

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENTNMOCD  
ArtesiaFORM 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.*5. Lease Serial No.  
NMNM0441951A

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.  
WHITE CITY 31 FEDERAL 49. API Well No.  
30-015-35494-00-S110. Field and Pool or Exploratory Area  
WHITE CITY-PENN11. County or Parish, State  
EDDY COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on page 2**1. Type of Well  
☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator  
CIMAREX ENERGY COMPANY OF CO  
Contact: TERRI STATHEM  
E-Mail: tstathem@cimarex.com3a. Address  
202 S CHEYENNE AVE SUITE 1000  
TULSA, OK 74103.43463b. Phone No. (include area code)  
Ph: 432-620-19364. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
Sec 31 T24S R26E SESE 800FSL 1250FEL**12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input checked="" type="checkbox"/> Plug Back	<input type="checkbox"/> 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 recompleat 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 plugback to the cisco canyon and wolfcamp as indicated on the attached procedure.

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.

Sundry to remove strawn test as previously approved.

**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL**OIL CONSERVATION  
ARTESIA DISTRICT  
MAR 20 2017  
RECEIVED

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

Electronic Submission #368904 verified by the BLM Well Information System  
For CIMAREX ENERGY COMPANY OF CO, sent to the Carlsbad  
Committed to AFMSS for processing by JENNIFER SANCHEZ on 03/07/2017 (17JAS0390SE)

Name (Printed/Typed) TERRI STATHEM

Title MANAGER REGULATORY COMPLIANCE

Signature (Electronic Submission)

Date 03/06/2017

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved By

Title

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

BUREAU OF LAND MANAGEMENT  
CARLSBAD FIELD 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 \*\***

U-27-17

**District I**  
 1625 N. French Dr., Hobbs, NM 88240  
 Phone: (575) 393-6161 Fax: (575) 393-6720  
**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**

<sup>1</sup> API Number 30-015-35494		<sup>2</sup> Pool Code 87280		<sup>3</sup> Pool Name White City, Penn (Gas)	
<sup>4</sup> Property Code 33815		<sup>5</sup> Property Name White City 31 Federal			<sup>6</sup> Well Number 4
<sup>7</sup> GRID No. 162683		<sup>8</sup> Operator Name Cimarex Energy Co. of Colorado			<sup>9</sup> Elevation 3409'

**<sup>10</sup> Surface Location**

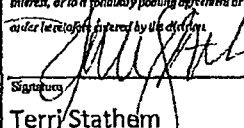
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	31	24S	26E		800	South	1250	East	Eddy

**<sup>11</sup> 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

<sup>12</sup> Dedicated Acres 640	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
--------------------------------------	-------------------------------	----------------------------------	-------------------------

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.

				<b>" OPERATOR CERTIFICATION</b> 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 undivided 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 joint venture pooling agreement or a compulsory pooling order (as defined by the division).  Signature Date 12/28/2016 Printed Name Terry Stathem E-mail Address tstathem@cimarex.com
				<b>"SURVEYOR CERTIFICATION</b> 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

1250'  
 800'

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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**

<sup>1</sup> API Number <b>30-015-35494</b>	<sup>2</sup> Pool Code <b>97693</b>	<sup>3</sup> Pool Name <b>Black River; Wolfcamp, Southwest (gas)</b>
<sup>4</sup> Property Code <b>33815</b>	<sup>5</sup> Property Name <b>White City 31 Federal</b>	
<sup>7</sup> OGDID No. <b>162683</b>	<sup>6</sup> Operator Name <b>Cimarex Energy Co. of Colorado</b>	
<sup>8</sup> Elevation <b>3409'</b>		

**" 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

**" 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

<sup>12</sup> Dedicated Acres <b>320</b>	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.


<div style="text-align: right; margin-right: 20px;">         1250' —        800' —     </div>	<p><b>" OPERATOR CERTIFICATION</b></p> <p><i>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 leased 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 has voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i></p> <p>Signature:  Date: <b>1-9-2017</b></p> <p>Printed Name: <b>Terri Stathem</b></p> <p>E-mail Address: <b>tstathem@cimarex.com</b></p> <hr/> <p><b>" SURVEYOR CERTIFICATION</b></p> <p><i>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.</i></p> <p>Date of Survey: _____</p> <p>Signature and Seal of Professional Surveyor: _____</p> <p>Certificate Number: _____</p>
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# Downhole Commingling Worksheet

Operator: Cimarex Energy																																																										
Lease/Well Name/API Number/Location: White City 31 Fed 4/30-015-35494/Sec. 31, T24S, R26E																																																										
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<b>Data</b>	<table border="1"> <thead> <tr> <th>Bottom Formation</th> <th>Upper Formation</th> <th>Estimated Combined Production Data</th> </tr> </thead> <tbody> <tr> <td>White City Penn (Gas)</td> <td>Blackriver; Wolcamp, Southwest (Gas)</td> <td></td> </tr> <tr> <td>87280</td> <td>97693</td> <td></td> </tr> <tr> <td>640 acres</td> <td>320 acres</td> <td></td> </tr> <tr> <td>Cisco Canyon</td> <td>Wolcamp</td> <td></td> </tr> <tr> <td>9,900' - 10,299'</td> <td>8,343' - 9,900'</td> <td>8,343' - 10,299'</td> </tr> <tr> <td>Flowing</td> <td>Flowing</td> <td>Flowing</td> </tr> <tr> <td>Within 150% of top perf</td> <td>Within 150% of top perf</td> <td>Within 150% of top perf</td> </tr> <tr> <td>Gas Drive</td> <td>Gas Drive</td> <td>Gas Drive</td> </tr> <tr> <td>Oil: 53.5° API Gas: 1142.4 BTU dry / 1122.6 BTU wet @ 14.73 psi</td> <td>Oil: 51.8° API Gas: 1225.8 BTU dry / 1204.6 BTU wet @ 14.73 psi</td> <td>Oil: 52.2° API Gas: 1204.1 BTU dry / 1183.3 BTU wet @ 14.7 psi</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Yes</td> <td>Yes</td> <td></td> </tr> <tr> <td>Yes</td> <td>Yes</td> <td></td> </tr> <tr> <td>Yes</td> <td>Yes</td> <td></td> </tr> <tr> <td>No</td> <td>No</td> <td>No</td> </tr> <tr> <td>New Zone</td> <td>New Zone</td> <td></td> </tr> <tr> <td>Date: N/A Expected Rate: 26 BOPD, 652 MCFPD, 165 BWPD</td> <td>Date: N/A Expected Rate: 74 BOPD, 1,855 MCFD, 468 BWPD</td> <td>Date: N/A Expected Rate: 100 BOPD, 2507 MCFD, 633 BWPD</td> </tr> <tr> <td>7% (terminal)</td> <td>7% (terminal)</td> <td>7% (terminal)</td> </tr> <tr> <td>Oil: 26% Gas: 26%</td> <td>Oil: 74% Gas: 74%</td> <td>Oil: 100% Gas: 100%</td> </tr> </tbody> </table>	Bottom Formation	Upper Formation	Estimated Combined Production Data	White City Penn (Gas)	Blackriver; Wolcamp, Southwest (Gas)		87280	97693		640 acres	320 acres		Cisco Canyon	Wolcamp		9,900' - 10,299'	8,343' - 9,900'	8,343' - 10,299'	Flowing	Flowing	Flowing	Within 150% of top perf	Within 150% of top perf	Within 150% of top perf	Gas Drive	Gas Drive	Gas Drive	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	0	0	0	Yes	Yes		Yes	Yes		Yes	Yes		No	No	No	New Zone	New Zone		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	7% (terminal)	7% (terminal)	7% (terminal)	Oil: 26% Gas: 26%	Oil: 74% Gas: 74%	Oil: 100% Gas: 100%
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Remarks:

Production history for analogs for both zones provided in field study appendix.

Operator Signature: 

Date: 7/17/17

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.



**LABORATORY SERVICES**  
Natural Gas Analysis

www.permianls.com

575.397.3713 2609 W Marland Hobbs NM 88240

For: Cimarex Energy  
Attention: Mark Cummings  
600 N. Marienfeld, Suite 600  
Midland, Texas 79701

Sample: Sta. # 309588185  
Identification: Wigeon 23 Fed Com 1  
Company: Cimarex Energy  
Lease:  
Plant:

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

Sampled by: Taylor Ridings  
Analysis by: Vicki McDaniel

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+	<u>0.624</u>	<u>0.270</u>
		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

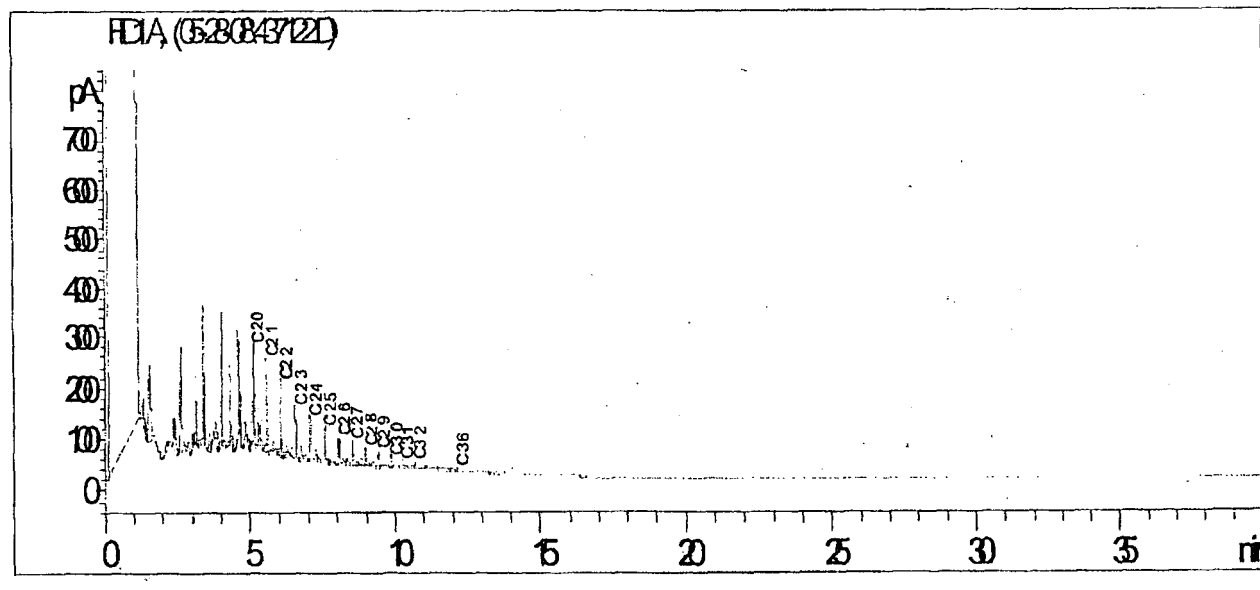
## OIL ANALYSIS

Company: CIMAREX ENERGY  
Region: PERMIAN BASIN  
Area: CARLSBAD, NM  
Lease/Platform: WIGEON '23' FEDERAL  
Entity (or well #): 1  
Formation: WOLFCAMP  
Sample Point: FRAC TANK 234  
Sample Date: 5/13/08

Sales RDT: 44212  
Account Manager: WAYNE PETERSON (575) 910-9389  
Analysis ID #: 3208  
Sample #: 437122  
Analyst: SHEILA HERNANDEZ  
Analysis Date: 5/30/08  
Analysis Cost: \$100.00

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		Analysis of Sample 43887 @ 75 °F					
Sampling Date:	05/14/08	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date:	05/15/08	Chloride:	55040.0	1552.48	Sodium:	32207.4	1400.94
Analyst:	WAYNE PETERSON	Bicarbonate:	329.4	5.4	Magnesium:	268.0	22.05
TDS (mg/l or g/m3):	90873.3	Carbonate:	0.0	0.	Calcium:	2780.0	138.72
Density (g/cm3, tonne/m3):	1.062	Sulfate:	225.0	4.68	Strontium:		
Anion/Cation Ratio:	1	Phosphate:			Barium:		
		Borate:			Iron:	23.5	0.85
		Silicate:			Potassium:		
Carbon Dioxide:	150 PPM	Hydrogen Sulfide:		0 PPM	Aluminum:		
Oxygen:		pH at time of sampling:		7.31	Chromium:		
Comments:		pH at time of analysis:			Copper:		
TEST RAN IN THE FIELD		pH used in Calculation:		7.31	Lead:		
					Manganese:		
					Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Gauge Press.	Calcite CaCO <sub>3</sub>		Gypsum CaSO <sub>4</sub> *2H <sub>2</sub> O		Anhydrite CaSO <sub>4</sub>		Celestite SrSO <sub>4</sub>		Barite BaSO <sub>4</sub>		CO <sub>2</sub> 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.

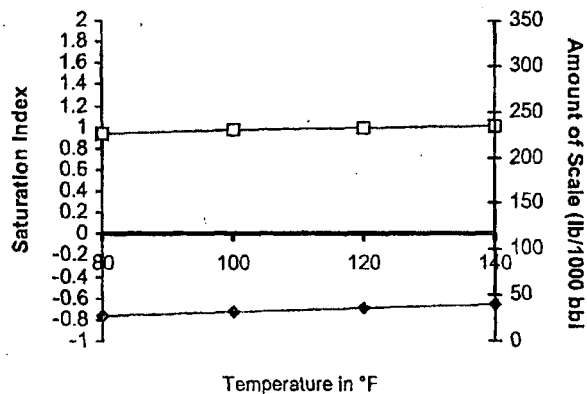
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

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

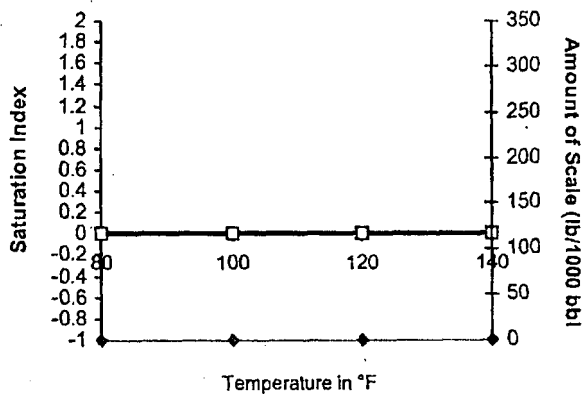
## Scale Predictions from Baker Petrolite

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

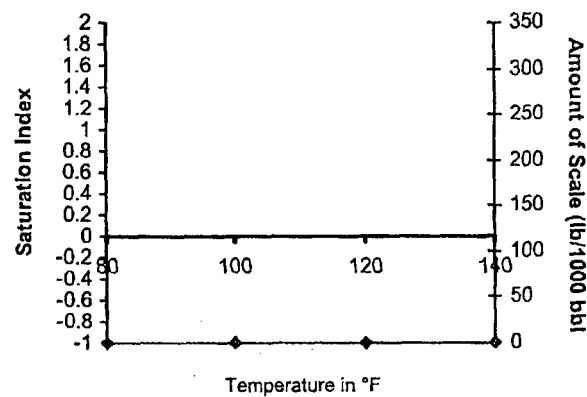
### Calcite - $\text{CaCO}_3$



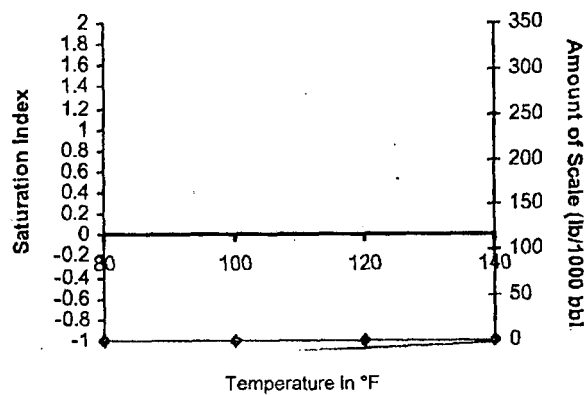
### Barite - $\text{BaSO}_4$



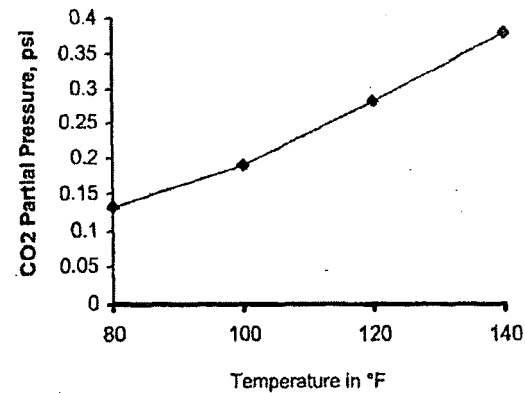
### Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



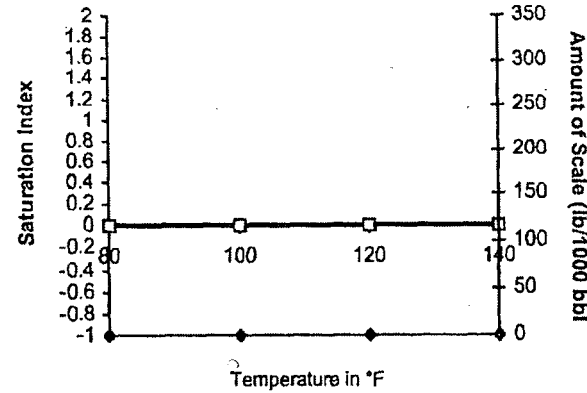
### Anhydrite - $\text{CaSO}_4$



### Carbon Dioxide Partial Pressure



### Celestite - $\text{SrSO}_4$







**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. Mariefeld, 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

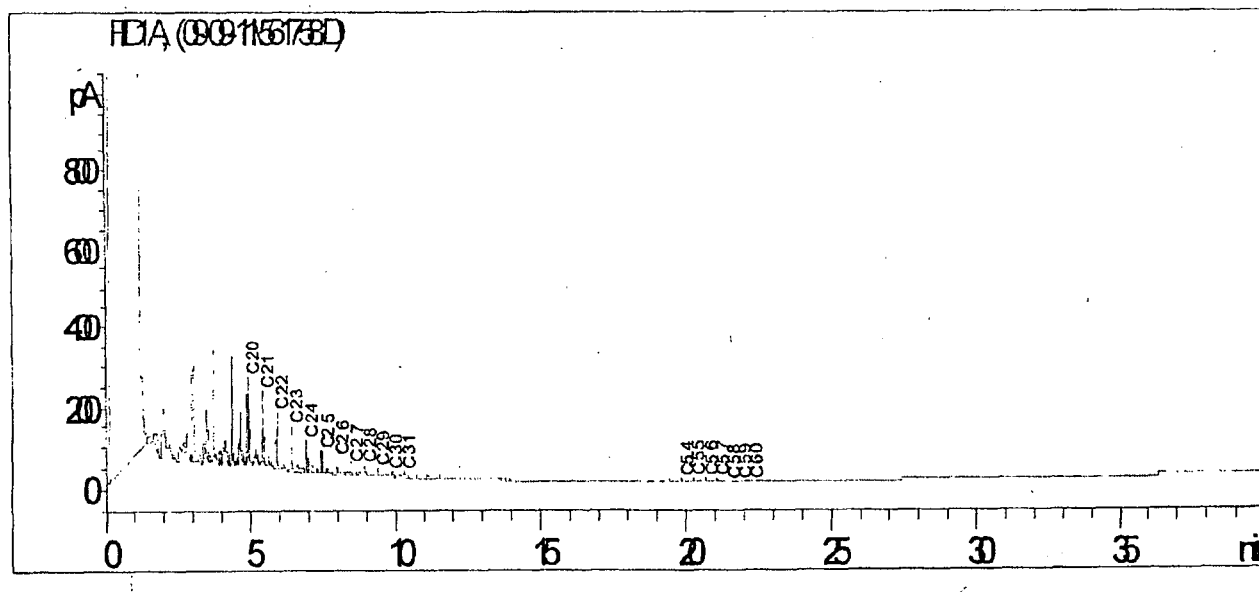
Lab Team Leader - Sheila Hernandez  
(432) 495-7240

## 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 C20142.



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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		Analysis of Sample 535681 @ 75 °F					
Sampling Date:	09/28/11	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date:	10/13/11	Chloride:	52535.0	1481.82	Sodium:	28338.7	1232.66
Analyst:	SANDRA GOMEZ	Bicarbonate:	146.0	2.39	Magnesium:	417.0	34.3
		Carbonate:	0.0	0.	Calcium:	3573.0	178.29
TDS (mg/l or g/m3):	86836.7	Sulfate:	83.0	1.73	Strontium:	1472.0	33.6
Density (g/cm3, tonne/m3):	1.063	Phosphate:			Barium:	22.0	0.32
Anion/Cation Ratio:	1	Borate:			Iron:	34.0	1.23
		Silicate:			Potassium:	215.0	5.5
					Aluminum:		
Carbon Dioxide:	150 PPM	Hydrogen Sulfide:		0 PPM	Chromium:		
Oxygen:		pH at time of sampling:		6	Copper:		
Comments:		pH at time of analysis:			Lead:		
RESISTIVITY 0.083 OHM-M @ 75°F		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 <sub>3</sub>		Gypsum CaSO <sub>4</sub> ·2H <sub>2</sub> O		Anhydrite CaSO <sub>4</sub>		Celestite SrSO <sub>4</sub>		Barite BaSO <sub>4</sub>		CO <sub>2</sub> Press
°F	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 CO<sub>2</sub> pressure is actually the calculated CO<sub>2</sub> fugacity. It is usually nearly the same as the CO<sub>2</sub> partial pressure.



KB - 18' above GL

**Cimarex Energy Co. of Colorado**

White City 31 Federal #4

800' FSL & 1250' FEL

Sec. 31, T-24-S, R-26-E, Eddy Co., NM

S. Gengler

01/07/2010

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

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

TOC @ 5150' by CBL

DV Tool @ 7904'  
cmtd w/ 1310 sx

278 jts 2-3/8" 4.7# L-80 Tbg

2-3/8" X 2-7/8" X-over @ 9004'

TOC @ 10400' by CBL  
Atoka perms (10462' - 10492')

91 jts 2-7/8" 6.5# L-80 Tbg

Morrow perms (11217' - 11888')

PBTD @ 12012'

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

Annular Gas Lift Valves @ 9039',  
10587' & 11900'

**CIMAREX**

**Proposed Ciscamp WBD**  
KB - 18' above GL

**Cimarex Energy Co. of Colorado**

White City 31 Federal 4

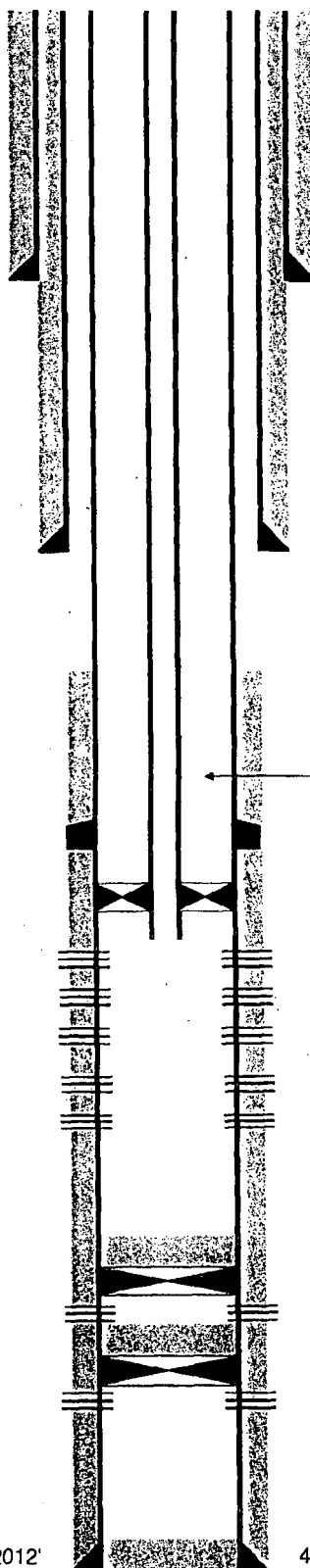
API #: 30-015-35494

800' FSL & 1250' FEL

Sec. 31, T24S, R26E, Eddy Co., NM

M. Karner

3/6/2017



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

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

DV @ 7904'  
cmtd w/ 1310 sx

AS 1X Pkr @ 8,293'

Wolfcamp perms (8,343' - 9,899')

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

CIBP set at +/- 10,412' with 35' of cement bailed on top  
Atoka perms (10,462' - 10,492')

CIBP set at +/- 11,167' with 25 sx cement pumped on top  
Morrow perms (11,217' - 11,888')

PBTD @ 12012'  
TD @ 12080'

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



CONFIDENTIAL. March 6, 2016

Production Operations – Carlsbad Region, Permian Basin  
**White City 31 Federal #4 - Cisco Canyon and Wolfcamp (Ciscamp)**  
*Proposed Commingling Allocation Factors. Eddy County, NM*

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**Appendix D: Recompletion Procedure – White City 31 Federal #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'. Cmt'd w/ 2,160 sx. DV @ 7,904'. TOC @ 5,150' by CBL
Tubing	2-3/8" 4.7# L-80 8rd, EOT @ 10,404'
Proposed RC Perfs	Wolfcamp (8,343' – 9,899') & Cisco Canyon (9,900' – 10,299')

**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 TOO H w/ 2-3/8" 4.7# L-80 tbg. Stand back Tubing.
6. TIH w/ CIBP on 2-3/8" 4.7# L-80 tbg to +/- 11,167'
7. Release from CIBP
8. Pump 25 sx down tubing
9. TOO H w/ tbg and stand back tbg
10. MIRU WL
11. RIH w/ GR/JB to tag TOC uphole of Morrow
12. RIH w/ WL to set CIBP at +/- 10,412'
13. RIH w/ WL to bail 35' of cement on top of CIBP at 10,412'
14. RU Pump truck and pressure test casing to 8,500 psi on a chart for 30 minutes with no more than 10% leak off.
15. ND 5k BOP, RDMO PU
16. RU two 10k frac valves and flow cross
17. MIRU water transfer with frac tanks to contain water to be pumped from frac pond
18. 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.
19. RU frac valves, flow cross, goat head, and wireline lubricator.
20. RIH w/ gauge ring/junk basket for 4-1/2" 11.6# P-110 csg to +/- 10,299'



CONFIDENTIAL. March 6, 2016

Production Operations – Carlsbad Region, Permian Basin  
**White City 31 Federal #4 - Cisco Canyon and Wolfcamp (Ciscamp)**  
*Proposed Commingling Allocation Factors. Eddy County, NM*

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21. Perforate Cisco Canyon from 9,900' – 10,299'.
22. RU frac and flowback equipment.
23. Acidize and frac Cisco Canyon perms down casing.
24. Set 10k flow through composite plug 15' uphole of top perforation
25. Test to 8,500 psi
26. Perforate Wolfcamp from 8,343' – 9,899'.
27. Acidize and frac Wolfcamp perms down casing.
28. RD frac
29. MIRU 2" coiled tbg unit.
30. 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.
31. Clean out to PBTD
32. POOH w/ blade mill, motor & CT
33. RDMO coiled tbg unit.
34. Flow back well for 24 hours, then SI well overnight.
35. RU wireline and lubricator.
36. RIH w/ GR/JB for 5-1/2" 17# P-110 to +/- 8,293'
37. 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" pump out plug pinned for 1,500 – 2,000 psi differential pressure
  - b. 1.875" XN profile nipple
  - c. 10' 2-3/8" 4.7# L-80 tbg sub
  - d. 5-1/2" x 2-3/8" Arrowset 1X packer and on-off tool stinger w/ 1.875" X profile nipple
38. RD WL and lubricator
39. ND goat head and frac valve, NU BOP, MIRU Pulling Unit
40. TIH w/ on/off tool overshot, GLVs, and 2-3/8" 4.7# L-80 tbg.
41. Latch overshot onto on-off tool and space out tubing
42. ND BOP, NU WH
43. RDMO pulling unit
44. RU pump truck and pump out plug. Put well on production.
45. **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.**

**White City 31 Federal 4  
30-015-35494  
Cimarex Energy Company of CO  
March 7, 2017  
Conditions of Approval**

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

**Work to be completed by June 07, 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 place 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. Before casing or a liner is added or replaced, prior BLM approval of the design is required. Use notice of intent Form 3160-5.**
- 5. Surface disturbance beyond the originally approved pad must have prior approval.**
- 6. Closed loop system required.**
- 7. 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.**
- 8. Operator to have H2S monitoring equipment on location.**



9. 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.
10. **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.**
11. **See attached for general requirements.**

**JAM 030717**