

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM 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.

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other8. Well Name and No.
WHITE CITY 31 FED 3

2. Name of Operator

CIMAREX ENERGY COMPANY OF CO

Contact: TERRI STATHEM

E-Mail: tstatthem@cimarex.com

9. API Well No.

30-015-34300-00-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

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 31 T24S R26E NWNW 950FNL 1000FWL

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			
<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 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

FEB 06 2017

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 4802.

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

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

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

Electronic Submission #365647 verified by the BLM Well Information System
For CIMAREX ENERGY COMPANY OF CO, sent to the Carlsbad
Committed to AFMSS for processing by CHARLES NIMMER on 02/02/2017 (17CN0100SE)

Name (Printed/Typed) TERRI STATHEM

Title MANAGER REGULATORY COMPLIANCE

Signature (Electronic Submission)

Date 02/01/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By CHARLES NIMMER

Title PETROLEUM ENGINEER

Date 02/02/2017

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 Carlsbad

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 ****

Accepted for record - NMOCD

REV 3-6-17

Downhole Commingling Worksheet

Operator: Cimarex Energy
 Lease/Well Name/API Number/Location: White City 31 Fed 3/30-015-34300/Sec. 31, T24S, R26E
 Date:

Data	Bottom Formation	Upper Formation	Estimated Combined Production Data
Pool name	White City Penn (Gas)	Black River; Wolfcamp 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)	9,937' - 10,342'	8,384' - 9,937'	8,384' - 10,342'
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: 53.5° API Gas: 1142.4	Oil: 51.8° API Gas: 1225.8	Oil: 52.2° API Gas: 1208.3
	BTU dry / 1122.6 BTU wet @ 14.73 psi	BTU dry / 1204.6 BTU wet @ 14.73 psi	BTU dry / 1187.4 BTU wet @ 14.7 psi
Oil gravity and/or BTU	0	0	0
Average Sulfur Content (Wt %)	Yes	Yes	
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: 18 BOPD, 451 MCFPD, 114 BWPD	Date: N/A Expected Rate: 82 BOPD, 2,056 MCFD, 519 BWPD	Date: N/A Expected Rate: 100 BOPD, 2507 MCFD, 633 BWPD
Average decline % (provide back up data)	7% (terminal)	7% (terminal)	7% (terminal)
Fixed Allocation Percentage	Oil: 18% Gas: 18%	Oil: 82% Gas: 82%	Oil: 100% Gas: 100%

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

Operator Signature: *Timothy R. Rhodes*
 Date: 2/11/11

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 Fed 3

Well Data

KB 21'
TD 12,135'
PBDT 11,940'

Casing 13-3/8" 48# H-40 @ 215'. Cmt'd w/ 210 sx, cmt circ
9-5/8" 40# J-55 @ 1,938'. Cmt'd w/ 725 sx, cmt circ
5-1/2" 17# P-110 @ 12,130'. Cmt'd w/ 2,180 sx. DV @ 7,154'. TOC @ 6,030' by CBL

Tubing 2-3/8" 4.7# L-80 8rd, EOT @ 11,459'

Current White City Penn Perfs Morrow (11,368' – 11,829')

Proposed White City Penn Perfs Strawn (10,342' – 10,488')

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. TIH w/ CIBP on 2-3/8" 4.7# L-80 tbg to set CIBP at +/- 11,779'
7. Pump 25 sacks class H cement down tubing to pump balanced plug. Abandoning Morrow.
8. TOOH 1000' and reverse circulate 2 tbg volumes
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 +/- 10,488'
12. RIH with 3-1/8" casing guns on electric line and perforate Strawn from 10,342' – 10,488'
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.
 - f. 5-1/2" x 2-3/8" Arrowset 1X packer and on-off tool stinger w/ 1.875" X profile nipple

14. RD WL and lubricator
15. TIH w/ on/off tool overshoot, GLVs, and 2-3/8" 4.7# L-80 tbg. Hydrotest in hole to 8500 psi.
16. Latch overshoot 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.

Cisco Canyon Wolfcamp (Ciscamp) Recompletion Procedure:

Proposed RC Perfs Wolfcamp (8,384' – 9,937') & Cisco Canyon (9,937' – 10,342')

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. MIRU WL
7. RIH w/ GR/JB to +/- 10,377'
8. RIH w/ WL to set CIBP at +/- 10,377'
9. 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 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 5-1/2" 17# P-110 csg to +/- 10,342'
17. Perforate Cisco Canyon from 9,937' – 10,342'.
18. RU frac and flowback equipment.

19. Acidize and frac Cisco Canyon perms down casing.
20. Set 10k flow through composite plug 15' uphole of top perforation
21. Test to 8,500 psi
22. Perforate Wolfcamp from 8,384' – 9,937'.
23. Acidize and frac Wolfcamp perms 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 10,342'
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/IB for 5-1/2" 17# P-110 to +/- 8,334'
35. RIH w/ 2-7/8" WEG, 2-7/8" pump out plug pinned for 1,500 – 2,000 psi differential pressure, 10' 2-7/8" 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 +/- 8,334'. From downhole up:
 - a. 2-7/8" WEG
 - b. 2-7/8" pump out plug pinned for 1,500 – 2,000 psi differential pressure
 - c. 1.875" XN profile nipple
 - d. 10' 2-7/8" 6.5# L-80 tbg sub
 - e. 5-1/2" x 2-7/8" 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 2-7/8" 6.5# 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.**



Current WBD
KB - 23' above GL

Cimarex Energy Co. of Colorado

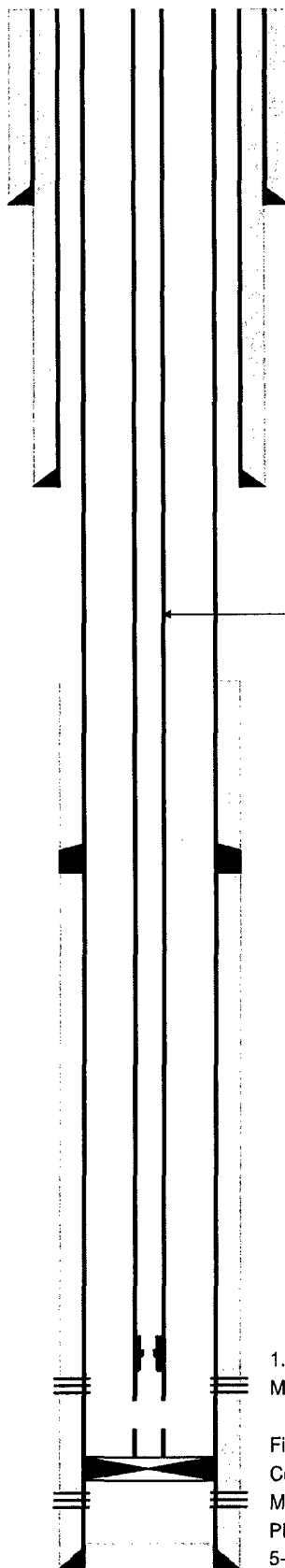
White City 31 Federal #3

950' FNL & 1000' FWL

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

S. Gengler

02/09/2012



13-3/8", 48# H-40 csg @ 215'
cmtd w/ 210 sx, cmt circ

TOC @ 1376' by CBL

9-5/8", 40# J-55 csg @ 1938'
cmtd w/ 725 sx, cmt circ

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

TOC @ 6030' by CBL

DV Tool @ 7154'
cmtd w/ 1180 sx

1.81" F Profile Nipple @ 11447'
Morrow perms (11368' - 11829')

Fish (Bit, bit sub, and 5' of tbg)
Composite BP @ 11940'
Morrow perms (11466' - 11780')
PBTD @ 12070'

5-1/2" 17# P-110 @ 12130', cmtd w/ 1000 sx
TD @ 12135'



Proposed Strawn WBD
KB - 23' above GL

Cimarex Energy Co. of Colorado

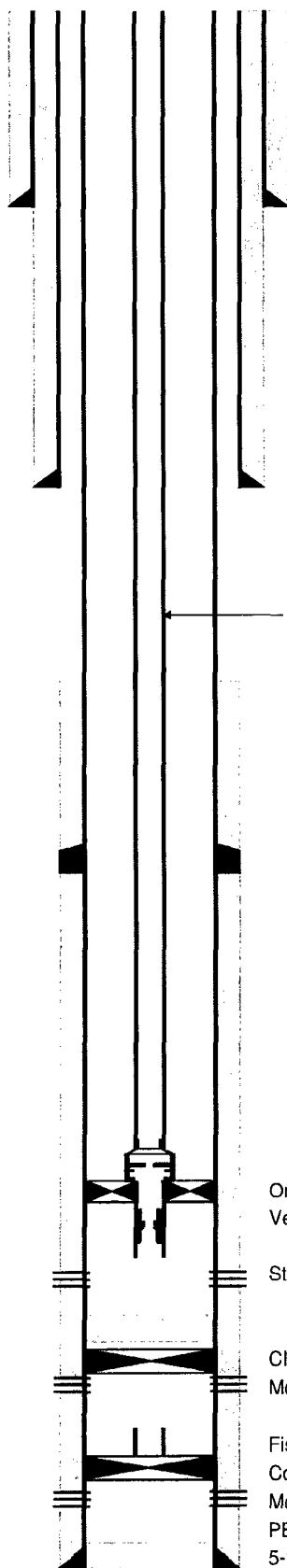
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TOC @ 6030' by CBL

DV Tool @ 7154'
cmtd w/ 1180 sx

On-off Tool w/ 1.875" Profile nipple @ 10285'
Versaset pkr @ 10292'

Strawn perfs (10342' - 10488')

CIBP @ 11318' w/ 25 sx cmt pumped on top
Morrow perfs (11368' - 11829')

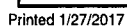
Fish (Bit, bit sub, and 5' of tbg)

Composite BP @ 11940'

Morrow perfs (11466' - 11780')

PBTD @ 12070'

5-1/2" 17# P-110 @ 12130', cmtd w/ 1000 sx
TD @ 12135'





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+	<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

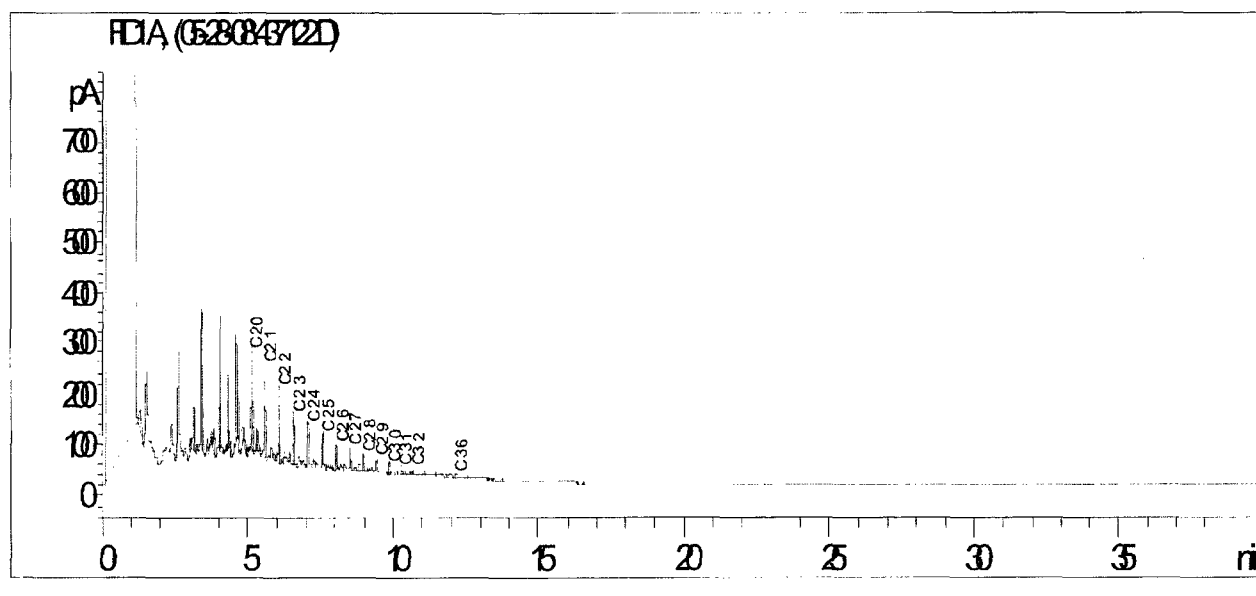
Lab Team Leader - Sheila Hernandez
(432) 495-7240

OIL ANALYSIS

Company:	CIMAREX ENERGY	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		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 ₃		Gypsum CaSO ₄ *2H ₂ O		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.

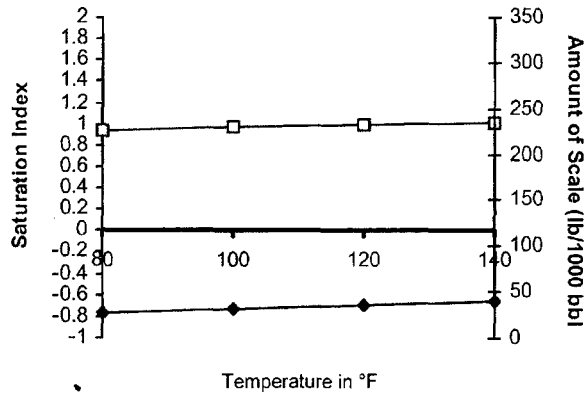
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

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

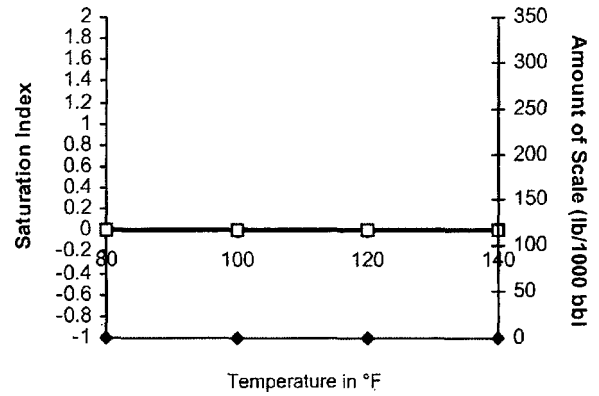
Scale Predictions from Baker Petrolite

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

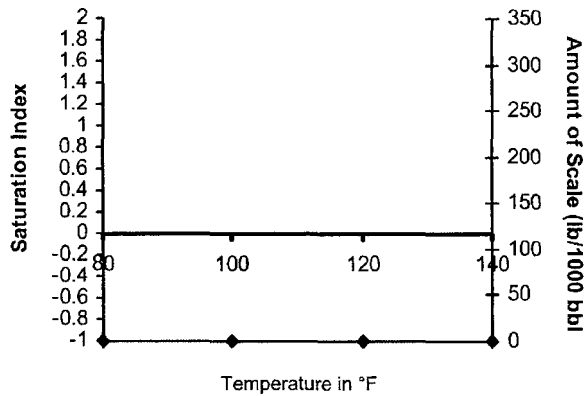
Calcite - CaCO_3



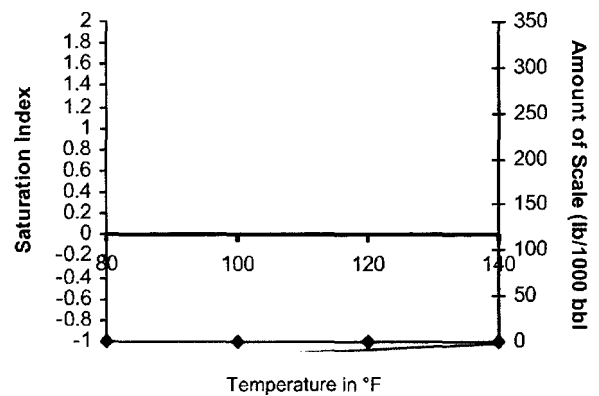
Barite - BaSO_4



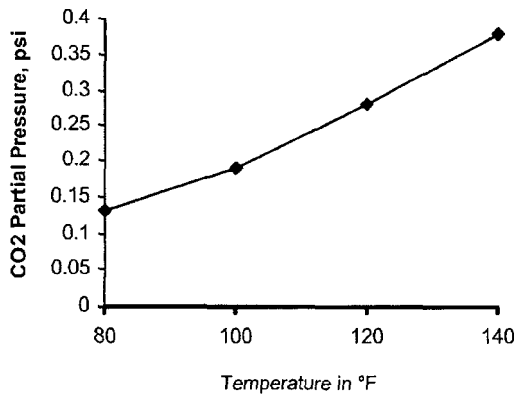
Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



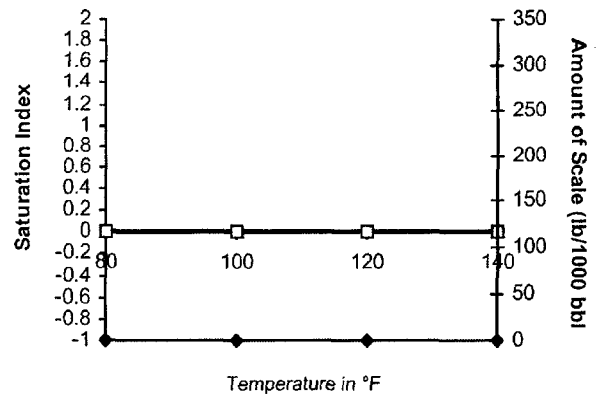
Anhydrite - CaSO_4



Carbon Dioxide Partial Pressure



Celestite - 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. 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	
	Sample Temp F	76.4	
	Atmos Temp F	76	
		Sampled by:	K. Hooten
		Analysis by:	Vicki McDaniel

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+	<u>0.439</u>	<u>0.190</u>
		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

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OIL ANALYSIS

Company: CIMAREX ENERGY

Region: PERMIAN BASIN

Area: LOCO HILLS, NM

Lease/Platform: TAOS FEDERAL LEASE

Entity (or well #): 3

Formation: UNKNOWN

Sample Point: TANK

Sample Date: 08/24/11

Sales RDT: 33521

Account Manager: STEVE HOLLINGER (575) 910-9393

Analysis ID #: 5419

Sample #: 561758

Analyst: SHEILA HERNANDEZ

Analysis Date: 09/13/11

Analysis Cost: \$125.00

Cloud Point: 89 ° F

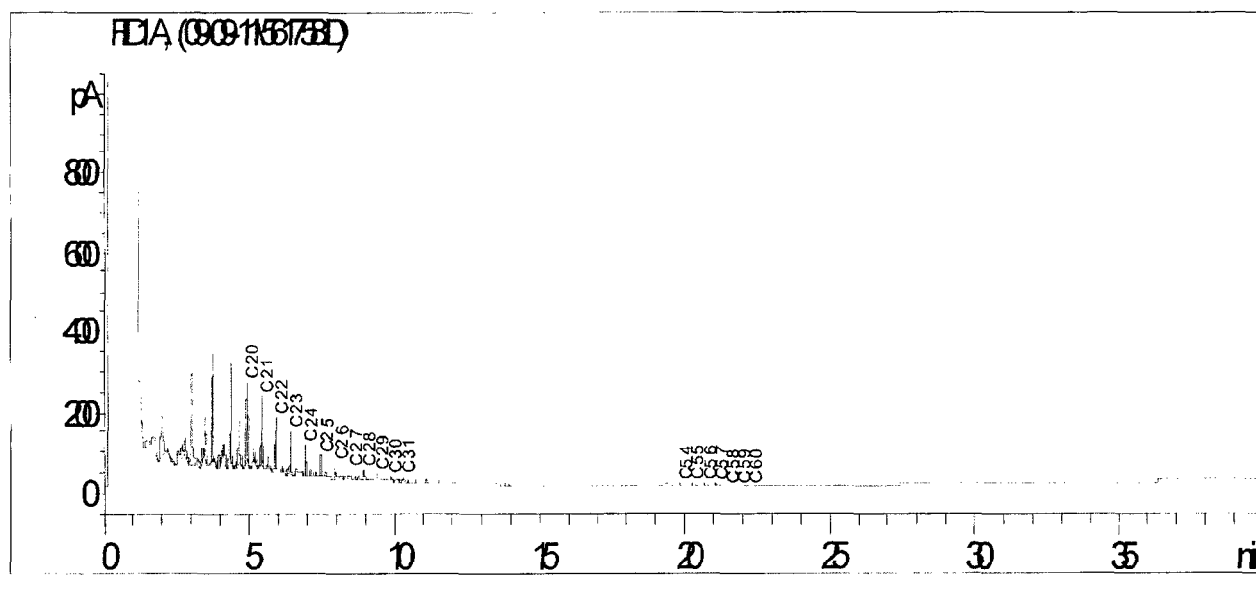
Weight Percent Paraffin (by GC)*: 1.03%

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
(806) 229-8121
Lab Team Leader - Sheila Hernandez
(432) 495-7240

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
TDS (mg/l or g/m3):	86836.7	Carbonate:	0.0	0.	Calcium:	3573.0	178.29
Density (g/cm3, tonne/m3):	1.063	Sulfate:	83.0	1.73	Strontium:	1472.0	33.6
Anion/Cation Ratio:	1	Phosphate:			Barium:	22.0	0.32
		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 ₃		Gypsum CaSO ₄ ·2H ₂ O		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	-0.61	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.

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

Permanent Abandonment of Production Zone Conditions of Approval

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. For wells in Lea County, call 575-393-3612

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. If a bailer is used to cap this plug, 35 feet of cement shall be sufficient. **Before pumping or bailing cement on top of CIBP, tag will be required to verify depth.**

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.