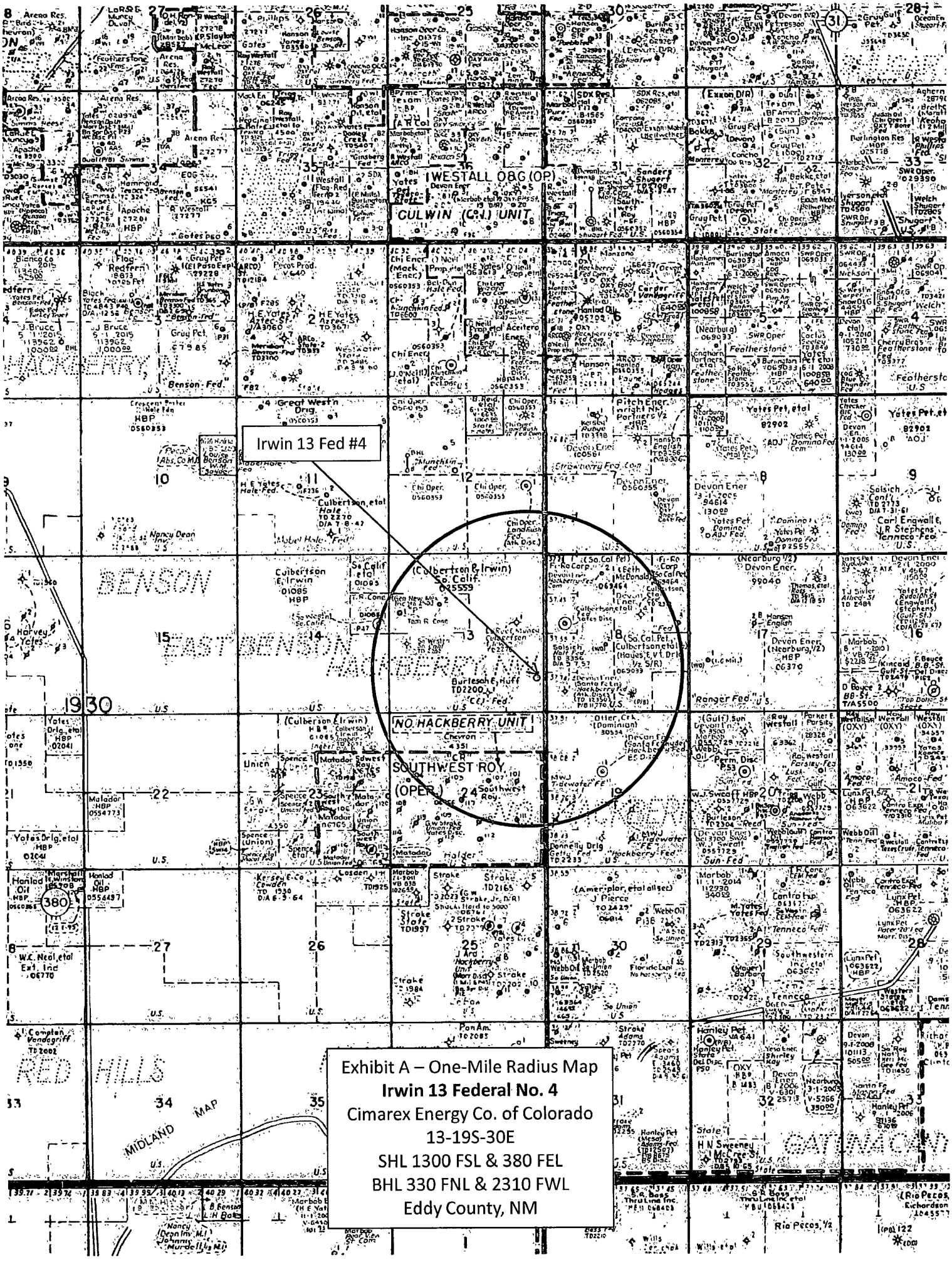
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com

W.O. Number: JMS 22324
Survey Date: 01-29-2010
Scale: 1" = 2 Miles
Date: 02-02-2010

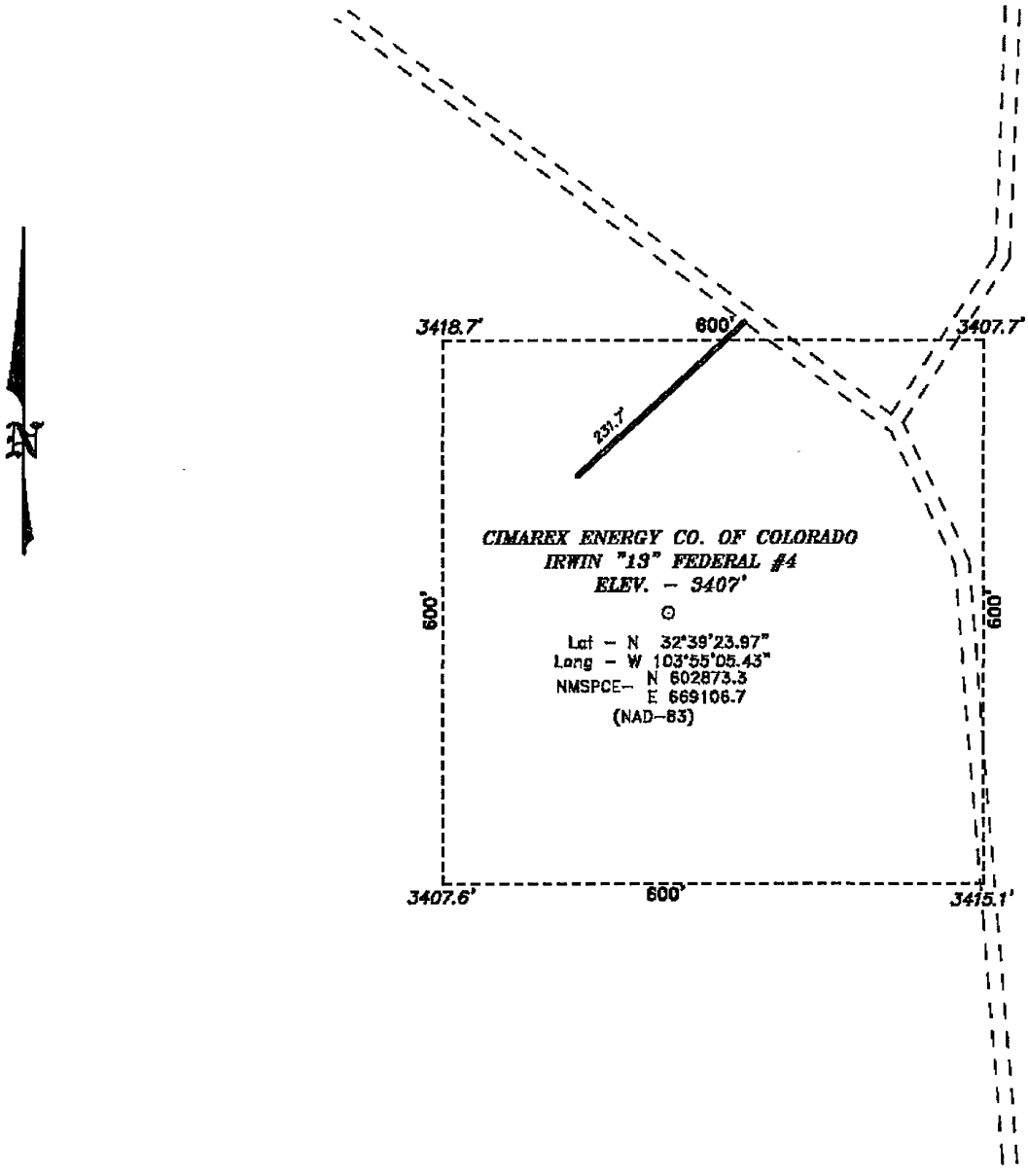
N

CIMAREX ENERGY CO. OF COLORADO

Exhibit B


Irwin 13 Fed #4
(Culbertson & Irwin) So. Calif. 025559
WESTALL O&G (OP)
CULWIN (CNL) UNIT
NO HACKBERRY UNIT
SOUTHWEST ROY (OPER.)
BENSON
EAST BENSON
HACKBERRY
RED HILLS
MAP
MIDLAND
Exhibit A – One-Mile Radius Map
Irwin 13 Federal No. 4
Cimarex Energy Co. of Colorado
13-19S-30E
SHL 1300 FSL & 380 FEL
BHL 330 FNL & 2310 FWL
Eddy County, NM

SECTION 13, TOWNSHIP 19 SOUTH, RANGE 30 EAST, N.M.P.M.,
EDDY COUNTY, **NEW MEXICO.**



Directions to Location:

FROM THE JUNCTION OF SHUGART AND WESTALL GO WEST TURNING SOUTHERLY ON LEASE ROAD FOR 2.8 MILES TO PROPOSED LOCATION.

CIMAREX ENERGY CO. OF COLORADO

REF: IRWIN "13" FEDERAL #4 / WELL PAD TOPO

THE IRWIN "13" FEDERAL #4 LOCATED 1300' FROM THE SOUTH LINE AND 380' FROM THE EAST LINE OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 30 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

BASIN SURVEYS P.O. BOX 1786 – HOBBS, NEW MEXICO

W.O. Number: 22324	Drawn By: J. SMALL		
Date: 02-02-2010	Disk: JMS 22324	Survey Date: 01-29-2010	Sheet 1 of 1 Sheets

Application to Drill
Irwin 13 Federal No. 4
Cimarex Energy Co. of Colorado
Unit P, Section 13
T19S-R30E, Eddy County, NM

In response to questions asked under Section II B of Bulletin NTL-6, the following information is provided for your consideration:

1 Location: SHL 1300 FSL & 380 FEL
BHL 330 FNL & 2310 FWL

2 Elevation above sea level: 3,407 GR

3 Geologic name of surface formation: Quaternery Alluvium Deposits

4 Drilling tools and associated equipment: Conventional rotary drilling rig using fluid as a circulating medium for solids removal.

5 Proposed drilling depth: Pilot Hole 9000' MD 13068' TVD 8699'

6 Estimated tops of geological markers:

Delaware Sands	3500'	Wolfcamp	9998'
Bone Spring	6350'	Strawn	10915'
FBSS	7750'	Morrow	11430'
SBSS	8600'	Morrow Clastics	11810'

7 Possible mineral bearing formation:
Bone Spring Oil

8 Proposed Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 500'	8.4 - 8.6	28	NC	FW
500' to 4000'	10.0	30-32	NC	Brine water
4000' to 9000'	8.4 - 9.5	30-32	NC	FW, brine
7770' to 13068'	8.4	28-32	NC	2% KCl

Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.

Proposed drilling Plan
After drilling and setting surface casing, drill to vertical TD 9000' and log. Set 7" casing to 7710' and cross over to 2⅞" 2000 psi IJ fiberglass tubing underneath to 9000' and cement in place. Drill out of the bottom of the 7" with a 6⅛" bit and through cement and fiberglass tubing to KOP @ 7770' and kick off to drill the lateral. The fiberglass tubing effectively circulates cement to surface and plugs back the open hole.

9 Casing & Cementing Program:

String	Hole Size	Depth			Casing OD		Weight	Collar	Grade
Surface	17½"	0'	to	500'	New	13⅜"	48#	STC	H-40
Intermediate	12¼"	0'	to	4000'	New	9⅝"	40#	LTC	J/K-55
Production	8¾"	0'	to	7710'	New	7"	26#	LTC	P-110
Production	8¾"	7710'	to	9000'	New	2⅞"	2.18#	0	IJ
Lateral Pt. 1	6⅛"	7610'	to	8895'	New	4½"	11.6#	**BTC**	P-110
Lateral Pt. 2	6⅛"	8895'	to	13068'	New	4½"	11.6#	**LTC**	P-110

10 Cementing:

Surface 600 sx Premium Plus + 2% $CaCl_2$ (wt 14.8, yld 1.35)
TOC Surface

Intermediate Lead: 215 sx Econocem + 3% Salt + 2% $CaCl_2$ + 3 lbm/sk Gilsonite (wt 11.7, yld 2.06)
Tail: 650 sks Premium Plus + 1% $CaCl_2$ (wt 14.8, yld 1.34)
TOC Surface – See COA

Production Lead: 360 sx EconoCem + 3% Salt + 5 lbm/sk gilsonite (wt 13.0, yld 1.71)
Tail: 365 sx HalCem (wt 14.8, yld 1.34)
TOC 3800' – See COA
Surface

Lateral No cement needed. Peak completion assembly.

Fresh water zones will be protected by setting 13⅜" casing at 500' and cementing to surface. Hydrocarbon zones will be protected by setting 9⅝" casing at 4000' and cementing to surface, and by setting 7" casing at 7710' and fiberglass to 9000' and cementing to 3800.'

Collapse Factor	*Burst Factor*	*Tension Factor*
1.125	1.125	1.6

11 Pressure control Equipment:
Exhibit "E". A 13⅝" 5000 PSI working pressure BOP tested to 3000 psi consisting of one set of blind rams and one set of pipe rams and a 5000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head as needed. A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

BOP unit will be hydraulically operated. BOP will be nippled up and operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling. From the base of the surface pipe through the running of production casing, the well will be equipped with a 5000 psi BOP system tested to 3000 psi.

BOPS will be tested by an independent service company to 250 psi low and 3000 psi high. Hydril will be tested to 250 psi low and 1500 psi high.

12 Testing, Logging and Coring Program:

See COA

A. Mud logging program: 2 man unit from 4000' to TD
B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR
C. No DSTs or cores are planned at this time.

13 Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex does not anticipate that there will be enough H_2S from the surface to the Bone Spring formations to meet the BLM's minimum requirements for the submission of an "H_2S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H_2S Safety package on all wells, attached is an "H_2S Drilling Operations Plan." Adequate flare lines will be installed off the mud / gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used.

Estimated BHP **3000 psi** Estimated BHT **130°**

14 Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved.
Drilling expected to take 30-35 days
If production casing is run an additional 30 days will be required to complete and construct surface facilities.

15 Other Facets of Operations:

After running casing, cased hole gamma ray neutron collar logs will be run from total depth over possible pay intervals.
Bone Spring pay will be perforated and stimulated.
The proposed well will be tested and potentialed as **an oil well.**

Cimarex Energy Co.

Location: Eddy County, NM
Field: (Irwin) Sec 13, T19S, R30E
Facility: Irwin 13 Fed No. 4H

Slot: No. 4H SHL
Well: No. 4H
Wellbore: No. 4H PWB

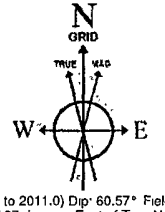
Plot reference wellpath is Prelim_2	
True vertical depths are referenced to Rig on No 4H SHL (RT)	Grid System NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No 4H SHL (RT)	North Reference Grid north
Rig on No 4H SHL (RT) to Mean Sea Level 3407 feet	Scale True distance
Mean Sea Level to Mud line (Facility Irwin 13 Fed No 4H) -3407 feet	Depths are in feet
Coordinates are in feet referenced to Surface Location	Created by Victor Hernandez on 3/16/2010

CIMAREX

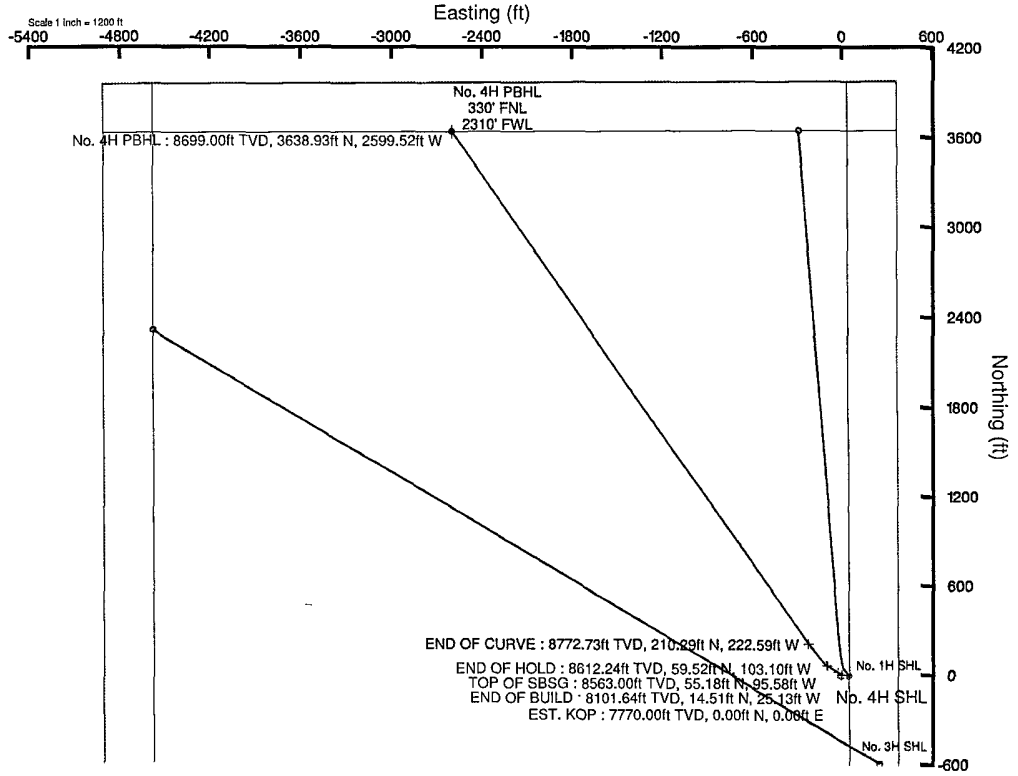
BAKER HUGHES INTEQ

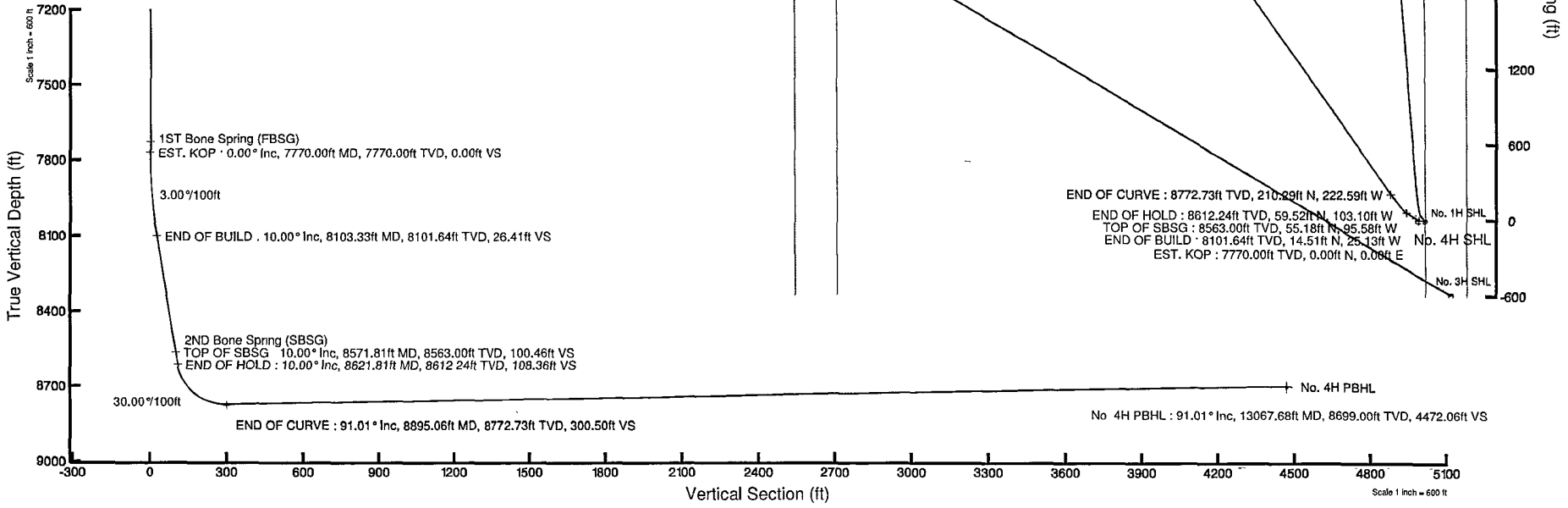
Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	0.00	0.000	300.000	0.00	0.00	0.00	0.00	0.00
EST. KOP	7770.00	0.000	300.000	7770.00	0.00	0.00	0.00	0.00
END OF BUILD	8103.33	10.000	300.000	8101.64	14.51	-25.13	3.00	26.41
TOP OF SBSG	8571.81	10.000	300.000	8563.00	55.18	-95.58	0.00	100.46
END OF HOLD	8621.81	10.000	300.000	8612.24	59.52	-103.10	0.00	108.36
END OF CURVE	8895.06	91.013	325.268	8772.73	210.29	-222.59	30.00	300.50
No. 4H PBHL	13067.68	91.013	325.268	8699.00	3638.93	-2599.52	0.00	4472.06



BGGM (1945.0 to 2011.0) Dip: 60.57° Field: 49025.5 nT
Magnetic North is 7.97 degrees East of True North (at 3/16/2010)
Grid North is 0.22 degrees East of True North
To correct azimuth from True to Grid subtract 0.22 degrees
To correct azimuth from Magnetic to Grid add 7.75 degrees
For example if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.75 = 97.75





Azimuth 324.46° with reference 0.00 N, 0.00 E

Planned Wellpath Report

Prelim_2

INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Cimarex Energy Co.**	Slot	**No. 4H SHL**
Area	**Eddy County, NM**	Well	**No. 4H**
Field	**(Irwin) Sec 13, T19S, R30E**	Wellbore	**No. 4H PWB**
Facility	**Irwin 13 Fed No. 4H**		

HOLE & CASING SECTIONS Ref Wellbore: No. 4H PWB Ref Wellpath: Prelim_2

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
6.125in Open Hole	7700.00	13067.68	5367.68	7700.00	8699.00	0.00	0.00	3638.93	-2599.52

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
1) No. 4H PBHL	13067.68	8699.00	3638.93	-2599.52	**666507.37**	**606511.96**	32°40'00.077"N	103°55'35.669"W	point

SURVEY PROGRAM Ref Wellbore: No. 4H PWB Ref Wellpath: Prelim_2

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	13067.68	NaviTrak (Standard)		No. 4H PWB

Planned Wellpath Report

Prelim_2

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Cimarex Energy Co.**	Slot	**No. 4H SHL**
Area	**Eddy County, NM**	Well	**No. 4H**
Field	**(Irwin) Sec 13, T19S, R30E**	Wellbore	**No. 4H PWB**
Facility	**Irwin 13 Fed No. 4H**		

WELLPATH DATA (60 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]	Comments
10170.00†	91.013	325.268	8750.21	1575.12	1257.91	-948.86	668157.91	604131.11	32°39'36.455"N	103°55'16.468"W	0.00	
10270.00†	91.013	325.268	8748.44	1675.09	1340.08	-1005.82	668100.95	604213.28	32°39'37.270"N	103°55'17.131"W	0.00	
10370.00†	91.013	325.268	8746.67	1775.07	1422.25	-1062.79	668043.99	604295.44	32°39'38.085"N	103°55'17.793"W	0.00	
10470.00†	91.013	325.268	8744.90	1875.04	1504.42	-1119.75	667987.03	604377.61	32°39'38.901"N	103°55'18.456"W	0.00	
10570.00†	91.013	325.268	8743.14	1975.01	1586.59	-1176.72	667930.07	604459.77	32°39'39.716"N	103°55'19.119"W	0.00	
10670.00†	91.013	325.268	8741.37	2074.99	1668.76	-1233.68	667873.11	604541.93	32°39'40.531"N	103°55'19.781"W	0.00	
10770.00†	91.013	325.268	8739.60	2174.96	1750.93	-1290.65	667816.15	604624.10	32°39'41.346"N	103°55'20.444"W	0.00	
10870.00†	91.013	325.268	8737.84	2274.94	1833.10	-1347.61	667759.19	604706.26	32°39'42.161"N	103°55'21.106"W	0.00	
10970.00†	91.013	325.268	8736.07	2374.91	1915.27	-1404.58	667702.23	604788.42	32°39'42.977"N	103°55'21.769"W	0.00	
11070.00†	91.013	325.268	8734.30	2474.89	1997.44	-1461.54	667645.27	604870.59	32°39'43.792"N	103°55'22.432"W	0.00	
11170.00†	91.013	325.268	8732.53	2574.86	2079.61	-1518.51	667588.30	604952.75	32°39'44.607"N	103°55'23.094"W	0.00	
11270.00†	91.013	325.268	8730.77	2674.84	2161.78	-1575.47	667531.34	605034.91	32°39'45.422"N	103°55'23.757"W	0.00	
11370.00†	91.013	325.268	8729.00	2774.81	2243.94	-1632.44	667474.38	605117.08	32°39'46.237"N	103°55'24.419"W	0.00	
11470.00†	91.013	325.268	8727.23	2874.78	2326.11	-1689.40	667417.42	605199.24	32°39'47.053"N	103°55'25.082"W	0.00	
11570.00†	91.013	325.268	8725.47	2974.76	2408.28	-1746.37	667360.46	605281.41	32°39'47.868"N	103°55'25.745"W	0.00	
11670.00†	91.013	325.268	8723.70	3074.73	2490.45	-1803.33	667303.50	605363.57	32°39'48.683"N	103°55'26.407"W	0.00	
11770.00†	91.013	325.268	8721.93	3174.71	2572.62	-1860.30	667246.54	605445.73	32°39'49.498"N	103°55'27.070"W	0.00	
11870.00†	91.013	325.268	8720.16	3274.68	2654.79	-1917.26	667189.58	605527.90	32°39'50.313"N	103°55'27.732"W	0.00	
11970.00†	91.013	325.268	8718.40	3374.66	2736.96	-1974.23	667132.62	605610.06	32°39'51.129"N	103°55'28.395"W	0.00	
12070.00†	91.013	325.268	8716.63	3474.63	2819.13	-2031.19	667075.66	605692.22	32°39'51.944"N	103°55'29.058"W	0.00	
12170.00†	91.013	325.268	8714.86	3574.61	2901.30	-2088.16	667018.70	605774.39	32°39'52.759"N	103°55'29.720"W	0.00	
12270.00†	91.013	325.268	8713.10	3674.58	2983.47	-2145.12	666961.74	605856.55	32°39'53.574"N	103°55'30.383"W	0.00	
12370.00†	91.013	325.268	8711.33	3774.55	3065.64	-2202.09	666904.77	605938.71	32°39'54.389"N	103°55'31.046"W	0.00	
12470.00†	91.013	325.268	8709.56	3874.53	3147.81	-2259.05	666847.81	606020.88	32°39'55.205"N	103°55'31.708"W	0.00	
12570.00†	91.013	325.268	8707.79	3974.50	3229.98	-2316.02	666790.85	606103.04	32°39'56.020"N	103°55'32.371"W	0.00	
12670.00†	91.013	325.268	8706.03	4074.48	3312.15	-2372.98	666733.89	606185.21	32°39'56.835"N	103°55'33.034"W	0.00	
12770.00†	91.013	325.268	8704.26	4174.45	3394.32	-2429.95	666676.93	606267.37	32°39'57.650"N	103°55'33.696"W	0.00	
12870.00†	91.013	325.268	8702.49	4274.43	3476.49	-2486.91	666619.97	606349.53	32°39'58.465"N	103°55'34.359"W	0.00	
12970.00†	91.013	325.268	8700.73	4374.40	3558.66	-2543.88	666563.01	606431.70	32°39'59.280"N	103°55'35.022"W	0.00	
13067.68	91.013	325.268	8699.00	4472.06	3638.93	-2599.52	666507.37	606511.96	32°40'00.077"N	103°55'35.669"W	0.00	No. 4H PBHL

Planned Wellpath Report

Prelim_2

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Cimarex Energy Co.**	Slot	**No. 4H SHL**
Area	**Eddy County, NM**	Well	**No. 4H**
Field	**(Irwin) Sec 13, T19S, R30E**	Wellbore	**No. 4H PWB**
Facility	**Irwin 13 Fed No. 4H**		

WELLPATH DATA (60 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	300.000	0.00	0.00	0.00	0.00	669106.70	602873.30	32°39'23.972"N	103°55'05.427"W	0.00	Tie On
7728.00†	0.000	300.000	7728.00	0.00	0.00	0.00	669106.70	602873.30	32°39'23.972"N	103°55'05.427"W	0.00	1ST Bone Spring (FBSG)
7770.00	0.000	300.000	7770.00	0.00	0.00	0.00	669106.70	602873.30	32°39'23.972"N	103°55'05.427"W	0.00	EST. KOP
7870.00†	3.000	300.000	7869.95	2.38	1.31	-2.27	669104.43	602874.61	32°39'23.985"N	103°55'05.454"W	3.00	
7970.00†	6.000	300.000	7969.63	9.52	5.23	-9.06	669097.64	602878.53	32°39'24.024"N	103°55'05.533"W	3.00	
8070.00†	9.000	300.000	8068.77	21.40	11.76	-20.36	669086.34	602885.06	32°39'24.089"N	103°55'05.665"W	3.00	
8103.33	10.000	300.000	8101.64	26.41	14.51	-25.13	669081.57	602887.81	32°39'24.117"N	103°55'05.720"W	3.00	END OF BUILD
8170.00†	10.000	300.000	8167.30	36.95	20.30	-35.15	669071.55	602893.59	32°39'24.174"N	103°55'05.837"W	0.00	
8270.00†	10.000	300.000	8265.78	52.76	28.98	-50.19	669056.51	602902.28	32°39'24.261"N	103°55'06.013"W	0.00	
8370.00†	10.000	300.000	8364.26	68.56	37.66	-65.23	669041.47	602910.96	32°39'24.347"N	103°55'06.188"W	0.00	
8470.00†	10.000	300.000	8462.74	84.37	46.34	-80.27	669026.44	602919.64	32°39'24.434"N	103°55'06.364"W	0.00	
8570.00†	10.000	300.000	8561.22	100.17	55.03	-95.31	669011.40	602928.32	32°39'24.520"N	103°55'06.539"W	0.00	
8571.81	10.000	300.000	8563.00	100.46	55.18	-95.58	669011.13	602928.48	32°39'24.522"N	103°55'06.543"W	0.00	TOP OF SBSG; 2ND Bone Spring (SBSG)
8621.81	10.000	300.000	8612.24	108.36	59.52	-103.10	669003.61	602932.82	32°39'24.565"N	103°55'06.630"W	0.00	END OF HOLD
8670.00†	23.865	315.425	8658.25	121.87	68.61	-113.62	668993.09	602941.90	32°39'24.655"N	103°55'06.753"W	30.00	
8770.00†	53.617	322.022	8735.41	183.48	115.83	-153.50	668953.21	602989.12	32°39'25.124"N	103°55'07.217"W	30.00	
8870.00†	83.517	324.703	8771.54	275.49	189.81	-208.24	668898.48	603063.09	32°39'25.858"N	103°55'07.854"W	30.00	
8895.06	91.013	325.268	8772.73	300.50	210.29	-222.59	668884.13	603083.58	32°39'26.062"N	103°55'08.021"W	30.00	END OF CURVE
8970.00†	91.013	325.268	8771.41	375.42	271.87	-265.28	668841.44	603145.15	32°39'26.672"N	103°55'08.518"W	0.00	
9070.00†	91.013	325.268	8769.64	475.40	354.04	-322.24	668784.48	603227.32	32°39'27.488"N	103°55'09.180"W	0.00	
9170.00†	91.013	325.268	8767.88	575.37	436.21	-379.21	668727.52	603309.48	32°39'28.303"N	103°55'09.843"W	0.00	
9270.00†	91.013	325.268	8766.11	675.35	518.38	-436.17	668670.56	603391.64	32°39'29.118"N	103°55'10.505"W	0.00	
9370.00†	91.013	325.268	8764.34	775.32	600.55	-493.14	668613.60	603473.81	32°39'29.933"N	103°55'11.168"W	0.00	
9470.00†	91.013	325.268	8762.58	875.30	682.72	-550.10	668556.64	603555.97	32°39'30.749"N	103°55'11.830"W	0.00	
9570.00†	91.013	325.268	8760.81	975.27	764.89	-607.07	668499.68	603638.13	32°39'31.564"N	103°55'12.493"W	0.00	
9670.00†	91.013	325.268	8759.04	1075.24	847.06	-664.03	668442.72	603720.30	32°39'32.379"N	103°55'13.155"W	0.00	
9770.00†	91.013	325.268	8757.27	1175.22	929.23	-721.00	668385.76	603802.46	32°39'33.194"N	103°55'13.818"W	0.00	
9870.00†	91.013	325.268	8755.51	1275.19	1011.40	-777.96	668328.79	603884.62	32°39'34.009"N	103°55'14.480"W	0.00	
9970.00†	91.013	325.268	8753.74	1375.17	1093.57	-834.93	668271.83	603966.79	32°39'34.825"N	103°55'15.143"W	0.00	
10070.00†	91.013	325.268	8751.97	1475.14	1175.74	-891.89	668214.87	604048.95	32°39'35.640"N	103°55'15.806"W	0.00	

Planned Wellpath Report

Prelim_2

REFERENCE WELLPATH IDENTIFICATION			
Operator	**Cimarex Energy Co.**	Slot	**No. 4H SHL**
Area	**Eddy County, NM**	Well	**No. 4H**
Field	**(Irwin) Sec 13, T19S, R30E**	Wellbore	**No. 4H PWB**
Facility	**Irwin 13 Fed No. 4H**		

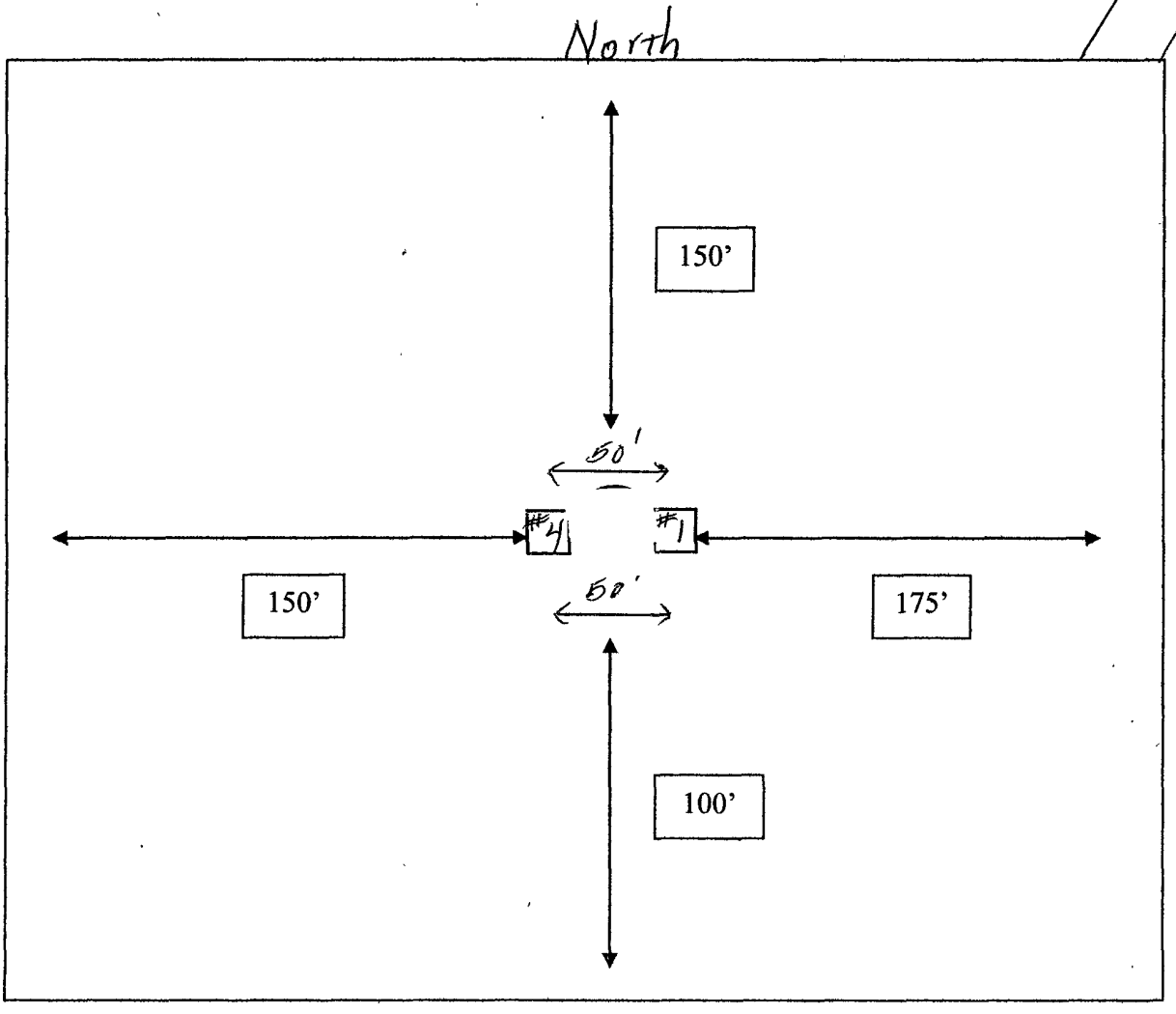
REPORT SETUP INFORMATION			
Projection System	**NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet**	Software System	**WellArchitect® 2.0**
North Reference	**Grid**	User	**Victor Hernandez**
Scale	**0.999928**	Report Generated	**3/16/2010** at **5:10:51 PM**
Convergence at slot	**0.22° East**	Database/Source file	**WA_Midland/No._4H_PWB.xml**

WELLPATH LOCATION	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	**East[ft]**	**Easting[USft]**	**Northing[USft]**	**Latitude**	**Longitude**
Slot Location	**0.00**	**0.00**	669106.70	602873.30	32°39'23.972"N	103°55'05.427"W
Facility Reference Pt			**669106.70**	**602873.30**	32°39'23.972"N	103°55'05.427"W
Field Reference Pt			**669156.70**	**602873.60**	32°39'23.973"N	103°55'04.842"W

WELLPATH DATUM			
Calculation method	**Minimum curvature**	Rig on No. 4H SHL (RT) to GL	**0.00ft**
Horizontal Reference Pt	**Surface Location**	Rig on No. 4H SHL (RT) to Mean Sea Level	**3407.00ft**
Vertical Reference Pt	**Rig on No. 4H SHL (RT)**	GL to Mud Line (Facility)	**0.00ft**
MD Reference Pt	**Rig on No. 4H SHL (RT)**	Section Origin	**N 0.00, E 0.00 ft**
Field Vertical Reference	**Mean Sea Level**	Section Azimuth	**324.46°**

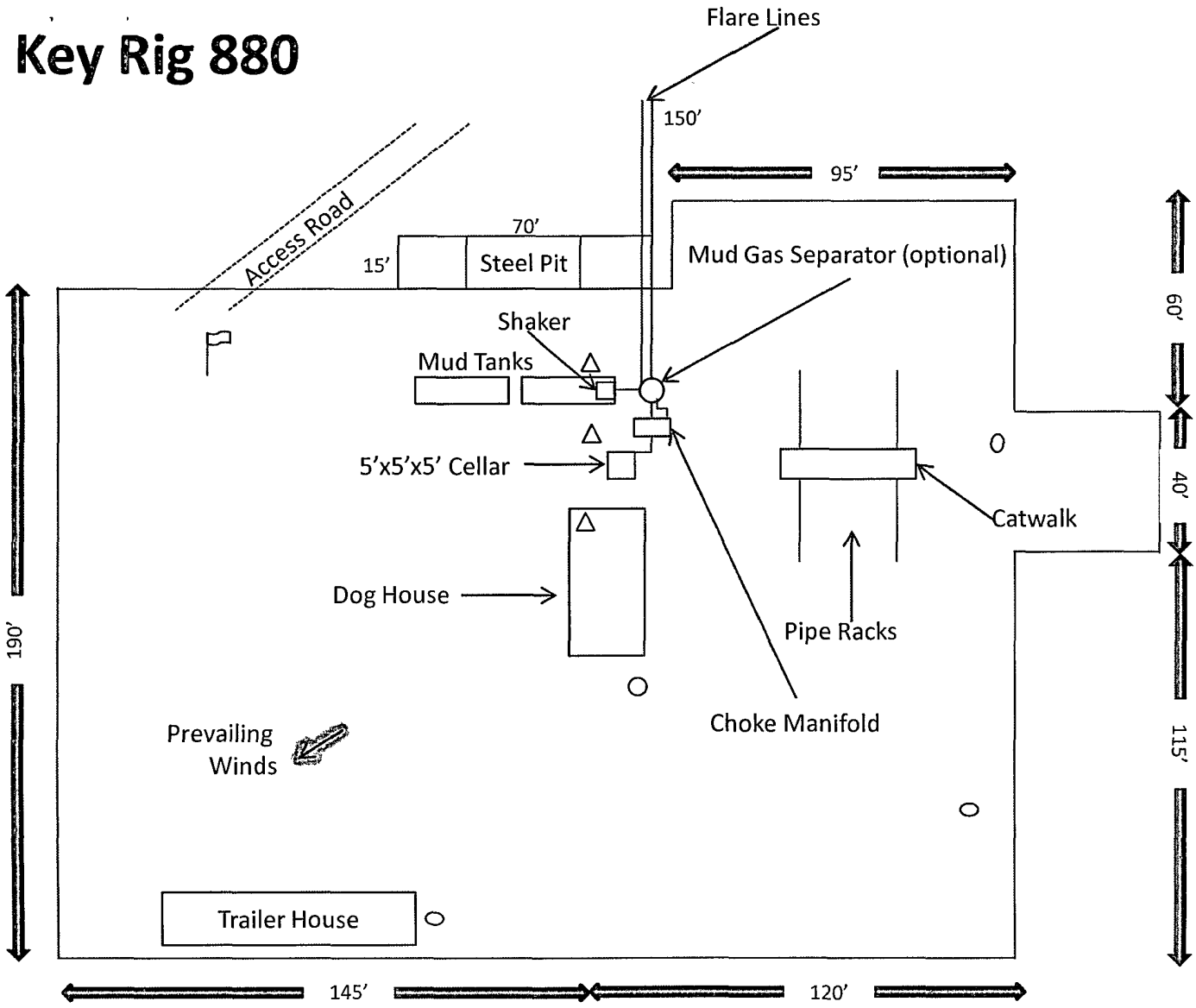
EXHIBIT 'A'
Erwin 13 #4

Rig Plat Only
Silver Oak Drilling, LLC
Rig #6, #7 & #9



V-Door West

Key Rig 880



Wind Direction Indicators (wind sock or streamers)

△ H2S Monitors (alarms at bell nipple and shale shaker)

O Briefing Areas

○ Remote BOP Closing Unit

Exhibit D – Rig Diagram
Irwin 13 Federal No. 4
Cimarex Energy Co. of Colorado
13-19S-30E
SHL 1300 FSL & 380 FEL
BHL 330 FNL & 2310 FWL
Eddy County, NM

SR & A

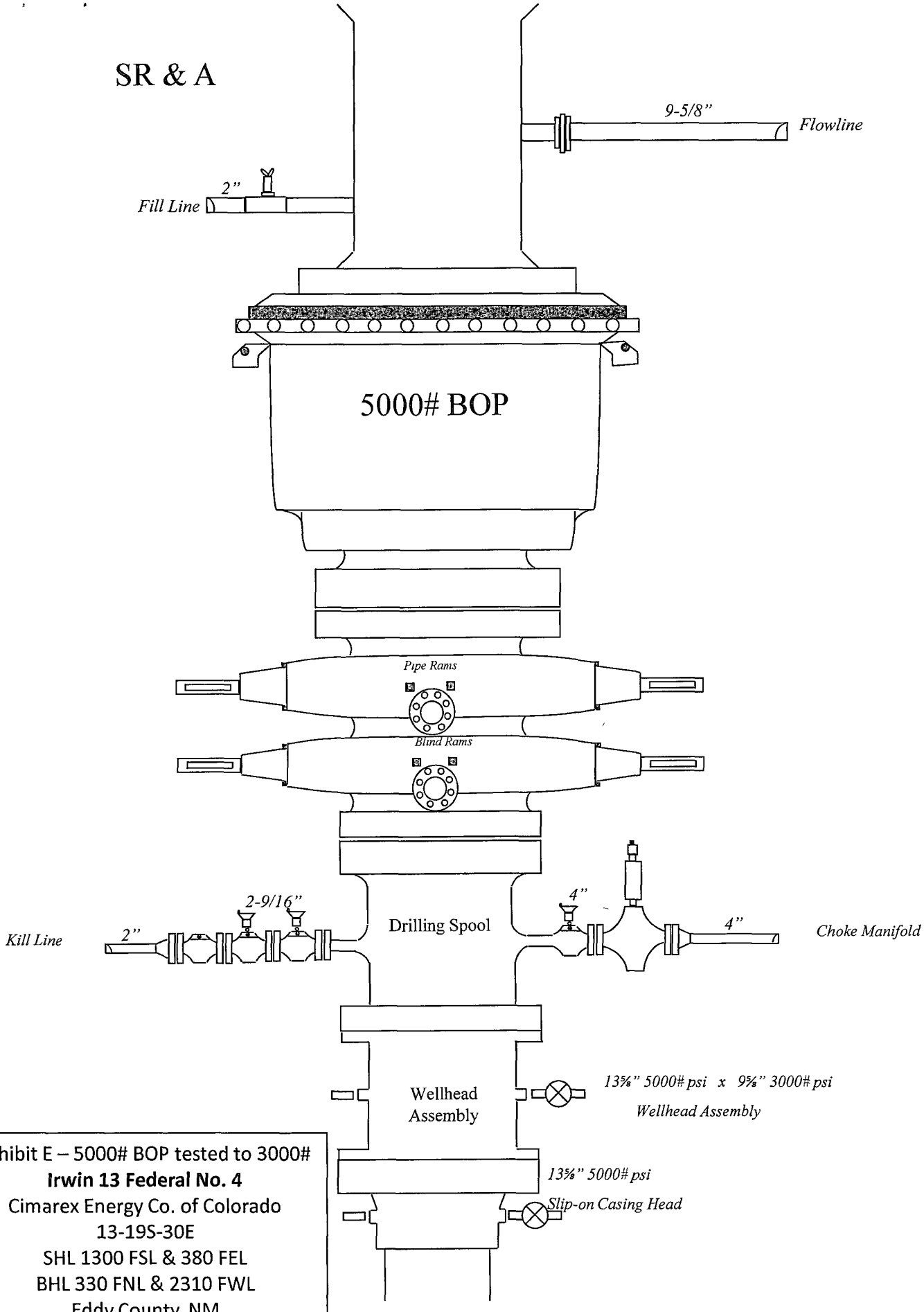
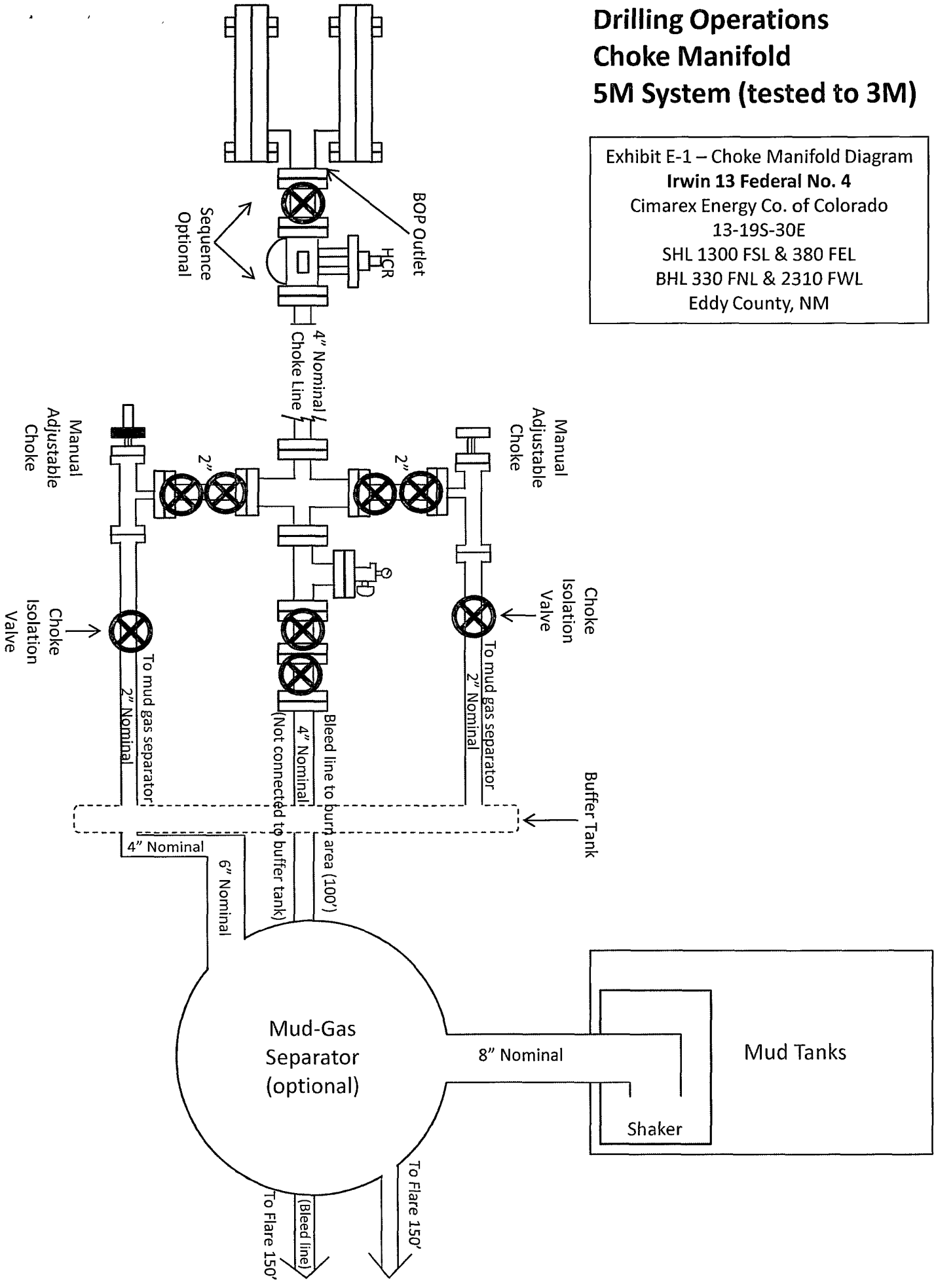


Exhibit E – 5000# BOP tested to 3000#
Irwin 13 Federal No. 4
Cimarex Energy Co. of Colorado
13-19S-30E
SHL 1300 FSL & 380 FEL
BHL 330 FNL & 2310 FWL
Eddy County, NM

Drilling Operations
Choke Manifold
5M System (tested to 3M)

Exhibit E-1 – Choke Manifold Diagram
Irwin 13 Federal No. 4
Cimarex Energy Co. of Colorado
13-19S-30E
SHL 1300 FSL & 380 FEL
BHL 330 FNL & 2310 FWL
Eddy County, NM



Hydrogen Sulfide Drilling Operations Plan
Irwin 13 Federal No. 4
Cimarex Energy Co. of Colorado
Unit P, Section 13
T19S-R30E, Eddy County, NM

1 All Company and Contract personnel admitted on location must be trained by a qualified H_2S safety instructor to the following:
   A. Characteristics of H_2S
   B. Physical effects and hazards
   C. Proper use of safety equipment and life support systems.
   D. Principle and operation of H_2S detectors, warning system and briefing areas.
   E. Evacuation procedure, routes and first aid.
   F. Proper use of 30 minute pressure demand air pack.

2 H_2S Detection and Alarm Systems:
   A. H_2S detectors and audio alarm system to be located at bell nipple, end of flow line (mud pit) and on derrick floor or doghouse.

3 Windsock and/or wind streamers:
   A. Windsock at mudpit area should be high enough to be visible.
   B. Windsock at briefing area should be high enough to be visible.

4 Condition Flags and Signs:
   A. Warning sign on access road to location.
   B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H_2S present in dangerous concentration). Only emergency personnel admitted to location.

5 Well control equipment:
   A. See exhibit "E"

6 Communication:
   A. While working under masks chalkboards will be used for communication.
   B. Hand signals will be used where chalk board is inappropriate.
   C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.

7 Drillstem Testing:
No DSTs or cores are planned at this time.

8 Drilling contractor supervisor will be required to be familiar with the effects H_2S has on tubular goods and other mechanical equipment.

9 If H_2S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas seperator will be brought into service along with H_2S scavengers if necessary.

H_2S Contingency Plan
Irwin 13 Federal No. 4
Cimarex Energy Co. of Colorado
Unit P, Section 13
T19S-R30E, Eddy County, NM

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 operator 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 there 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=1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO_2	2.21 Air=1	2 ppm	N/A	1000 ppm

Contacting Authorities

Cimarex Energy Co. of Colorado's personnel must liaise 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. Cimarex Energy Co. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

H_2S Contingency Plan Emergency Contacts

Irwin 13 Federal No. 4

Cimarex Energy Co. of Colorado

Unit P, Section 13

T19S-R30E, Eddy County, NM

Company Office		
Cimarex Energy Co. of Colorado	800-969-4789	
Co. Office and After-Hours Menu		

Key Personnel

Name	Title	Office	Mobile
Doug Park	Drilling Manager	432-620-1934	972-333-1407
Dee Smith	Drilling Super	432-620-1933	972-882-1010
Jim Evans	Drilling Super	432-620-1929	972-465-0564
Roy Shirley	Field Super		432-634-2136

Artesia		
Ambulance	911	
State Police	575-746-2703	
City Police	575-746-2703	
Sheriff's Office	575-746-9888	
Fire Department	**575-746-2701**	
Local Emergency Planning Committee	575-746-2122	
New Mexico Oil Conservation Division	575-748-1283	

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

Santa Fe		
New Mexico Emergency Response Commission (Santa Fe)	505-476-9600	
New Mexico Emergency Response Commission (Santa Fe) 24 Hrs	505-827-9126	
New Mexico State Emergency Operations Center	505-476-9635	

National	
National Emergency Response Center (Washington, D.C.)	800-424-8802

Medical			
Flight for Life - 4000 24th St.; Lubbock, TX	806-743-9911		
Aerocare - R3, Box 49F; Lubbock, TX	806-747-8923		
Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM	505-842-4433		
SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM	505-842-4949		

Other			
Boots & Coots IWC	800-256-9688	or	281-931-8884
Cudd Pressure Control	432-699-0139	or	432-563-3356
Halliburton	575-746-2757		
B.J. Services	575-746-3569		

Surface Use Plan
Irwin 13 Federal No. 4
Cimarex Energy Co. of Colorado
Unit P, Section 13
T19S-R30E, Eddy County, NM

1 Existing Roads: Area maps, Exhibit "B" is a reproduction of Eddy Co. General Highway Map. Exhibit "C" is a reproduction of a USGS Topographic Map, showing existing roads and proposed roads. All existing roads will be maintained in a condition equal to or better than current conditions. Any new roads will be constructed to BLM specifications.

A. Exhibit "A" shows the proposed well site as staked.
B. From the junction of Shugart and Westall, go West turning southerly on lease road for 2.8 miles to proposed location.

2 Planned Access Roads: 231.7' of on-lease access road will be built.

3 Location of Existing Wells in a One-Mile Radius - Exhibit A

A. Water wells - None known

B. Disposal wells - None known

C. Drilling wells - None known

D. Producing wells - As shown on Exhibit "A"

E. Abandoned wells - As shown on Exhibit "A"

4 If on completion this well is a producer, Cimarex Energy Co. of Colorado will furnish maps and/or plats showing on site facilities or off site facilities if needed. This will be accompanied by a Sundry Notice.

5 Location and Type of Water Supply:
Water will be purchased locally from a commercial source and trucked over the access roads or piped in flexible lines laid on top of the ground.

6 Source of Construction Material:
If possible, construction will be obtained from the excavation of drill site. If additional material is needed, it will be purchased from a local source and transported over the access route as shown on Exhibit "C".

7 Methods of Handling Waste Material:

A. Drill cuttings will be seperated by a series of solids removal equipment and stored in steel containment pits and then hauled to a state-approved disposal facility.

B. All trash, junk and other waste material will be contained in trash cages or bins to prevent scattering. When the job is completed all contents will be removed and disposed of in an approved sanitary land fill.

C. Salts remaining after completion of well will be picked up by supplier including broken sacks.

D. Sewage from living quarters will drain into holding tanks and be cleaned out periodically. A Porta-John will be provided for the rig crews. This equipment will be properly maintained during the drilling operations and removed upon completion of the well.

E. Drilling fluids will be contained in steel pits in a closed circulating system. Fluids will be cleaned and reused. Water produced during testing will be contained in the steel pits and disposed of at a state approved disposal facility. Any oil or condensate produced will be stored in test tanks until sold and hauled from the site.

8 Ancillary Facilities:

A. No camps or airstrips to be constructed.

9 Well Site Layout:

A. Exhibit "D" shows location and rig layout.

C. Mud pits in the closed circulating system will be steel pits and the cuttings will be stored in steel containment pits.

D. Cuttings will be stored in steel pits until they are hauled to a state-approved disposal facility.

E. If the well is a producer, those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements.

10 Plans for Restoration of Surface:

Rehabilitation of the location will start in a timely manner after all drilling operations cease. The type of reclamation will depend on whether the well is a producer or a dry hole.

Drainage systems, if any, will be reshaped to the original configuration with provisions made to alleviate erosion. These may need to be modified in certain circumstances to prevent inundation of the location's pad and surface facilities. After the area has been shaped and contoured, topsoil from the spoil pile will be placed over the disturbed area to the extent possible. Revegetation procedures will comply with BLM standards.

If the well is a dry hole, the pad and road area will be recountoured to match the existing terrain. Topsoil will be spread to the extent possible. Revegetation will comply with BLM standards.

Should the well be a producer, the previously noted procedures will apply to those areas which are not required for production facilities.

11 Other Information

A. Topography consists of a sloping plane with loose tan sands. Vegetation is mainly yucca, mesquite and shin oak.

B. The wellsite is on surface owned by Department of the Interior, Bureau of Land Management. The land is used mainly for farming, cattle ranching, recreational use, and oil and gas production.

C. In lieu of an archaeological survey report, Cimarex will be submitting an MOA application for this well pad and access road since they are within the MOA boundary.

D. There are no know dwellings within 1½ miles of this location.

Operator Certification Statement
Irwin 13 Federal No. 4
Cimarex Energy Co. of Colorado
Unit P, Section 13
T19S-R30E, Eddy County, NM

Operator's Representative
Cimarex Energy Co. of Colorado
600 N. Marienfeld St., Ste. 600
Midland, TX 79701
Office Phone: (432) 571-7800
Zeno Farris

CERTIFICATION: I hereby certify that the statements and plans made in this APD are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Cimarex Energy Co. of Colorado and/or its contractors/subcontractors and is in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provision of U.S.C. 1001 for the filing of a false statement.

NAME: Zeno Farris
Zeno Farris

DATE: March 23, 2010

TITLE: Manager Operations Administration

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	CIMAREX ENERGY
LEASE NO.:	NM025559
WELL NAME & NO.:	4-IRWIN 13 FEDERAL
SURFACE HOLE FOOTAGE:	1300' FSL & 380' FEL
BOTTOM HOLE FOOTAGE	330' FNL & 2310' FWL
LOCATION:	Section 13, T. 19 S., R 30 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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

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)

Pad restriction

The well pad will restricted to 100 feet to the south in order to limit cut into the hillside.

Berming

Install 1 foot caliche berms around the entire pad except the east edge. Avoid the blocking the drainage located on the southwest corner of the pad.

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. V-DOOR DIRECTION: west

C. 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.

D. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

E. FEDERAL MINERAL MATERIALS PIT

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

F. 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.

G. ON LEASE ACCESS ROADS

Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) feet.

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

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

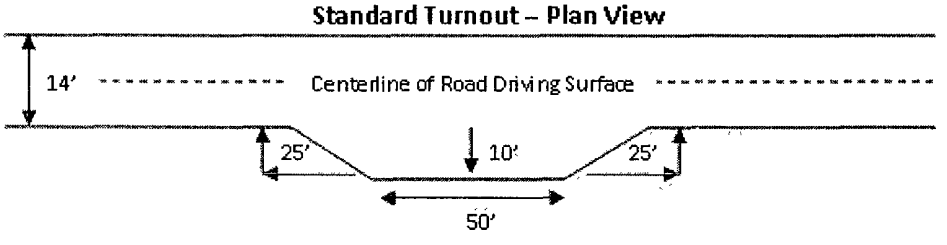
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

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

Ditching

Ditching shall be required on both sides of the road.

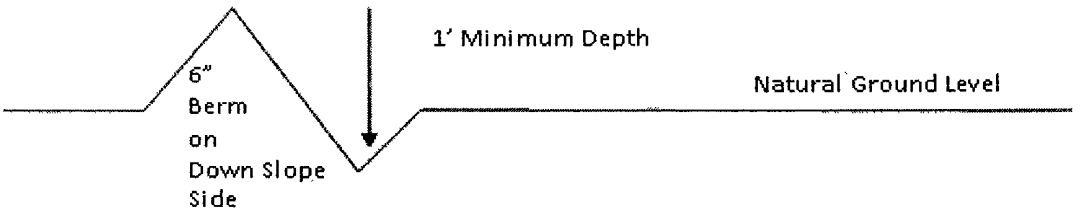
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



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

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

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.

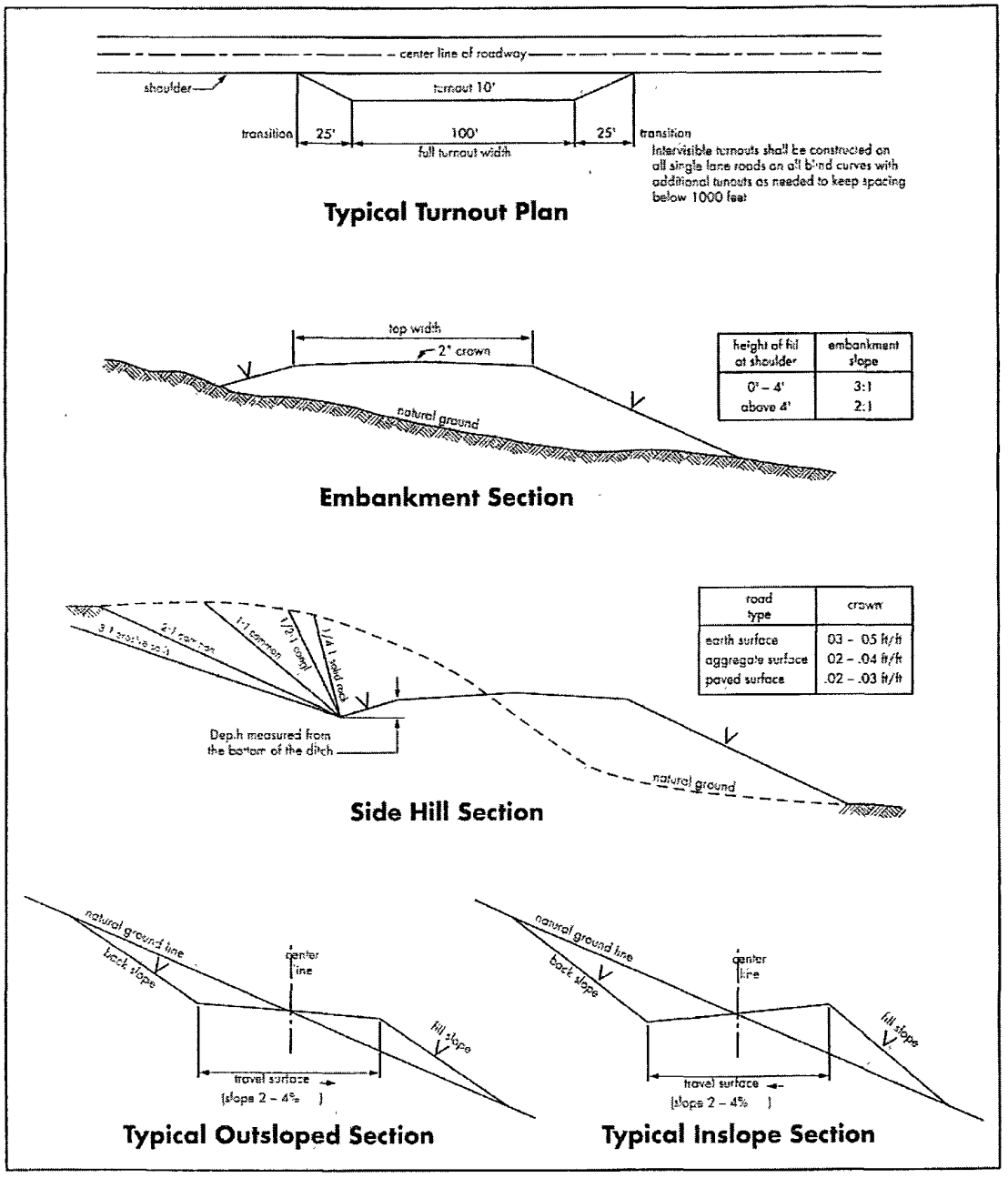
A gate shall be constructed and fastened securely to H-braces.

Fence Requirement
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

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. **Due to recent H2S encounters in the salt formation, it is recommended that monitoring equipment be onsite for potential Hydrogen Sulfide prior to drilling out the surface shoe. If Hydrogen Sulfide is encountered, please report measurements 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.

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 CAL/GR/N well log run from TD to surface will 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 and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

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

Wait on cement (WOC) time 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. 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.

R-111-P/Secretary's Potash
Possible brine and water flows in the Artesia and Salado Groups.
Possible lost circulation in the Capitan Reef (if encountered) and the Artesia Group.

1. The **13-3/8** inch surface casing shall be set at **approximately 500 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface.

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

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

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

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

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

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Casing is to be set between 100 to 600 feet below the base of salt. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash. Additional cement may be required as the excess calculates to be 1%.**

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

   ☒ **Cement to surface due to proximity to measured ore.** If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to potash. Additional cement will be required to bring cement to surface.**

4. Cement not required on the **4-1/2** inch production liner casing. **Peak 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.

6. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed. Required due to proximity to measured ore.

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. **Operator installing a 5M system but testing as a 3M.**

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

    a. Casing cut-off and BOP installation will not be initiated until the cement has had a minimum of 8 hours setup time for a water basin. The casing shall remain stationary and under pressure for at least eight hours after the operator places the cement. In the potash area, the minimum time is 12 hours and the casing shall remain stationary and under pressure during this time period. Casing shall be under pressure if the operator uses some acceptable means of holding pressure or if the operator employs one or more float valves to hold the cement in place. Testing the BOP/BOPE against a plug can commence after meeting the above conditions plus the BOP installation time.

    b. The tests shall be done by an independent service company using a test plug.

    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. DRILL STEM TEST

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

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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

C. ELECTRIC LINES

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

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

Species	lb/acre
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0

*Pounds of pure live seed:

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