Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:
4/17/2017	MAM	DHC	DMAM1710630635

ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Geological & Engineering Bureau –
1220 South St. Francis Drive, Santa Fe, NM 87505

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Applicant: Cimarex Energy Co. of Colorado **OGRID Number:** 162683
Well Name: Federal 13 Com #4 **API:** 30-015-34199
Pool: Purple Sage - Wolfcamp Gas; White City; Penn (G) **Pool Code:** 98220;

SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED BELOW

1) **TYPE OF APPLICATION:** Check those which apply for [A]
A. Location – Spacing Unit – Simultaneous Dedication
☐NSL ☐NSP(PROJECT AREA) ☐NSP(PRORATION UNIT) ☐SD

B. Check one only for [I] or [II]
[I] Commingling – Storage – Measurement
■DHC ☐CTB ☐PLC ☐PC ☐OLS ☐OLM
[II] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery
☐WFX ☐PMX ☐SWD ☐IPI ☐EOR ☐PPR

FOR OCD ONLY
☐ Notice Complete
☐ Application Content Complete

2) **NOTIFICATION REQUIRED TO:** Check those which apply.
A. ☐ Offset operators or lease holders
B. ☐ Royalty, overriding royalty owners, revenue owners
C. ☐ Application requires published notice
D. ■ Notification and/or concurrent approval by SLO
E. ■ Notification and/or concurrent approval by BLM
F. ☐ Surface owner
G. ☐ For all of the above, proof of notification or publication is attached, and/or,
H. ☐ No notice required

3) **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Amithy Crawford
Print or Type Name

Signature

4/18/2017
Date

432-620-1909
Phone Number

acrawford@cimarex.com
e-mail Address

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Tony Delfin
Acting Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division

Administrative Order DHC-4795
Order Date: September 1, 2016
Application Reference Number: pMAM1624453789

Cimarex Energy Co. of Colorado
600 North Marienfeld Street, Suite 600
Midland, Tx. 79701

Attention: Ms. Amithy Crawford

Federal 13 Com. Well No. 4
API No. 30-015-34199
Unit G, Section 13, Township 25 South, Range 26 East, NMPM
Eddy County, New Mexico

Pool	WHITE CITY; PENN (GAS)	Gas (87280)
Names:	SAGE DRAW; WOLFCAMP, EAST (G)	Gas (96890)

Reference is made to your recent application for an exception to Division Rule 19.15.12.9A. NMAC of the Division Rules and Regulations to permit the above-described well to commingle production from the subject pools in the wellbore.

It appears that the subject well qualifies for approval for such exception pursuant to the provisions of Division Rule 19.15.12.11A. NMAC, and since reservoir damage or waste will not result from such downhole commingling, and correlative rights will not be violated thereby, you are hereby authorized to commingle the production as described above and any Division Order which authorized the dual completion or otherwise required separation of the zones is hereby placed in abeyance.

In accordance with Division Rule 19.15.12.11A (6) NMAC, the production attributed to any commingled pool within the well shall not exceed the allowable applicable to that pool.

As per the application, the assignment of allowable and allocation of oil and gas production from the subject well for the White City; Penn (Gas) Pool and Sage Draw; Wolfcamp, East (G) allocation percentages shall be based on the remaining gas in place (RGIP) calculations, which in turn is based on offset analogy production and well log analysis for each pool.

Assignment of allowable and allocation of production from the well shall be as follows:

SAGE DRAW; WOLFCAMP, EAST (G) POOL	Pct. Oil: 81	Pct. Gas: 81
WHITE CITY; PENN (GAS)	Pct. Oil: 19	Pct. Gas: 19

It is also understood that notice of this application, pursuant to Division Rule 19.15.4.12 A (6), is not required since the interest ownership between the zones to be commingled is common throughout.

REMARKS: The operator shall notify the Division's District II office upon implementation of commingling operations.

This Order is subject to like approval from the Bureau of Land Management.

Pursuant to Division Rule 19.15.12.11B. NMAC, the commingling authority granted herein may be rescinded by the Division Director if conservation is not being best served by such commingling.

David R. Catanach

David R. Catanach
Director

DRC/mam

cc: New Mexico Oil Conservation Division – Artesia
Bureau of Land Management - Carlsbad

Cimarex Energy Co.
202 S. Cheyenne Ave.
Suite 1000
Tulsa, Oklahoma 74103-4346
PHONE: 918.585.1100
FAX: 918.585.1133

CIMAREX

Michael McMillian
Oil Conservation Division
New Mexico Department of Energy,
Minerals and Natural Resources
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Re: Federal 13 Com 4
API 30-015-34199
Section 13, Township 25 South, Range 26 East, N.M.P.M.
Eddy County, New Mexico.

Dear Mr. McMillian:

The Federal 13 Com 4 well is located in the NE/4 of Sec. 13, 25S, 26E, Eddy County NM.

Cimarex is the operator of the NE/4 of Sec. 13, 25S, 26E, Eddy County, NM as to all depths from the surface of the earth down to 11,854'. Ownership in the NE/4 is common from the top of the Wolfcamp formation at 8,551' down to 11,854 feet.

Sincerely,

Caitlin Pierce

Caitlin Pierce
Production Landman
cpierce@cimarex.com
Direct: 432-571-7862

Schlumberger

PS Platform

Interpretation Results - Final Report

Client: Cimarex Energy Company

Well: Federal 13 Com #4

Field: White City

County: Eddy, New Mexico

API: 30-015-34199

Log Date: 7-Mar-2017

Analyst: Leonid Kolomytsev
Daniel Amyotte
Casey Chadwick

Cimarex Energy Company
Federal 13 Com #4
7-Mar-2017

Schlumberger

Logging Objective:

Flow contribution from each perforation.

Well Bore Information:

Production Tubing: 2-7/8" 6.5# L-80 @ 8597' MD

Production Casing: 5-1/2" 17# P-110 @ 12358' MD

Perforations: 6 Stages / 54 Perforations Clusters

Correlation: by Field Engineer to EOT.

Logging Tool: Standard PSP-DEFT-GHOST w/ 2.25" FBS on Digital Slickline (DSL)

General Logging Procedure:

RU & RIH w/ Gauge Ring. Report Tag Depth. ROH.

RU & RIH w/ PSP. Record Main Flowing Passes at variable logging speeds
(based on well conditions) from Top Log Interval (TLI) to Bottom Log Interval (BLI).

Record Main Station Stops (at least 2 minutes each) between perforations, stages, major changes in flow regime, or as directed by client or production log analyst.

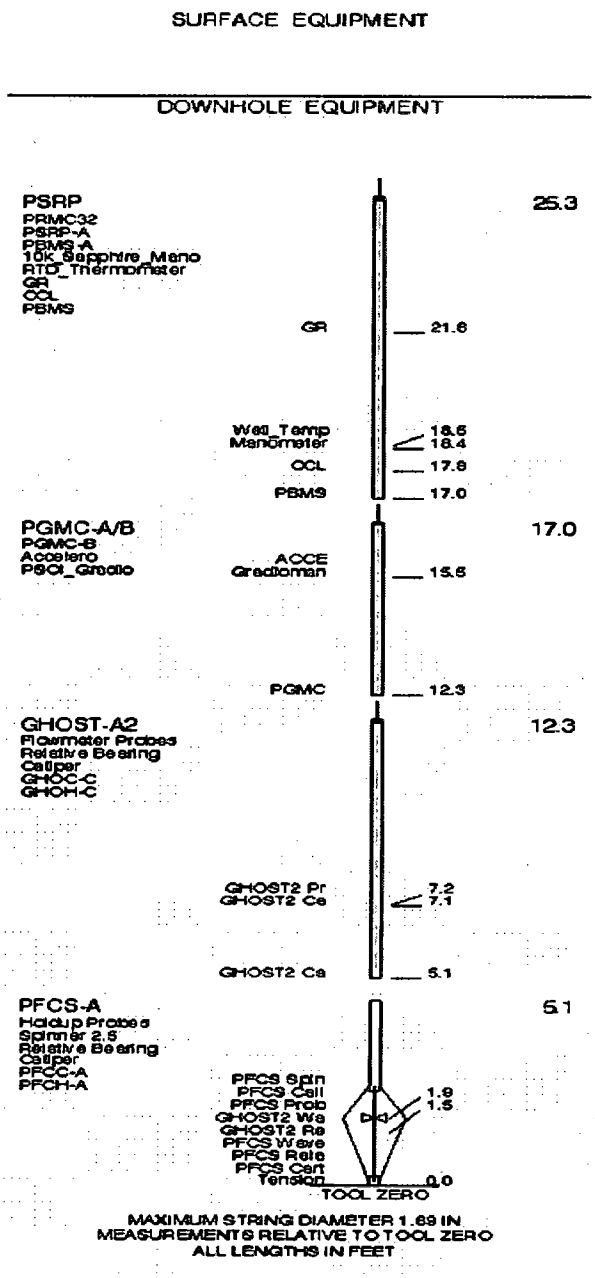
Record any addition Flowing Passes and/or Station Stops as needed or requested.

ROH. Delivery data to interpreter.

Cimarex Energy Company
Federal 13 Com #4
7-Mar-2017

Schlumberger

PL Tool Diagram:



Cimarex Energy Company
Federal 13 Com #4
7-Mar-2017

Schlumberger

Interpretation Results: Surface Flowrate Results - Stage

Formation	Stage	Perforations		Gas (mcfpd)	Oil (bpd)	Water (bpd)	Gas (%)	Oil (%)	Water (%)
Wolfcamp	6	8646	8879	145	--	70	8.0%	--	9.2%
	5	9084	9266	145	--	240	8.0%	--	31.6%
	4	9371	9561	85	--	80	4.7%	--	10.5%
	3	9619	9835	880	--	370	48.5%	--	48.7%
	2	9894	10088	160	--	0	8.8%	--	0.0%
	1	10143	10351	400	--	0	22.0%	--	0.0%
Total				1815	--	760	100.0%	--	100.0%

Cimarex Energy Company
Federal 13 Com #4
7-Mar-2017

Schlumberger

Interpretation Results: Surface Flowrate Results - Detail

Formation	Stage	Perforations		Gas (mcfpd)	Oil (bpd)	Water (bpd)	Gas (%)	Oil (%)	Water (%)	
Wolfcamp	6	8646	8647	120	--	40	6.6%	--	5.3%	
		8689	8690	0	--	0	0.0%	--	0.0%	
		8715	8717	15	--	0	0.8%	--	0.0%	
		8742	8743	0	--	0	0.0%	--	0.0%	
		8760	8761	0	--	0	0.0%	--	0.0%	
		8783	8784	10	--	10	0.6%	--	1.3%	
		8804	8806	0	--	0	0.0%	--	0.0%	
		8830	8832	0	--	10	0.0%	--	1.3%	
		8849	8851	0	--	0	0.0%	--	0.0%	
		8877	8879	0	--	10	0.0%	--	1.3%	
Wolfcamp	5	9084	9085	trace	--	0	trace	--	0.0%	**
		9110	9111	0	--	0	0.0%	--	0.0%	
		9131	9132	0	--	0	0.0%	--	0.0%	
		9147	9148	0	--	0	0.0%	--	0.0%	
		9186	9187	50	--	40	2.8%	--	5.3%	
		9203	9204	0	--	0	0.0%	--	0.0%	
		9217	9219	35	--	40	1.9%	--	5.3%	
		9245	9247	50	--	80	2.8%	--	10.5%	
		9264	9266	10	--	80	0.6%	--	10.5%	
Wolfcamp	4	9371	9372	35	--	30	1.9%	--	3.9%	
		9391	9392	0	--	10	0.0%	--	1.3%	
		9416	9417	10	--	20	0.6%	--	2.6%	
		9432	9433	0	--	0	0.0%	--	0.0%	
		9466	9467	40	--	20	2.2%	--	2.6%	
		9484	9485	0	--	0	0.0%	--	0.0%	
		9504	9506	0	--	0	0.0%	--	0.0%	
		9524	9526	0	--	0	0.0%	--	0.0%	
		9542	9544	0	--	0	0.0%	--	0.0%	
		9559	9561	0	--	0	0.0%	--	0.0%	
Wolfcamp	3	9619	9620	450	--	0	24.8%	--	0.0%	
		9643	9644	20	--	50	1.1%	--	6.6%	
		9665	9666	25	--	50	1.4%	--	6.6%	
		9693	9694	10	--	40	0.6%	--	5.3%	
		9712	9714	35	--	80	1.9%	--	10.5%	
		9750	9752	295	--	0	16.3%	--	0.0%	
		9784	9786	45	--	90	2.5%	--	11.8%	
		9833	9835	0	--	60	0.0%	--	7.9%	

continued on next page

Interpretation Results: Surface Flowrate Results - Detail (Continued)

Wolfcamp	2	9894	9895	45	--	0	2.5%	--	0.0%	
		9923	9924	0	--	0	0.0%	--	0.0%	
		9941	9942	45	--	0	2.5%	--	0.0%	
		9961	9962	35	--	0	1.9%	--	0.0%	
		9985	9986	trace	--	0	trace	--	0.0%	**
		10035	10036	35	--	0	1.9%	--	0.0%	
		10050	10051	trace	--	0	trace	--	0.0%	**
		10068	10070	trace	--	0	trace	--	0.0%	**
		10086	10088	0	--	0	0.0%	--	0.0%	
Wolfcamp	1	10143	10144	115	--	0	6.3%	--	0.0%	
		10157	10158	trace	--	0	trace	--	0.0%	**
		10208	10209	trace	--	0	trace	--	0.0%	**
		10229	10230	285	--	0	15.7%	--	0.0%	
		10244	10246	0	--	0	0.0%	--	0.0%	
		10263	10265	0	--	0	0.0%	--	0.0%	
		10306	10308	0	--	0	0.0%	--	0.0%	
		10349	10351	0	--	0	0.0%	--	0.0%	
Total				1815	--	760	100.0%	--	100.0%	

Cimarex Energy Company
Federal 13 Com #4
7-Mar-2017

Schlumberger

Interpretation Remarks

This interpretation is based on PSP Production Log data recorded on 07-Mar-2017 in memory on slickline. The Field Engineer (FE) is Blake Melcher. Five down and four up main logging passes were recorded over the main logging interval under flowing conditions. Color coding is as follows: D1/U1-Red, D2/U2-Dk Blue, D3/U3-Green, D4/U4-Lt Blue, D5-Violet. Down pass curves have solid coding. Up pass have dashed coding. Station stops are presented as circles at their respective depths.

Main logging passes are correlated by Field Engineer. Top Log Interval (TLI) is observed @ 8400' MD. Bottom Log Interval (BLI) is observed @ 10462' MD.

EOT is observed on the averaged X-Y caliper measurement (C1C2) @ 8603" MD. The average X-Y caliper measurement (C1C2) is consistent and agrees with nominal ID. A nominal ID of 4.892" is used in the interpretation calculations.

Downhole pressure (WPRE) is stable during the main passes. Down and Up passes are used in the interpretation calculations.

Downhole temperature (WTEP) trends are repeatable. Down pass temperatures are used preferentially in the interpretation calculations.

All DEFT (electrical) probes are functioning properly and the basis of the water holdup (Yw) image. DEFT (electrical) probe measurements are most consistent on down passes which are used preferentially in the interpretation calculations. DEFT (electrical) probes provide a confident measurement of water holdup, independent of PVT information, by counting the hydrocarbon bubbles during a dominate water flow regime or water droplets during a dominate gas or oil flow regime.

* GHOST (optical) probes measurements were not consistent between individual probes and passes, and are not used in the interpretation calculations.

The gradiomanometer density measurement (WFDE) is confident and used in the interpretation calculations.

Spinner response is consistent and provides a confident slope and liquid threshold for downhole in-situ spinner calibrations. All spinner passes are used in the spinner calibrations and apparent velocity calculations.

Total downhole rates (QZT) are calculated using the apparent spinner velocity, a nominal casing ID, averaged water holdup (Yw), fluid density (WFDE) and an established water-hydrocarbons flow model. Rates are calculated downhole and presented in downhole barrels on the log snapshots. Calculated downhole rates are then converted to surface rates at standard conditions and presented in the above table.

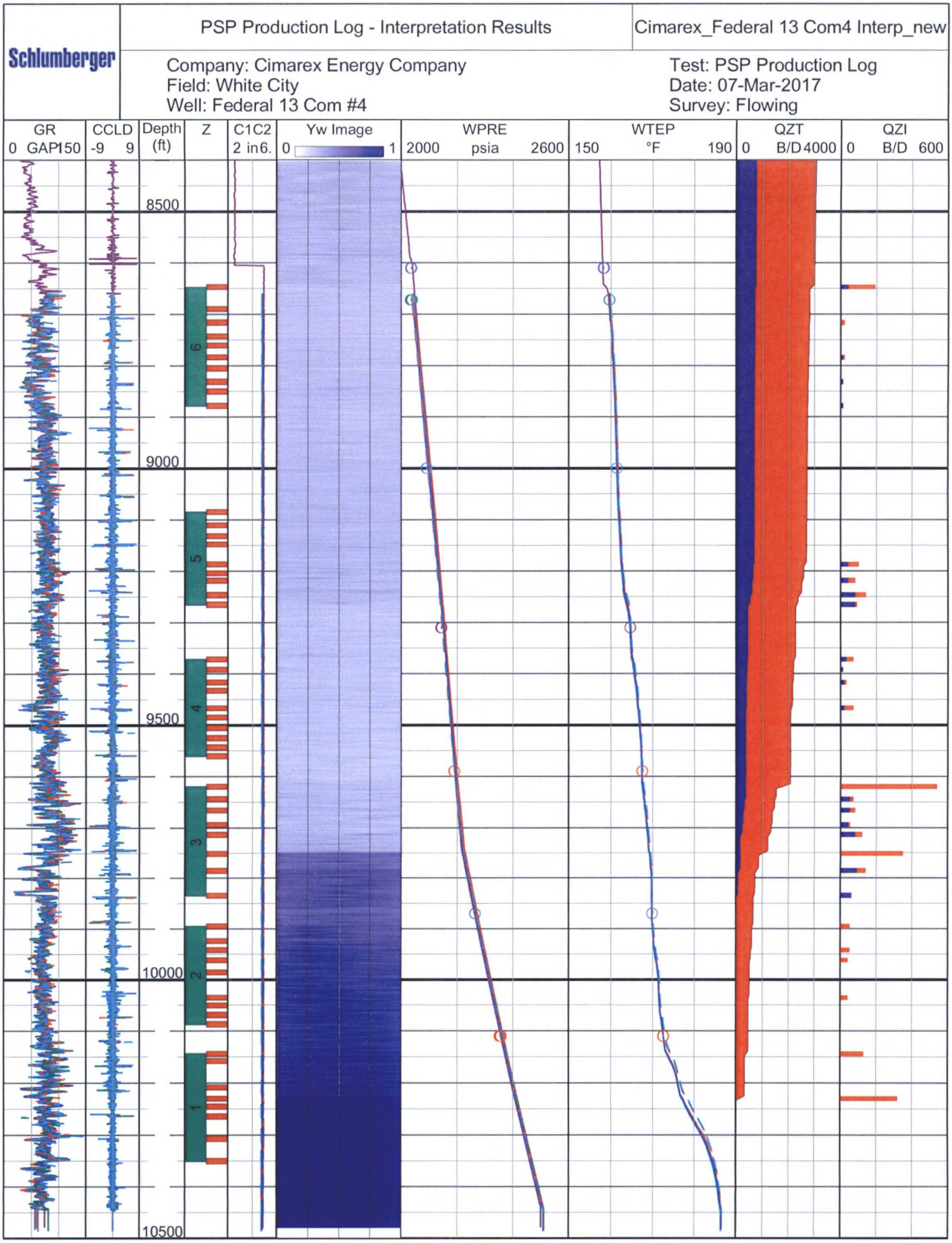
PVT Information: Oil gravity of 52 API, Gas gravity of 0.7178 s.g. Water salinity 63000 ppm was provided by Cimarex .

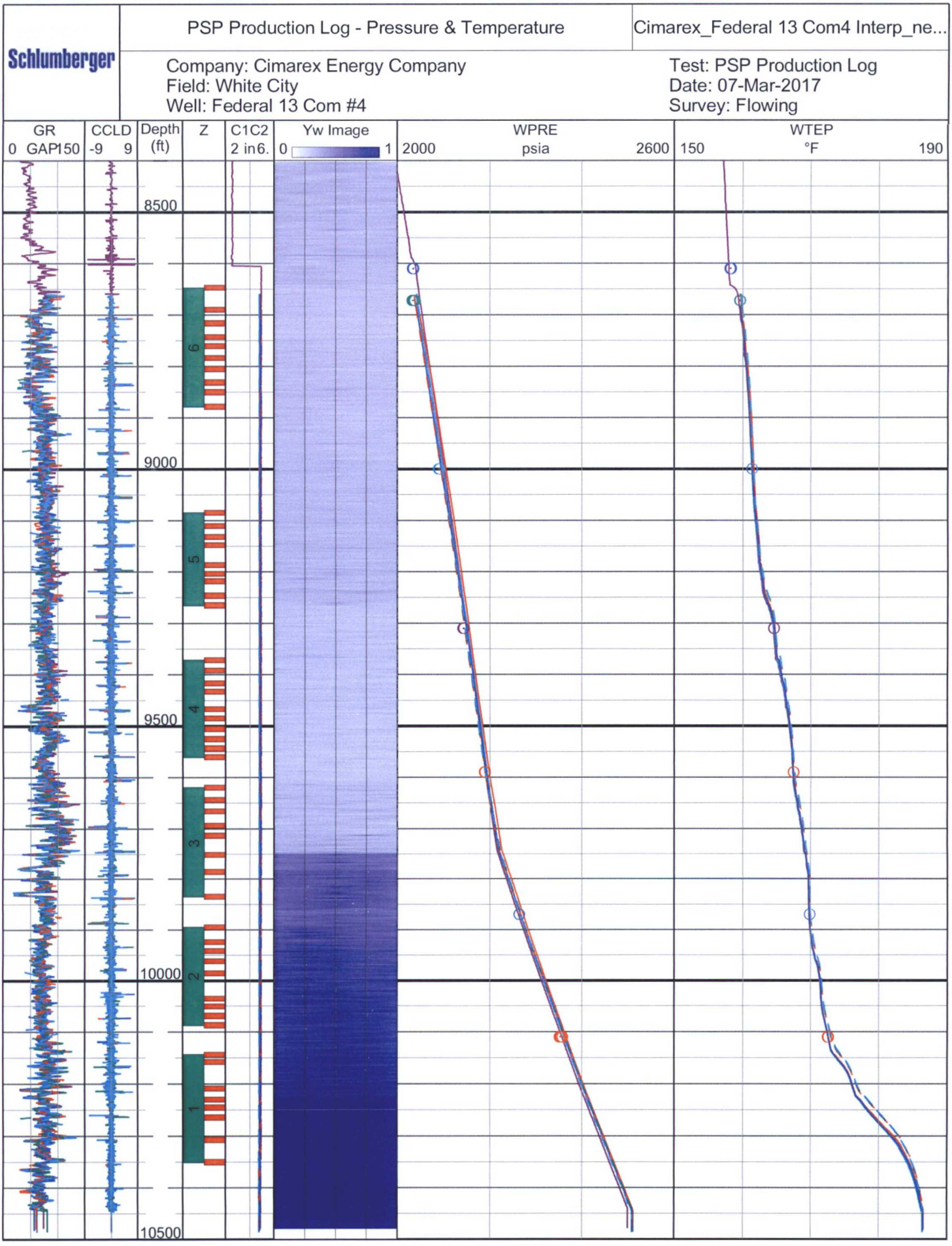
** A report of "trace" gas production is based on temperature, water holdup and density but does not appear to be of sufficient volume to observed on the spinner. Therefore, "trace" gas suggests minimal or negligible gas production, if any, into the wellbore.

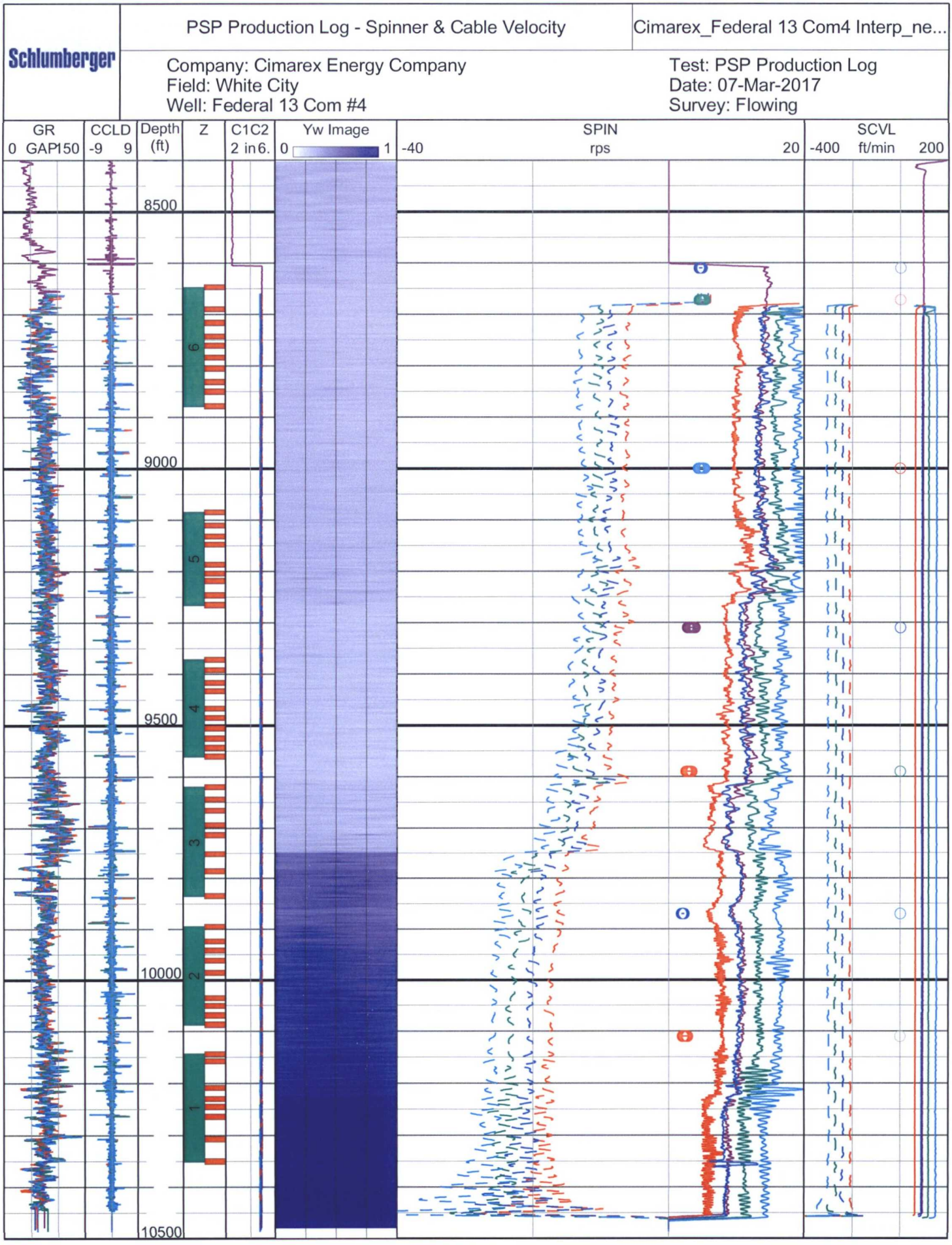
Overall, data quality is high (except for the GHOST optical probes) and the downhole environment is stable resulting in a high level of confidence in gas/water interpretation calculations and results.

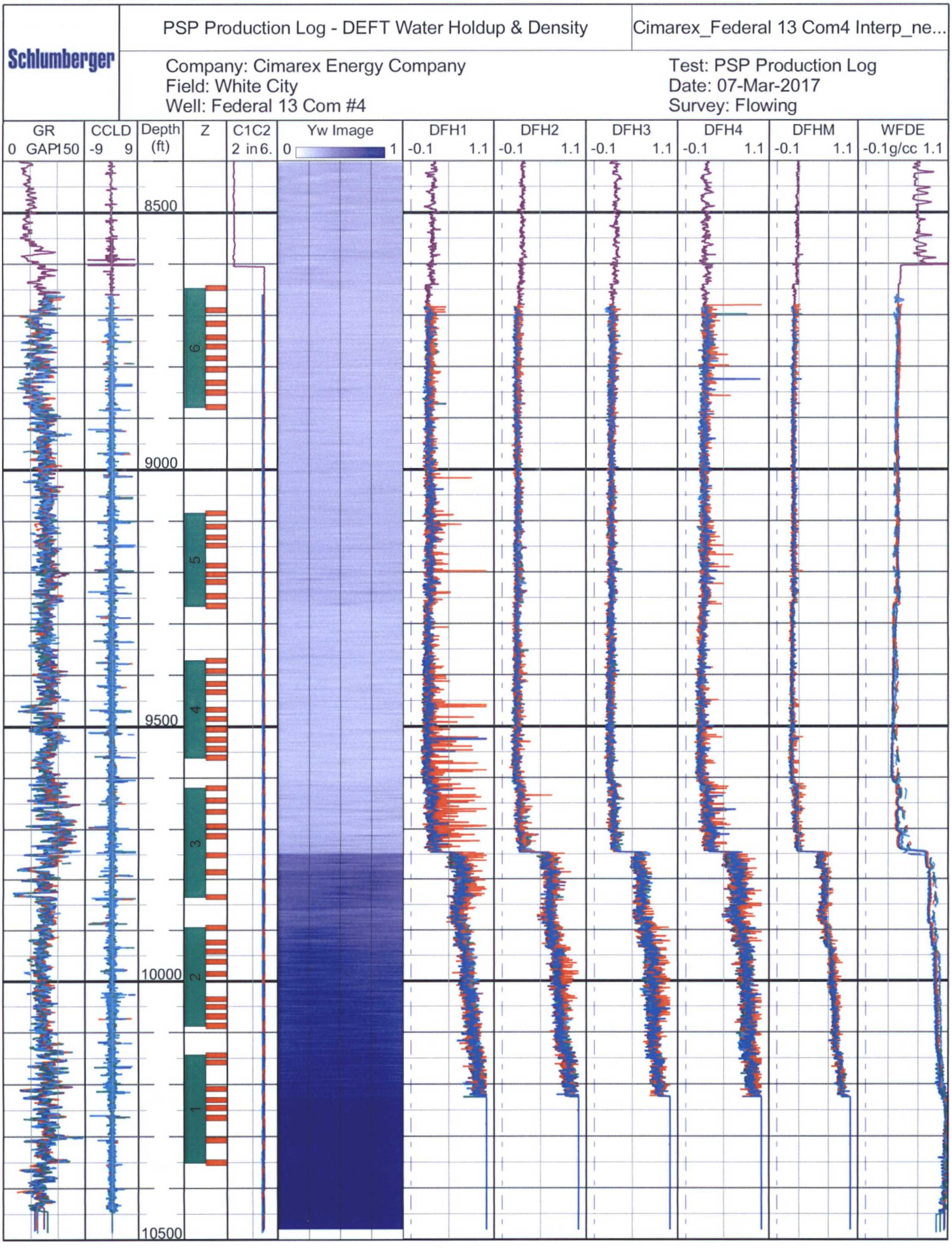
Leonid Kolomytsev, Production Engineer
Schlumberger, Houston, TX, USA

Casey Chadwick, Production Logging Domain Champion,
North America Wireline, Houston, TX, USA


Schlumberger
PSP Production Log - Interpretation Results
Cimarex_Federal 13 Com4 Interp_new
Company: Cimarex Energy Company
Field: White City
Well: Federal 13 Com #4
Test: PSP Production Log
Date: 07-Mar-2017
Survey: Flowing
GR
0 GAPI 150
CCLD
-9 9
Depth
(ft)
Z
C1C2
2 in 6.
Yw Image
0 1
WPRE
2000 psia 2600
WTEP
150 °F 190
QZT
0 B/D 4000
QZI
0 B/D 600
8500
9000
9500
10000
10500
6
5
4
3
2
1


Schlumberger
PSP Production Log - Pressure & Temperature
Cimarex_Federal 13 Com4 Interp_ne...
Company: Cimarex Energy Company
Field: White City
Well: Federal 13 Com #4
Test: PSP Production Log
Date: 07-Mar-2017
Survey: Flowing
GR
0 GAPI150
CCLD
-9 9
Depth
(ft)
Z
C1C2
2 in6.
Yw Image
0 1
WPRE
2000 psia 2600
WTEP
150 °F 190
8500
9000
9500
10000
10500
6
5
4
3
2
1


Schlumberger
PSP Production Log - Spinner & Cable Velocity
Cimarex_Federal 13 Com4 Interp_ne...
Company: Cimarex Energy Company
Field: White City
Well: Federal 13 Com #4
Test: PSP Production Log
Date: 07-Mar-2017
Survey: Flowing
GR
0 GAP150
CCLD
-9 9
Depth
(ft)
Z
C1C2
2 in6.
Yw Image
0 1
SPIN
-40 rps 20
SCVL
-400 ft/min 200
8500
9000
9500
10000
10500
6
5
4
3
2
1


Schlumberger
PSP Production Log - DEFT Water Holdup & Density
Cimarex_Federal 13 Com4 Interp_ne...
Company: Cimarex Energy Company
Field: White City
Well: Federal 13 Com #4
Test: PSP Production Log
Date: 07-Mar-2017
Survey: Flowing
GR
0 GAPI150
CCLD
-9 9
Depth
(ft)
Z
C1C2
2 in 6.
Yw Image
0 1
DFH1
-0.1 1.1
DFH2
-0.1 1.1
DFH3
-0.1 1.1
DFH4
-0.1 1.1
DFHM
-0.1 1.1
WFDE
-0.1g/cc 1.1
8500
9000
9500
10000
10500
6
5
4
3
2
1

PSP & FSI Interpretation Mnemonics

CALI_FSI	Flow Scanner Caliper
CCLC/CCLD	Casing Collar Locator
CVEL/SCVL	Cable Velocity
D1RB	DEFT Relative Bearing Probe 1
DFBFx_FSI (0-5)	FSI Vertical DEFT Bubble Count Array (0-Bot, 5-Top)
DFBM	PSP Mean DEFT Bubble Count
DFBx (1-4)	PSP Individual Probe DEFT Bubble Count
DFHFx_FSI (0-5)	FSI Vertical DEFT Water Holdup Array (0-Bot, 5-Top)
DFHM	PSP Mean DEFT Water Holdup
DFHx (1-4)	PSP Individual Probe DEFT Water Holdup
GHBFx_FSI (0-5)	FSI Vertical GHOST Bubble Count Array (0-Bot, 5-Top)
GHBM2	PSP Mean GHOST Bubble Count
GHBx (5-8)	PSP Individual Probe GHOST Bubble Count
GHHFx_FSI (0-5)	FSI Vertical GHOST Gas Holdup Array (0-Bot,5-Top)
GHHM2	PSP Mean GHOST Gas Holdup
GHHx (5-8)	PSP Individual Probe GHOST Gas Holdup
GR	Gamma Ray
HTEN	Head Tension/Compression
MWFD	Pressure Derived Density
PFC1	PSP Caliper 1 (X)
PFC2	PSP Caliper 2 (Y)
RB_FSI	FSI Relative Bearing
SPIN/SPI1	Full Bore Spinner / Inline Spinner
SPIFx_FSI (0-4)	FSI Vertical Micro-Spinner Array (0-Bot, 4-Top)
WFDE	Gradio Well Fluid Density
WPRE	Well Pressure
WTEP	Well Temperature

Color Coding is typically the same for all the curves that belong to the same pass
RED – Pass One / Dk Blue – Pass Two / Green – Pass Three / Lt Blue – Pass Four

VAFV/VAPP	Apparent fluid velocity (gas, water & oil)
QGI, QOI, QWI	Interval Gas, Oil, Water Rates (down hole unless stated otherwise)
QGT, QOT, QWT	Cumulative Gas, Oil, Water Rates (down hole unless stated otherwise)

Tool Mnemonics List

DEFT	Digital Fluid Entry Tool (Resistivity Probes)
GHOST	Gas Holdup Optical Sensor Tool (Optical Probes)
FSI	Flow Scanner Imager
PSP	Production Services Platform
PBMS	Production Basic Measurement Sonde (Temperature, Pressure, CCL, GR)
PCMS	Production Compression Measurement Sonde
PGMC	Production GradioManometer Carrier (Density)
PFCS	Production Flowmeter Caliper Sonde (Holdup, Caliper, Full Bore Spinner)
PILS	Production In-Line Spinner

McMillan, Michael, EMNRD

From: Amithy Crawford <acrawford@cimarex.com>
Sent: Monday, April 17, 2017 12:31 PM
To: McMillan, Michael, EMNRD
Cc: Terri Stathem
Subject: Amend DHC-4795
Attachments: DHC Approved Federal 13 Com 4.pdf; Ownership Letter Federal 13 com #4.pdf; Cimarex_Federal 13 Com4_Interp_Final_Rpt_DS (002).pdf

Mr. McMillan,

The allocation percentages applied for were 81% Wolfcamp and 19% Cisco Canyon. Ownership is identical. Please see attached production log showing
78% Wolfcamp and 22% Cisco Canyon.

Please let me know if you need any additional information in order to amend our DHC-4795.

Thank you,

Amithy Crawford
600 N. Marienfeld St. Suite 600
Midland, TX 79701
Direct Phone: 432-620-1909