3160-5
2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONSERVATION
ARTESIA DISTRICT
NMOCD
Artesia
MAR 09 2017
RECEIVED

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMNM0441951A

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
WHITE CITY 31 FEDERAL 4

2. Name of Operator
CIMAREX ENERGY COMPANY OF CO
Contact: TERRI STATHEM
E-Mail: tstathem@cimarex.com

9. API Well No.
30-015-35494-00-S1

3a. Address
202 S CHEYENNE AVE SUITE 1000
TULSA, OK 74103.4346

3b. Phone No. (include area code)
Ph: 432-620-1936

10. Field and Pool or Exploratory Area
WHITE CITY-PENN 87280
+ PURPLE SAGE WFMP 98220

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 31 T24S R26E SESE 800FSL 1250FEL

11. County or Parish, State
EDDY COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☒ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Cimarex Energy Co. respectfully requests approval to add perfs in the White City Penn pool (Strawn) according to the attached procedure. If the Strawn is uneconomic Cimarex proposes to add perfs in the White City Penn pool (Cisco Canyon) and perf the Wolfcamp as indicated on the attached procedure.

NM OIL CONSERVATION
ARTESIA DISTRICT
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SEE ATTACHED FOR CONDITIONS OF APPROVAL

Cimarex also requests approval to downhole commingle the Cisco and Wolfcamp pools. The 2016 White City Area Downhole Commingling Field Study included the referenced well for the commingling. Field Study approved 7/6/16.

NMOCD DHC 4803. ✓

Attachments: C102, procedure, wellbore diagrams, oil, water & gas analysis, and DHC worksheet.

Procedure changed! See COAs as plugs were missed.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #365663 verified by the BLM Well Information System
For CIMAREX ENERGY COMPANY OF CO, sent to the Carlsbad
Committed to AFMSS for processing by DEBORAH MCKINNEY on 02/07/2017 (17DLM0764SE)

Name *(Printed/Typed)* TERRI STATHEM — Title MANAGER REGULATORY COMPLIANCE

Signature (Electronic Submission) — Date 02/02/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED
FEB 27 2017
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Approved By — Title — Date

Conditions of approval, if any, are attached. Approval of this notice 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. — Office

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

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

RWP.

CIMAREX

White City 31 Fed 4

Well Data

KB	17'
TD	12,080'
PBTD	12,012'
Casing	13-3/8" 48# H-40 @ 320'. Cmt'd w/ 540 sx, cmt circ 9-5/8" 40# J-55 @ 2,250'. Cmt'd w/ 1,110 sx, cmt circ 4-1/2" 11.6# P-110 @ 12,080'. Cmtd w/ 2,160 sx. DV @ 7,904'. TOC @ 5,150' by CBL
Tubing	2-3/8" 4.7# L-80 8rd, EOT @ 10,404'
Current White City Penn Perfs	Morrow (11,217' – 11,888') & Atoka (10,462' – 10,492')
Proposed White City Penn Perfs	Strawn (10,299' – 10,434')

White City; Penn (Strawn) Add Pay Procedure:

Notify BLM 24 hours prior to starting operations.

1. Test anchors prior to moving in rig.
2. Move in rig up pulling unit.
3. Kill well as necessary with 7% KCl.
4. Nipple down wellhead, nipple up 5,000 psi blow out preventer stack.
5. TOOH w/ 2-3/8" 4.7# L-80 tbg. Stand back tbg. Scan tubing during TOOH.
6. MIRU WL. RIH w/ GR/JB to +/- ~~10,377'~~ 12,012' Morrow top @ 11,012' see COAs
7. RIH w/ WL to set CIBP at +/- ~~10,377'~~
8. RIH w/ WL to bail 35' of cement on top of CIBP at ~~+/- 10,377'~~ **Note: This will put TOC at top of Strawn. Abandoning the Morrow.**
9. WOC 6-8 hours
10. Test casing to 5,000 psi on chart for 30 minutes with no more than 10% leakoff.
11. RIH w/ 4.6" gauge ring and junk basket on electric line to +/- 10,469'
12. RIH with 3-1/8" casing guns on electric line and perforate Strawn from 10,299' – 10,434'
13. RIH w/ BHA described below from downhole up:
    a. 2-3/8" WEG
    b. 2-3/8" pump out plug pinned for 1,500 – 2,000 psi differential pressure
    c. 1.875" XN profile nipple
    d. 10' 2-3/8" 4.7# L-80 tbg sub
    e. 5-1/2" x 2-3/8" Arrowset 1X packer and on-off tool stinger w/ 1.875" X profile nipple

See COAs!

14. RD WL and lubricator
15. TIH w/ on/off tool overshot, GLVs, and 2-3/8" 4.7# L-80 tbg. Hydrotest in hole to 8500 psi.
16. Latch overshot onto on-off tool and space out tubing
17. ND BOP, NU WH
18. RDMO pulling unit
19. RU pump truck and pump out plug
20. MIRU Propetro acid
21. Pump 19,000 total gallons of 15% NEFE HCl with 225 ball sealers down 2-3/8" tubing
22. Flush with 1 tubing volume 2% KCl
23. Put well on production. Swab well as necessary

If Strawn recompletion is unsuccessful, move forward with procedure to recomplete as Wolfcamp Cisco Canyon completion.

Proposed RC Perfs Wolfcamp (8,343' – 9,900') & Cisco Canyon (9,900' – 10,299')

Cisco Canyon Wolfcamp (Ciscamp) Recompletion Procedure:

Notify BLM 24 hours prior to start of workover operations.

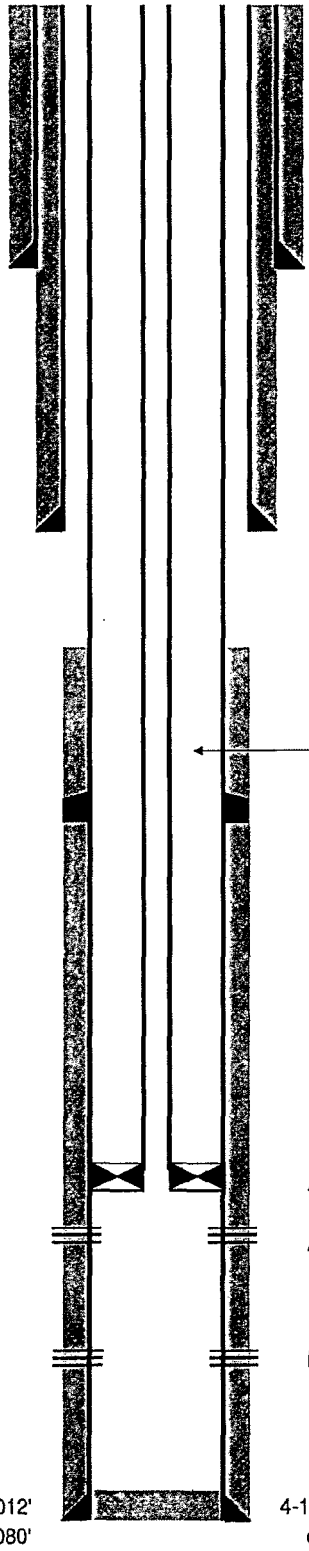
1. Test anchors prior to MIRU PU.
2. MIRU PU, rental flare, and choke manifold.
3. Kill well with produced water if available or FW as necessary.
4. ND WH, NU 5K BOP
5. Release packer and TOOH w/ 2-3/8" 4.7# L-80 tbg. Stand back Tubing.
6. MIRU WL
7. RIH w/ GR/JB to +/- ~~10,334'~~
8. RIH w/ WL to set CIBP at +/- ~~10,334'~~ See COAs. this depth is below your perfs
9. RIH w/ WL to bail 35' of cement on top of CIBP at +/- 10,334' **Note: This will put TOC at top of Strawn. Abandoning the Strawn.**
10. RU Pump truck and pressure test casing to 8,500 psi on a chart for 30 minutes with no more than 10% leak off.
11. ND 5k BOP, RDMO PU
12. RU two 10k frac valves and flow cross
13. MIRU water transfer with frac tanks to contain water to be pumped from frac pond
14. Test frac valves and flow cross prior to frac job. Arrange for these items, manlift, forklift, and Pace testers to be on location the day before the frac job to test so that we do not have the frac waiting on a successful test the following day.
15. RU frac valves, flow cross, goat head, and wireline lubricator.
16. RIH w/ gauge ring/junk basket for 4-1/2" 11.6# P-110 csg to +/- 10,299'
17. Perforate Cisco Canyon from 9,900' – ~~10,299~~'. ? will have CIBP @ 35' cement
18. RU frac and flowback equipment.
19. Acidize and frac Cisco Canyon perfs down casing. See COAs.

20. Set 10k flow through composite plug 15' uphole of top perforation
21. Test to 8,500 psi
22. Perforate Wolfcamp from 8,343' – 9,900'.
23. Acidize and frac Wolfcamp perfs down casing.
24. Set 10k flow through composite plug 15' above top perforation
25. Test to 8,500 psi
26. RD frac
27. MIRU 2" coiled tbg unit.
28. RIH w/ blade mill & downhole motor on 2" CT and drill out sand and composite plugs using freshwater for circulation. Pump sweeps each time a plug is tagged, each time a plug is drilled out, and every 60 bbls pumped.
29. Clean out to PBTD 10,299'
30. POOH w/ blade mill, motor & CT
31. RDMO coiled tbg unit.
32. Flow back well for 24 hours, then SI well overnight.
33. RU wireline and lubricator.
34. RIH w/ GR/JB for 5-1/2" 17# P-110 to +/- 8,293'
35. RIH w/ 2-7/8" WEG, 2-7/8" pump out plug pinned for 1,500 – 2,000 psi differential pressure, 10' 2-3/8" 4.7# L-80 tbg sub w/ 1.875" XN profile nipple w/ blanking plug in place, 5-1/2" Arrowset 1X packer and on-off tool stinger w/ 1.875" X profile nipple. Set packer +/- 8,293'. From downhole up:
    a. 2-3/8" WEG
    b. 2-3/8" pump out plug pinned for 1,500 – 2,000 psi differential pressure
    c. 1.875" XN profile nipple
    d. 10' 2-3/8" 4.7# L-80 tbg sub
    e. 5-1/2" x 2-3/8" Arrowset 1X packer and on-off tool stinger w/ 1.875" X profile nipple
36. RD WL and lubricator
37. ND goat head and frac valve, NU BOP, MIRU Pulling Unit
38. TIH w/ on/off tool overshot, GLVs, and 2-3/8" 4.7# L-80 tbg.
39. Latch overshot onto on-off tool and space out tubing
40. ND BOP, NU WH
41. RDMO pulling unit
42. RU pump truck and pump out plug. Put well on production.
43. **Run Production Log for allocation purposes after recovering load. Run additional production logs if actual production varies significantly from expected performance. Send copies of these logs to BLM and file for an adjustment of allocation factor if necessary.**

CIMAREX

Current WBD
KB - 18' above GL

Cimarex Energy Co. of Colorado
White City 31 Federal 4
API #: 30-015-35494
800' FSL & 1250' FEL
Sec. 31, T24S, R26E, Eddy Co., NM
H. Hubbard 12/14/2016



13-3/8" 48# H-40 csg @ 320'
cmtd w/ 540 sx, Cmt circ.

9-5/8" 40# J-55 @ 2250'
cmtd w/ 1110 sx, Cmt circ.

TOC @ 5150' by CBL

331 jts 2-3/8" 4.7# L-80 tbg

DV @ 7904'
cmtd w/ 1310 sx

AS 1X Pkr @ 10,404'

Atoka perfs (10,462' - 10,492')

Morrow perfs (11,217' - 11,888')

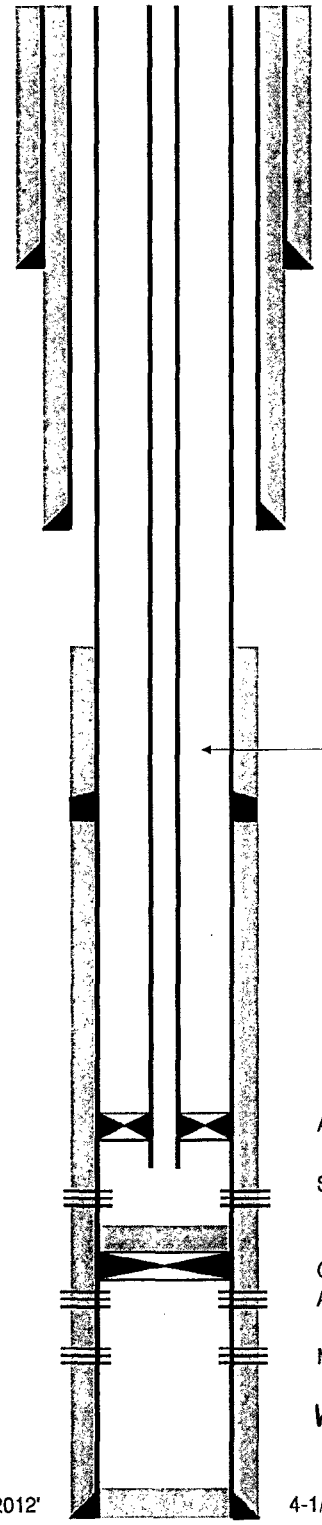
PBTD @ 12012'
TD @ 12080'

4-1/2" 11.6# P-110 csg @ 12080'
cmtd w/ 850 sx, cmt circ.

CIMAREX

Proposed Strawn WBD
KB - 18' above GL

Cimarex Energy Co. of Colorado
White City 31 Federal 4
API #: 30-015-35494
800' FSL & 1250' FEL
Sec. 31, T24S, R26E, Eddy Co., NM
H. Hubbard 12/14/2016



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cmtd w/ 540 sx, Cmt circ.

9-5/8" 40# J-55 @ 2250'
cmtd w/ 1110 sx, Cmt circ.

TOC @ 5150' by CBL

2-3/8" 4.7# L-80 tbg

DV @ 7904'
cmtd w/ 1310 sx

AS 1X Pkr @ 10,249'

Strawn perfs (10,299' - 10,434')

See COAs!!

CIBP set at +/- 10,469' w/ 35' of cmt bailed on top
Atoka perfs (10,462' - 10,492')

Morrow perfs (11,217' - 11,888')

need to isolate Morrow

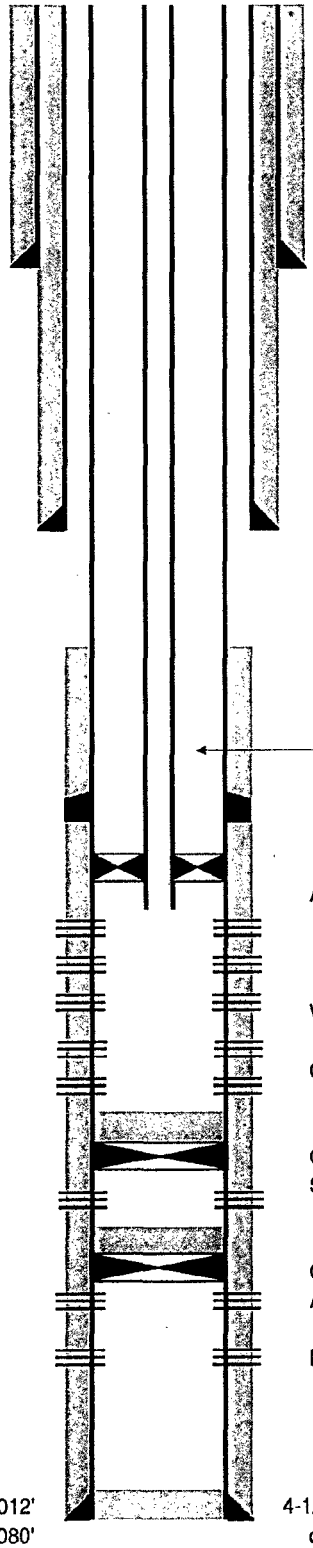
PBTD @ 12012'
TD @ 12080'

4-1/2" 11.6# P-110 csg @ 12080'
cmtd w/ 850 sx, cmt circ.

CIMAREX

Proposed Ciscamp WBD
KB - 18' above GL

Cimarex Energy Co. of Colorado
White City 31 Federal 4
API #: 30-015-35494
800' FSL & 1250' FEL
Sec. 31, T24S, R26E, Eddy Co., NM
H. Hubbard 1/27/2017



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cmtd w/ 540 sx, Cmt circ.

9-5/8" 40# J-55 @ 2250'
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TOC @ 5150' by CBL

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DV @ 7904'
cmtd w/ 1310 sx

AS 1X Pkr @ 8,293'

Wolfcamp perfs (8,343' - 9,900')

Cisco Canyon perfs (9,900' - 10,299')

???

CIBP set at +/- ~~10,334'~~ w/ 35' of cement on top
Strawn perfs (10,299' - 10,434')

See COA's!!

CIBP set at +/- 10,469' w/ 35' of cmt bailed on top
Atoka perfs (10,462' - 10,492')

Morrow perfs (11,217' - 11,888')

PBTD @ 12012'
TD @ 12080'

4-1/2" 11.6# P-110 csg @ 12080'
cmtd w/ 850 sx, cmt circ.

LABORATORY SERVICES
Natural Gas Analysis

www.permianls.com

575.397.3713 2609 W Marland Hobbs NM 88240

For:	Cimarex Energy	Sample:	Sta. # 309588185
	Attention: Mark Cummings	Identification:	Wigeon 23 Fed Com 1
	600 N. Marienfeld, Suite 600	Company:	Cimarex Energy
	Midland, Texas 79701	Lease:	
		Plant:	

Sample Data:	Date Sampled	7/30/2013	12:25 PM		
	Analysis Date	7/31/2013			
	Pressure-PSIA	900		Sampled by:	Taylor Ridings
	Sample Temp F	107		Analysis by:	Vicki McDaniel
	Atmos Temp F	85			

H2S = 0.3 PPM

Component Analysis

		Mol Percent	GPM
Hydrogen Sulfide	H2S		
Nitrogen	N2	0.677	
Carbon Dioxide	CO2	0.123	
Methane	C1	82.764	
Ethane	C2	9.506	2.536
Propane	C3	3.772	1.037
I-Butane	IC4	0.640	0.209
N-Butane	NC4	1.185	0.373
I-Pentane	IC5	0.335	0.122
N-Pentane	NC5	0.374	0.135
Hexanes Plus	C6+	0.624	0.270
		100.000	4.681

REAL BTU/CU.FT.		Specific Gravity	
At 14.65 DRY	1219.2	Calculated	0.6973
At 14.65 WET	1197.9		
At 14.696 DRY	1223.0		
At 14.696 WET	1202.1	Molecular Weight	20.1966
At 14.73 DRY	1225.8		
At 14.73 Wet	1204.6		

North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
(806) 229-8121

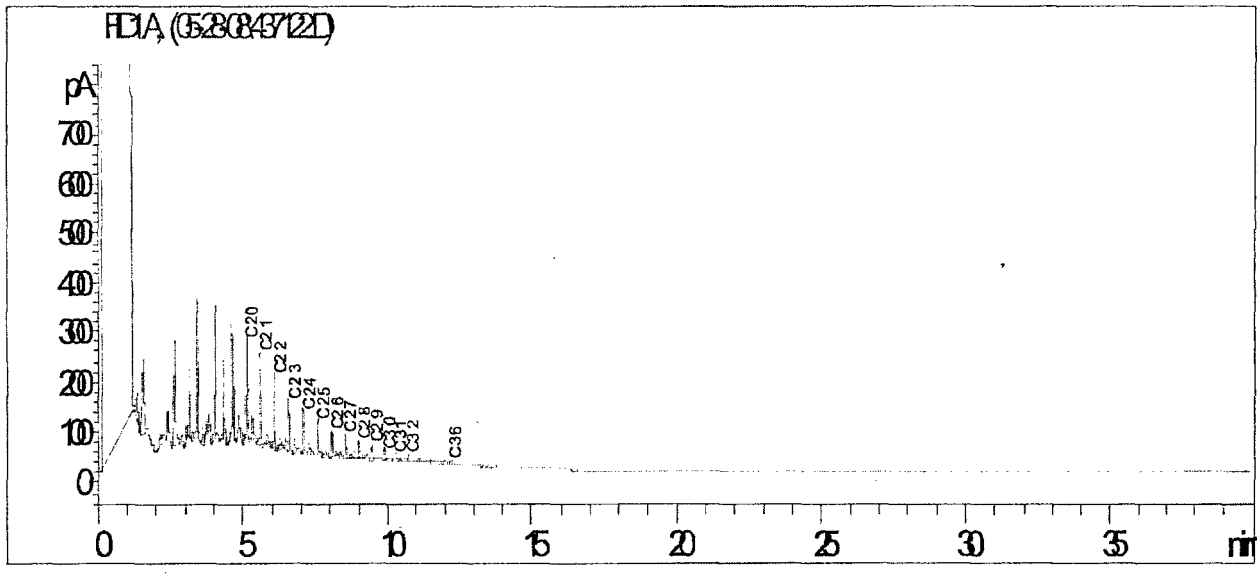
Lab Team Leader - Sheila Hernandez
(432) 495-7240

OIL ANALYSIS

Company:	CIMAREX ENERGY	Sales RDT:	44212
Region:	PERMIAN BASIN	Account Manager:	WAYNE PETERSON (575) 910-9389
Area:	CARLSBAD, NM	Analysis ID #:	3208
Lease/Platform:	WIGEON '23' FEDERAL	Sample #:	437122
Entity (or well #):	1	Analyst:	SHEILA HERNANDEZ
Formation:	WOLFCAMP	Analysis Date:	5/30/08
Sample Point:	FRAC TANK 234	Analysis Cost:	$100.00
Sample Date:	5/13/08		

Cloud Point:	<68 °F
Weight Percent Paraffin (by GC)*:	1.49%
Weight Percent Asphaltenes:	0.03%
Weight Percent Oily Constituents:	98.41%
Weight Percent Inorganic Solids:	0.07%

*Weight percent paraffin and peak carbon number includes only n-alkanes (straight chain hydrocarbons) greater than or equal to C20H42.



North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
(806) 229-8121
Lab Team Leader - Sheila Hernandez
(432) 495-7240

Water Analysis Report by Baker Petrolite

Company:	CIMAREX ENERGY	Sales RDT:	44212
Region:	PERMIAN BASIN	Account Manager:	WAYNE PETERSON (505) 910-9389
Area:	CARLSBAD, NM	Sample #:	43887
Lease/Platform:	WIGEON UNIT	Analysis ID #:	82014
Entity (or well #):	23 FEDERAL 1	Analysis Cost:	$80.00
Formation:	UNKNOWN		
Sample Point:	SEPARATOR		

Summary	
Sampling Date:	05/14/08
Analysis Date:	05/15/08
Analyst:	WAYNE PETERSON
TDS (mg/l or g/m3):	90873.3
Density (g/cm3, tonne/m3):	1.062
Anion/Cation Ratio:	1
Carbon Dioxide:	150 PPM
Oxygen:	
Comments:	
TEST RAN IN THE FIELD	

Analysis of Sample 43887 @ 75 °F

Anions	mg/l	meq/l	Cations	mg/l	meq/l
Chloride:	**55040.0**	**1552.48**	**Sodium:**	**32207.4**	**1400.94**
Bicarbonate:	**329.4**	**5.4**	**Magnesium:**	**268.0**	**22.05**
Carbonate:	**0.0**	**0.**	**Calcium:**	**2780.0**	**138.72**
Sulfate:	**225.0**	**4.68**	**Strontium:**		
Phosphate:			**Barium:**		
Borate:			**Iron:**	**23.5**	**0.85**
Silicate:			Potassium:		
			Aluminum:		
Hydrogen Sulfide:		0 PPM	Chromium:		
pH at time of sampling:		7.31	Copper:		
pH at time of analysis:			Lead:		
pH used in Calculation:		**7.31**	Manganese:		
			Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite $CaCO_3$		Gypsum $CaSO_4 \cdot 2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$		CO_2 Press
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	0.94	27.24	-1.11	0.00	-1.14	0.00	0.00	0.00	0.00	0.00	0.13
100	0	0.97	31.09	-1.16	0.00	-1.12	0.00	0.00	0.00	0.00	0.00	0.19
120	0	0.99	35.26	-1.20	0.00	-1.08	0.00	0.00	0.00	0.00	0.00	0.28
140	0	1.02	39.74	-1.23	0.00	-1.02	0.00	0.00	0.00	0.00	0.00	0.38

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

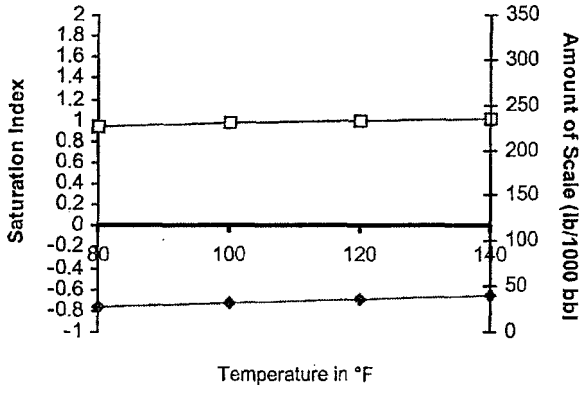
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.

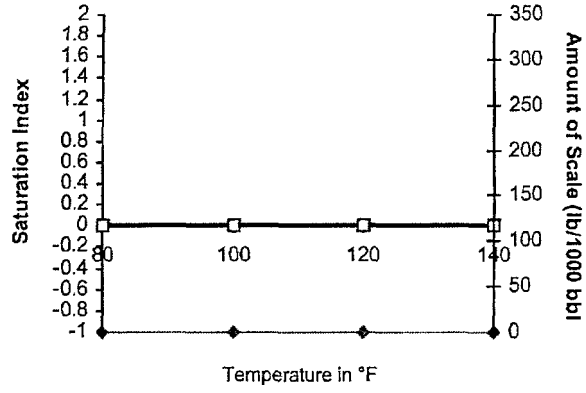
Scale Predictions from Baker Petrolite

Analysis of Sample 43887 @ 75 °F for CIMAREX ENERGY, 05/15/08

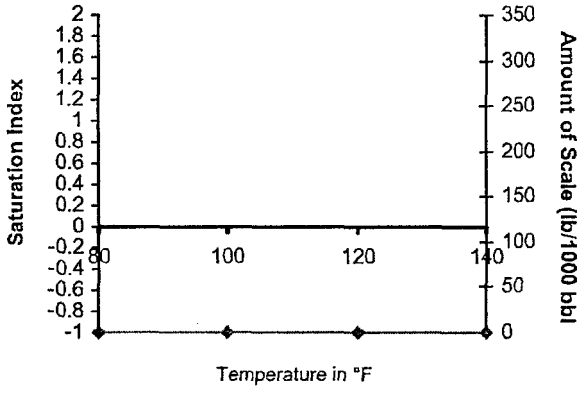
Calcite - CaCO3



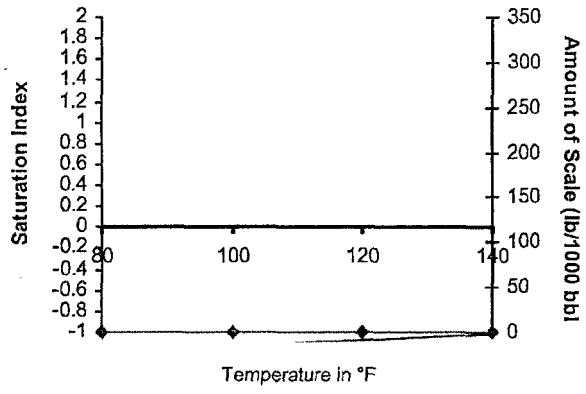
Barite - BaSO4



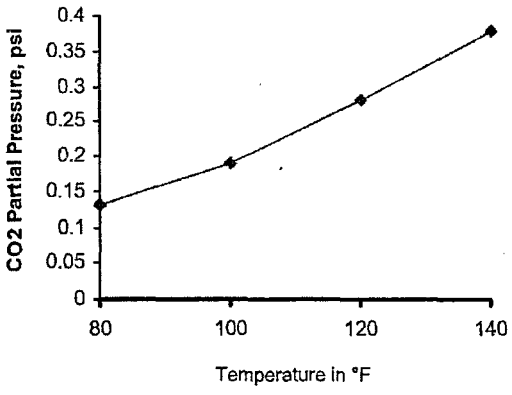
Gypsum - CaSO4*2H20



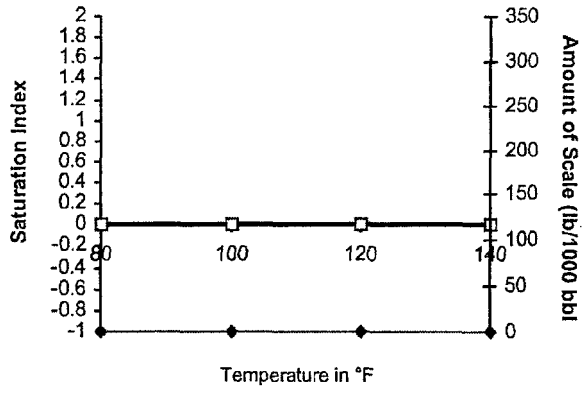
Anhydrite - CaSO4



Carbon Dioxide Partial Pressure



Celestite - SrSO4



LABORATORY SERVICES
Natural Gas Analysis

www.permianls.com

575.397.3713 2609 W Marland Hobbs NM 88240

For:	Cimarex Energy	Sample:	Sta. # 309588438
	Attention: Mark Cummings	Identification:	Taos Fed. #3 Sales
	600 N. Marienfeld, Suite 600	Company:	Cimarex Energy
	Midland, Texas 79701	Lease:	
		Plant:	

Sample Data:	Date Sampled	7/2/2014	10:30 AM		
	Analysis Date	7/9/2014			
	Pressure-PSIA	83		Sampled by:	K. Hooten
	Sample Temp F	76.4		Analysis by:	Vicki McDaniel
	Atmos Temp F	76			

H2S =

Component Analysis

		Mol Percent	GPM
Hydrogen Sulfide	H2S		
Nitrogen	N2	0.618	
Carbon Dioxide	CO2	0.172	
Methane	C1	88.390	
Ethane	C2	7.080	1.889
Propane	C3	1.966	0.540
I-Butane	IC4	0.355	0.116
N-Butane	NC4	0.569	0.179
I-Pentane	IC5	0.198	0.072
N-Pentane	NC5	0.213	0.077
Hexanes Plus	C6+	0.439	0.190
		100.000	3.063

REAL BTU/CU.FT.		Specific Gravity	
At 14.65 DRY	1136.2	Calculated	0.6445
At 14.65 WET	1116.4		
At 14.696 DRY	1139.7		
At 14.696 WET	1120.3	Molecular Weight	18.6673
At 14.73 DRY	1142.4		
At 14.73 Wet	1122.6		

North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
(806) 229-8121

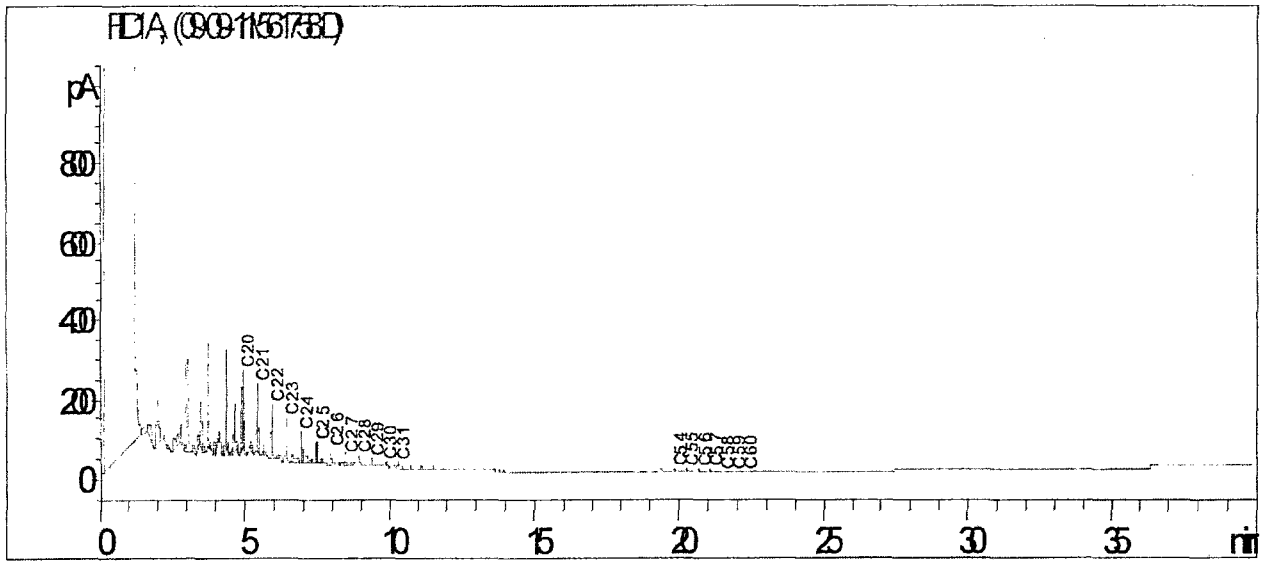
Lab Team Leader - Sheila Hernandez
(432) 495-7240

OIL ANALYSIS

Company:	CIMAREX ENERGY	Sales RDT:	33521
Region:	PERMIAN BASIN	Account Manager:	STEVE HOLLINGER (575) 910-9393
Area:	LOCO HILLS, NM	Analysis ID #:	5419
Lease/Platform:	TAOS FEDERAL LEASE	Sample #:	561758
Entity (or well #):	3	Analyst:	SHEILA HERNANDEZ
Formation:	UNKNOWN ?	Analysis Date:	09/13/11
Sample Point:	TANK	Analysis Cost:	$125.00
Sample Date:	08/24/11		

Cloud Point:	89 °F
Weight Percent Paraffin (by GC)*:	1.03%
Weight Percent Asphaltenes:	0.01%
Weight Percent Oily Constituents:	98.93%
Weight Percent Inorganic Solids:	0.03%

*Weight percent paraffin and peak carbon number includes only n-alkanes (straight chain hydrocarbons) greater than or equal to C20H42.



North Permian Basin Region
P.O. Box 740
Sundown, TX 79372-0740
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Water Analysis Report by Baker Petrolite

Company:	CIMAREX ENERGY	Sales RDT:	33521
Region:	PERMIAN BASIN	Account Manager:	STEVE HOLLINGER (575) 910-9393
Area:	CARLSBAD, NM	Sample #:	535681
Lease/Platform:	TAOS FEDERAL LEASE	Analysis ID #:	113272
Entity (or well #):	3	Analysis Cost:	$90.00
Formation:	UNKNOWN		
Sample Point:	SEPARATOR		

Summary	
Sampling Date:	09/28/11
Analysis Date:	10/13/11
Analyst:	SANDRA GOMEZ
TDS (mg/l or g/m3):	86836.7
Density (g/cm3, tonne/m3):	1.063
Anion/Cation Ratio:	1
Carbon Dioxide:	150 PPM
Oxygen:	
Comments:	
RESISTIVITY 0.083 OHM-M @ 75℉	

Analysis of Sample 535681 @ 75 ℉

Anions	mg/l	meq/l	Cations	mg/l	meq/l
Chloride:	**52535.0**	**1481.82**	**Sodium:**	**28338.7**	**1232.66**
Bicarbonate:	**146.0**	**2.39**	**Magnesium:**	**417.0**	**34.3**
Carbonate:	**0.0**	**0.**	**Calcium:**	**3573.0**	**178.29**
Sulfate:	**83.0**	**1.73**	**Strontium:**	**1472.0**	**33.6**
Phosphate:			**Barium:**	**22.0**	**0.32**
Borate:			**Iron:**	**34.0**	**1.23**
Silicate:			Potassium:	215.0	5.5
			Aluminum:		
Hydrogen Sulfide:		0 PPM	Chromium:		
pH at time of sampling:		6	Copper:		
pH at time of analysis:			Lead:		
pH used in Calculation:		**6**	Manganese:	1.000	0.04
			Nickel:		

Conditions — Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl

Temp	Gauge Press.	Calcite $CaCO_3$		Gypsum $CaSO_4 * 2H_2O$		Anhydrite $CaSO_4$		Celestite $SrSO_4$		Barite $BaSO_4$		CO_2 Press
℉	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0	-0.61	0.00	-1.46	0.00	-1.49	0.00	-0.05	0.00	1.22	11.59	1.14
100	0	-0.51	0.00	-1.51	0.00	-1.47	0.00	-0.07	0.00	1.04	10.94	1.44
120	0	-0.40	0.00	-1.54	0.00	-1.43	0.00	-0.07	0.00	0.89	10.30	1.76
140	0	-0.28	0.00	-1.57	0.00	-1.36	0.00	-0.06	0.00	0.75	9.66	2.07

Note 1: When assessing the severity of the scale problem, both the saturation Index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO2 pressure is actually the calculated CO2 fugacity. It is usually nearly the same as the CO2 partial pressure.

Downhole Commingling Worksheet

Operator:	Cimarex Energy
Lease/Well Name/API Number/Location:	White City 31 Fed 4/30-015-35494/Sec. 31, T24S, R26E

Date:

Data	Bottom Formation	Upper Formation	Estimated Combined Production Data
Pool name	White City Penn (Gas)	Blackriver; Wolcamp, Southwest (Gas)	
Pool Code	87280	97693	
State Form C-102 with dedicated Acres Provided	640 acres	320 acres	
Formation Name	Cisco Canyon	Wolfcamp	
Top and Bottom of Pay Section (Perforated or open-Hole Interval)	9,900' - 10,299'	8,343' - 9,900'	8,343' - 10,299'
Method of production	Flowing	Flowing	Flowing
Bottom Hole Pressure	Within 150% of top perf	Within 150% of top perf	Within 150% of top perf
Reservoir Drive mechanism	Gas Drive	Gas Drive	Gas Drive
Oil gravity and/or BTU	Oil: 53.5° API Gas: 1142.4 BTU dry / 1122.6 BTU wet @ 14.73 psi	Oil: 51.8° API Gas: 1225.8 BTU dry / 1204.6 BTU wet @ 14.73 psi	Oil: 52.2° API Gas: 1204.1 BTU dry / 1183.3 BTU wet @ 14.7 psi
Average Sulfur Content (Wt %)	0	0	0
Oil sample Analysis provided	Yes	Yes	
Gas Analysis provided	Yes	Yes	
Produce Water Analysis provided	Yes	Yes	
H2S present	No	No	No
Producing, Shut-In or New Zone	New Zone	New Zone	
Date and Oil/Gas/Water rates of Last Production (new zones or no production history Operator shall attached production estimated and supporting data)	Date: N/A Expected Rate: 26 BOPD, 652 MCFPD, 165 BWPD	Date: N/A Expected Rate: 74 BOPD, 1,855 MCFD, 468 BWPD	Date: N/A Expected Rate: 100 BOPD, 2507 MCFD, 633 BWPD
Average decline % (provide back up data)	7% (terminal)	7% (terminal)	7% (teterminal)
Fixed Allocation Percentage	Oil: 26% Gas: 26%	Oil: 74% Gas: 74%	Oil: 100% Gas: 100%

Remarks:	Production history for analogs for both zones provided in field study appendix.
Operator Signature:	
Date: 3/1/17	

Attached Supporting documents

State Form C-102 with dedicated Acres Provided
Oil sample Analysis provided (Must be current)
Gas Analysis provided (Must be current)
Produce Water Analysis provided (Must be current)
Any additional supporting data (i.e. offset well production and decline curves etc..)
*Utilize weighted average.

White City 31 Federal 4
30-015-35494
Cimarex Energy Company of CO
February 27, 2017
Conditions of Approval

Notify BLM at 575-361-2822 a minimum of 24 hours prior to commencing work.

Work to be completed by May 27, 2017.

1. **Operator shall set a CIBP at 11,167' (50' above top most perf) and place 215' Class H cement on top. Tag required at a minimum of 10,952' to seal the top of the Morrow Formation.**

2. **Operator shall set a CIBP at 10,412' (50' above top most perf) and 35' Class H cement on top to isolate the Atoka Formation**

3. **Must conduct a casing integrity test before perforating and fracturing. Submit results to BLM. The CIT is to be performed on the production casing to max treating pressure. Notify BLM if test fails.**

4. A minimum of a **5000 (5M)** BOP to be used. All blowout preventer (BOP) and related equipment (BOPE) shall comply with reasonable well control requirements. A two ram system with a blind ram and a pipe ram designed for the size of the work string shall be adequate. Tapered work strings will require an additional pipe ram. The manifold shall comply with Onshore Oil and Gas Order #2 Attachment I (5M Diagrams of Choke Manifold Equipment). The accumulator system shall have an immediately available power source to close the rams and retain 200 psi above pre-charge. The pre-charge test shall follow requirements in Onshore Order #2.

<u>If the Strawn is found uneconomic continue with plug back as follows:</u>

5. **Operator shall set a CIBP at 10,249' (50' above top most perf) and 35' Class H cement on top to isolate the Strawn Formation**

6. **DHC approved as written by the operator.**

7. **Must conduct a casing integrity test before perforating and fracturing. Submit results to BLM. The CIT is to be performed on the production casing to max treating pressure. Notify BLM if test fails.**

8. Before casing or a liner is added or replaced, prior BLM approval of the design is required. Use notice of intent Form 3160-5.
9. Surface disturbance beyond the originally approved pad must have prior approval.

10. Closed loop system required.

11. All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of work over 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.

12. Operator to have H2S monitoring equipment on location.

13. A minimum of a **5000 (5M)** BOP to be used. All blowout preventer (BOP) and related equipment (BOPE) shall comply with reasonable well control requirements. A two ram system with a blind ram and a pipe ram designed for the size of the work string shall be adequate. Tapered work strings will require an additional pipe ram. The manifold shall comply with Onshore Oil and Gas Order #2 Attachment I (5M Diagrams of Choke Manifold Equipment). The accumulator system shall have an immediately available power source to close the rams and retain 200 psi above pre-charge. The pre-charge test shall follow requirements in Onshore Order #2.

14. **Subsequent sundry required detailing work done and completion report for the new formations. Operator to include well bore schematic of current well condition when work is complete.**

15. **See attached for general requirements.**

JAM 022717

BUREAU OF LAND MANAGEMENT
Carlsbad Field Office
620 East Greene Street
Carlsbad, New Mexico 88220
575-234-5972

General Requirements for Plug Backs

Failure to comply with the following Conditions of Approval may result in a Notice of Incidents of Noncompliance (INC) in accordance with 43 CFR 3163.1.

1. Plugging operations shall commence within **ninety (90)** days from this approval.

If you are unable to plug back the well by the 90th day provide this office, prior to the 90th day, with the reason for not meeting the deadline and a date when we can expect the well to be plugged back. Failure to do so will result in enforcement action.

2. **Notification: Contact the appropriate BLM office at least 24 hours prior to the commencing of any plug back operations. For wells in Eddy County, call 575-361-2822.**

3. Blowout Preventers: A blowout preventer (BOP), as appropriate, shall be installed before commencing any plugging operation. The BOP must be installed and maintained as per API and manufacturer recommendations. The minimum BOP requirement is a 2M system for a well not deeper than 9,090 feet; a 3M system for a well not deeper than 13,636 feet; and a 5M system for a well not deeper than 22,727 feet.

4. Mud Requirement: Mud shall be placed between all plugs. Minimum consistency of plugging mud shall be obtained by mixing at the rate of 25 sacks (50 pounds each) of gel per 100 barrels of **brine** water. Minimum nine (9) pounds per gallon.

5. Cement Requirement: Sufficient cement shall be used to bring any required plug to the specified depth and length. Any given cement volumes on the proposed plugging procedure are merely estimates and are not final. Unless specific approval is received, no plug except the surface plug shall be less than 25 sacks of cement. Any plug that requires a tag will have a minimum WOC time of 4 hours.

In lieu of a cement plug across perforations in a cased hole (not for any other plugs), a bridge plug set within 50 feet to 100 feet above the perforations shall be capped with 25 sacks of cement. **Before pumping cement on top of CIBP, tag will be required to verify depth. Based on depth, a tag of the cement may be deemed necessary.**

Unless otherwise specified in the approved procedure, the cement plug shall consist of either **Neat Class "C"**, for up to 7,500 feet of depth or **Neat Class "H"**, for deeper than 7,500 feet plugs.

6. Subsequent Plug back Reporting: Within 30 days after plug back work is completed, file one original and three copies of the Subsequent Report, Form 3160-5 to BLM. The report should give in detail the manner in which the plug back work was carried out, the extent (by depths) of cement plugs placed, and the size and location (by depths) of casing left in the well. **Show date work was completed.**

7. Trash: All trash, junk and other waste material shall be contained in trash cages or bins to prevent scattering and will be removed and deposited in an approved sanitary landfill. Burial on site is not permitted.

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 09 2017

RECEIVED

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-35494	~~97693~~ 98220	Purple Sage Black River; Wolfcmap, ~~Southwest~~ (gas)

[4] Property Code	[5] Property Name	[6] Well Number
33815	White City 31 Federal	4

[7] OGRID No.	[8] Operator Name	[9] Elevation
162683	Cimarex Energy Co. of Colorado	3409'

[10] 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	31	24S	26E		800	South	1250	East	Eddy

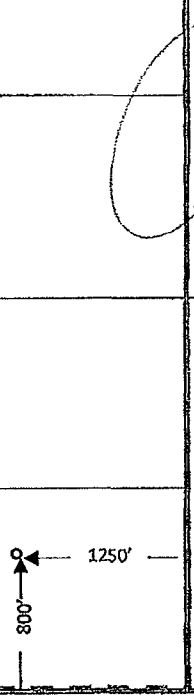
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320			

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.

[16]



[17] 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.

1-9-2017

Signature Date

Terri Stathem

Printed Name

tstathem@cimarex.com

E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number

RWP

District I
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Phone: (575) 393-6161 Fax: (575) 393-0720
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NM OIL CONSERVATION
ARTESIA DISTRICT
MAR 07 2017
RECEIVED

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
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Santa Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-35494	87280	White City; Penn (Gas)

[4] Property Code	[5] Property Name	[6] Well Number
33815	White City 31 Federal	4

[7] OGRID No.	[8] Operator Name	[9] Elevation
162683	Cimarex Energy Co. of Colorado	3409'

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P	31	24S	26E		800	South	1250	East	Eddy

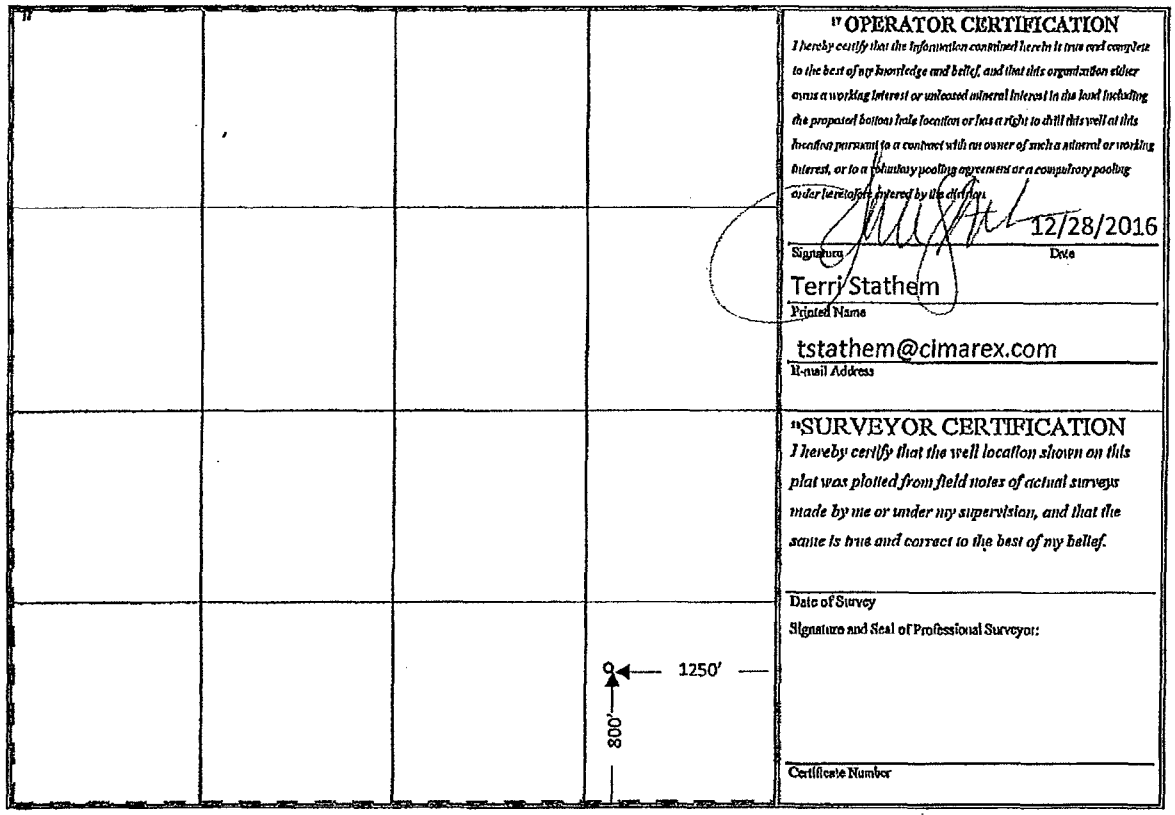
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
640			

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.

[16]



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12/28/2016
Signature Date

Terri Stathem
Printed Name

tstathem@cimarex.com
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number