

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
 - 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

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

DHC-4793

- [1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]
 [A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Cimarex Energy Co of Colorado - 162683
 Well:
 Grynberg 11 Fed Com 4 - 30-015-34197

Check One Only for [B] or [C]

- [B] Commingling - Storage - Measurement
☒ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

- [C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

- [D] Other: Specify _____

Pools:
 Sage Draw, Wolfcamp
 E (Gas) 96890
 White City, Penn (Gas)
 87280

- [2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ☐ Does Not Apply
 [A] ☒ Working, Royalty or Overriding Royalty Interest Owners
 [B] ☐ Offset Operators, Leaseholders or Surface Owner
 [C] ☐ Application is One Which Requires Published Legal Notice
 [D] ☒ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
 [E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,
 [F] ☐ Waivers are Attached

- [3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

- [4] **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.

Aricka Easterling

Aricka Easterling

Regulatory Analyst

3/30/16

Print or Type Name

Signature

Title

Date

aeasterling@cimarex.com
 e-mail Address

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

RECEIVED OOD
2016 APR -5 A 9:36



March 30, 2016

New Mexico Oil Conservation Division
Mr. Michael McMillian
1220 South St. Francis Dr.
Santa Fe NM, 87505

RE: Grynberg 11 Federal Com 4
Sec.11-25S-26E
30-015-34197
C-107A Wolfcamp and Ciscamp

Dear Mr. McMillian,
Enclosed is an original form C-107A (Application for Downhole Commingle) for the well mentioned above.

Cimarex proposes perf and stimulate the Ciscamp 9997'-10210'. Perf and stimulate the Wolfcamp 9142'-9689'. Allocation percentages for each zone will be based on production log and furnished after production and cleanup.

It is anticipated that the reservoir pressure from these two shale zones will be compatible and the resulting volumes would not warrant a casing/ tubing dual completion.

Royalty, overriding, and working interest owners are diverse in each zone.

Please find enclosed the following documents for the subject well:

- Administrative application check list
- Plats
- Recomplete procedure
- Wellbore diagram
- Owner notification letter

If you have any questions or need further information. Please call me at 918-560-7060.

Sincerely,

Aricka Easterling
Regulatory Analyst

Cimarex Energy Co.

202 S Cheyenne Ave

Suite 1000

Tulsa, Oklahoma 74103-4346

Phone 918.585.1100

Fax 918.749.8059



March 30, 2016

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Interest Owners

RE: Request for a Commingle Gas Production
Grynberg 11 Federal Com 4
API # 30-015-34197
Sec. 11-25S-26E

Pool: Sage Draw, Wolfcamp E (Gas) (96890)
White City; Penn (Gas) (87280)
Eddy County, New Mexico

To Whom It May Concern:

This is to advise you that Cimarex Energy Co of Colorado is filing an application with the New Mexico Oil Conservation Division ("NMOCD") seeking approval for a Gas Commingling & measurement & sales for the above mentioned wells.

A copy of our application submitted to the Division is attached.

Any objection or requests that a hearing should be held regarding this application must be submitted to the New Mexico Oil Conservation Division Santa Fe Office within 20 days from the date of this letter.

Please contact me should you have any questions or need anything further.

Thank you in advance for your time.

Sincerely,

Aricka Easterling
Regulatory Analyst

Enclosure

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



Working, Royalty, or Overriding Royalty Interest Owners
Grynberg 11 Federal Com 4
Sec. 11-25S-26E
API: 30-015-34197

Celeste C. Grynberg
5000 S. Quebec St., Ste 5000
Denver, CO 80237

USPS certified Mail #
7014 0510 0001 2310 9417

Gates Properties Ltd.
PO BOX 81119
Midland, TX 79708

USPS certified Mail #
7014 0510 0001 2310 9479

Reva Sandra Vinnik
5062 E. Princeton Ave
Englewood, CO 80110

USPS certified Mail #
7014 0510 0001 2310 9486

Feil Living Trust
Marie A. Feil Trustee
6096 Upland Terrace S.
Seattle, WA 98118

USPS certified Mail #
7014 0510 0001 2310 9493

BLM
PO BOX 5810 TA
Denver, CO 80217

BLM
PO BOX 5640
Denver, CO 80217

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240

DISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised JUNE 10, 2003
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-015-34197	Pool Code 87280	Pool Name White City; Penn (Gas)
Property Code 34059	Property Name GRYNBERG 11 FEDERAL COM	Well Number 4
OGRID No. 162683	Operator Name Cimarex Energy Company	Elevation 3360'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	11	25-S	26-E		880	NORTH	1270	WEST	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
Dedicated Acres 640	Joint or Infill	Consolidation Code	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

GEODETIC COORDINATES NAD 27 NME Y=417943.3 N X=520237.4 E LAT.=32°08'56.49" N LONG.=104°16'04.60" W	OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief. <i>Hope Knauls</i> Signature Hope Knauls Printed Name hknauls@cimarex.com Title 4-15-2015 Date
	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. MAY 14, 2005 Date Surveyed JR Signature & Seal of Professional Surveyor
	<i>Gary Bidson 5/14/05</i> 05.11.0736
	Certificate No. GARY BIDSON 12841

DISTRICT I
1625 N. FRANCIS DR., HOBBS, NM 88240

DISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III
1000 Rio Brazos Ed., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised JUNE 10, 2003
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-015-34197	Pool Code 96890	Pool Name Sage Draw, Wolfcamp, E (G)
Property Code 34059	Property Name GRYNBERG 11 FEDERAL COM	Well Number 4
OGRID No. 162683	Operator Name Cimarex Energy Company	Elevation 3360'

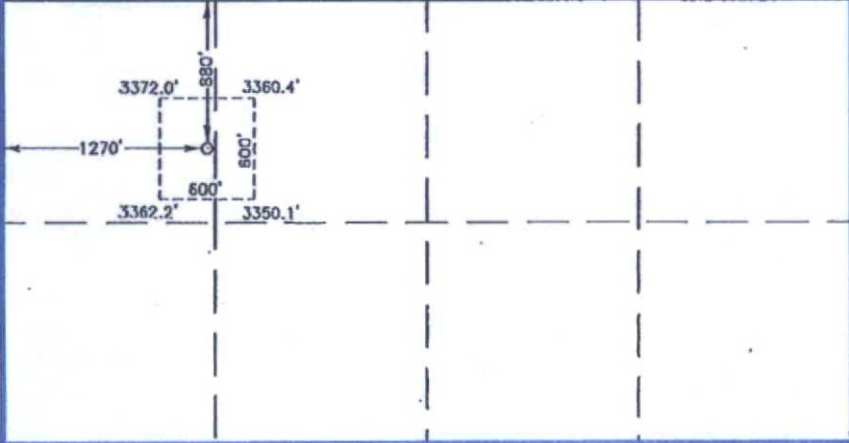
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	11	25-S	26-E		880	NORTH	1270	WEST	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
Dedicated Acres 320	Joint or Infill	Consolidation Code	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

	OPERATOR CERTIFICATION <i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.</i> Signature: <u>Hope Knauls</u> Printed Name: <u>Hope Knauls</u> Title: <u>hknauls@cimarex.com</u> Date: <u>4-15-2015</u>
GEODETTIC COORDINATES NAD 27 NME Y=417943.3 N X=520237.4 E LAT.=32°08'56.49" N LONG.=104°16'04.60" W	SURVEYOR CERTIFICATION <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> Date Surveyed: <u>MAY 14, 2005</u> Signature & Seal of Professional Surveyor: <u>GARY B. HUDSON</u> Certificate No. <u>GARY HUDSON</u> 12041



KB - 19' above GL

Cimarex Energy Co. of Colorado

Grynberg 11 Federal 4

API #: 30-015-34193

SHL - 880' FNL & 1270' FWL

Sec. 11, T-25-S, R-26-E, Eddy Co., NM

M. Karner

1/12/2016

13-3/8", 48# H40 csg @ 221'
cmtd w/ 230 sx, cmt circ

9-5/8", 40# J-55 csg @ 2675'
cmtd w/ 780 sx, cmt circ

No CBL beyond 7100', cement is present to 7100'.

363 jts 2-7/8" L-80 8rd EUE Tbg

DV Tool @ 7327' in 5.5"

TOC @ 8980' in 5.5" by Halliburton RCBL, Jan 17, '06

2-7/8" x 2-3/8" X/O @ 11,165'

2-3/8" OD 1.812" ID 'F' Landing Nipple @ 11165'

RTTS Packer 2-3/8" x 5 1/2" 13-20# @ 11172'

Morrow perfs (11215' - 11222') (6spf)

5 1/2" CBP @ 11362' w/1 sx sand on top

Morrow perfs (11398' - 11403') (6spf)

5 1/2" CBP @ 11516'

Morrow perfs (11530' - 11534') (6spf)

5 1/2" CBP @ 11540'

Morrow perfs (11544' - 11550') (6spf)

PBTD @ 12035'

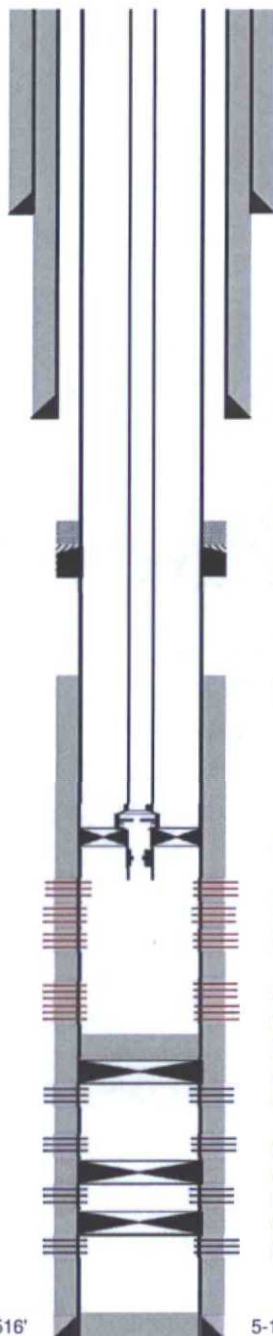
5-1/2" 17# P-110 LT&C @ 12029' cmtd w/ 2245 sx TOC 8980'

TD @ 12081'



PROPOSED WBD
KB - 19' above GL

Cimarex Energy Co. of Colorado
Grynberg 11 Federal Com 4
API #: 30-015-34197
880' FNL & 1270' FWL
Sec. 11, T25S, R26E, Eddy Co., NM
M. Karner 3/28/2016



13-3/8" 48# H-40 csg @ 221'
cmted w/ 230 sx, Cmt circ.

9-5/8" 40# J-55 @ 2675'
cmted w/ 780 sx, Cmt circ.

No CBL above 7100', cement is present to 7100'.

DV @ 7,327'

TOC @ 8,980' by CBL

Arrowset 1X pkr @ $\pm 9,100'$ & O/O tool w/ "X" nipple

Wolfcamp perms (9,142' - 9,287') *PROPOSED*

Wolfcamp perms (9,322' - 9,476') *PROPOSED*

Wolfcamp perms (9,518' - 9,689') *PROPOSED*

Cisco Canyon perms (9,997' - 10,081') *PROPOSED*

Cisco Canyon perms (10,100' - 10,210') *PROPOSED*

PBTD @ $\pm 10,930'$

CIBP @ $\pm 11,165'$ w/ 25 sx cmt

Morrow perms (11,215'-222')

Morrow perms (11,398'-403' & 11,449'-456')

CIBP @ 11,516'

Morrow perms (11,530'-534')

CIBP @ 11,540'

Morrow perms (11,533'-550')

PBTD @ 11516'
TD @ 12081'

5-1/2" 17# P-110 csg @ 12081'
cmted w/ 2245 sx

District I
1625 N. French Drive, Hobbs, NM 88240
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1000 Rio Brazos Road, Aztec, NM 87410
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1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-107A
Revised August 1, 2011
APPLICATION TYPE
☒ Single Well
☐ Establish Pre-Approved Pools
EXISTING WELLBORE
☒ Yes ☐ No

APPLICATION FOR DOWNHOLE COMMINGLING

Cimarex Energy Co. of Colorado 202 S Cheyenne Ave, Suite 1000 Tulsa, OK 74103
Operator Address

Grynberg 11 Federal Com 4 (Unit J) Sec. 11-25S-26E Eddy
Lease Well No. Unit Letter-Section-Township-Range County

OGRID No. 162683 Property Code 34059 API No. 30-015-34197 Lease Type: ☒ Federal ☐ State ☐ Fee

DATA ELEMENT	UPPER ZONE	INTERMEDIATE ZONE	LOWER ZONE
Pool Name	Sage Draw, Wolfcamp E (Gas)		White City; Penn (Gas)
Pool Code	96890		87280
Top and Bottom of Pay Section (Perforated or Open-Hole Interval)	9142'-9689'		9997'-10210'
Method of Production (Flowing or Artificial Lift)			
Bottomhole Pressure (Note: Pressure data will not be required if the bottom perforation in the lower zone is within 150% of the depth of the top perforation in the upper zone)	Within 150% of bottom Perfs		Within 150% of bottom Perfs
Oil Gravity or Gas BTU (Degree API or Gas BTU)	To be supplied		To be supplied
Producing, Shut-In or New Zone	New zone		New Zone
Date and Oil/Gas/Water Rates of Last Production. (Note: For new zones with no production history, applicant shall be required to attach production estimates and supporting data)	Date: Production Rates: Log Attached	Date: Production Rates: Log Attached	Date: Production Rates: Log Attached
Fixed Allocation Percentage (Note: If allocation is based upon something other than current or past production, supporting data or explanation will be required.)	Oil Gas 75 % 75 %	Oil Gas % %	Oil Gas 25 % 25 %

ADDITIONAL DATA

Are all working, royalty and overriding royalty interests identical in all commingled zones? Yes ☐ No ☒
If not, have all working, royalty and overriding royalty interest owners been notified by certified mail? Yes ☒ No ☐
Are all produced fluids from all commingled zones compatible with each other? Yes ☒ No ☐
Will commingling decrease the value of production? Yes ☐ No ☒
If this well is on, or communitized with, state or federal lands, has either the Commissioner of Public Lands or the United States Bureau of Land Management been notified in writing of this application? Yes ☒ No ☐
NMOCD Reference Case No. applicable to this well: _____

Attachments:
C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
Production curve for each zone for at least one year. (If not available, attach explanation.)
For zones with no production history, estimated production rates and supporting data.
Data to support allocation method or formula.
Notification list of working, royalty and overriding royalty interests for uncommon interest cases.
Any additional statements, data or documents required to support commingling.

PRE-APPROVED POOLS

If application is to establish Pre-Approved Pools, the following additional information will be required:

List of other orders approving downhole commingling within the proposed Pre-Approved Pools
List of all operators within the proposed Pre-Approved Pools
Proof that all operators within the proposed Pre-Approved Pools were provided notice of this application.
Bottomhole pressure data.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.
SIGNATURE Aricka Easterling TITLE _____ Regulatory Analyst _____ DATE 3/30/16
TYPE OR PRINT NAME Aricka Easterling TELEPHONE NO. (918) 560-7060
E-MAIL ADDRESS aeasterling@cimarex.com

Zones (FT)	Water (STB/D)	Oil (STB/D)	Gas Mscf/D
9213-9262	42.62	3.71	123.04
9408-9681	67.72	13.86	489.29
9726-9775	82	14.8	537.58
9797-9801	8.05	3.37	114.26
10162-10241	37.89	6.81	246.65
10269-10383	27.63	4.99	196.91

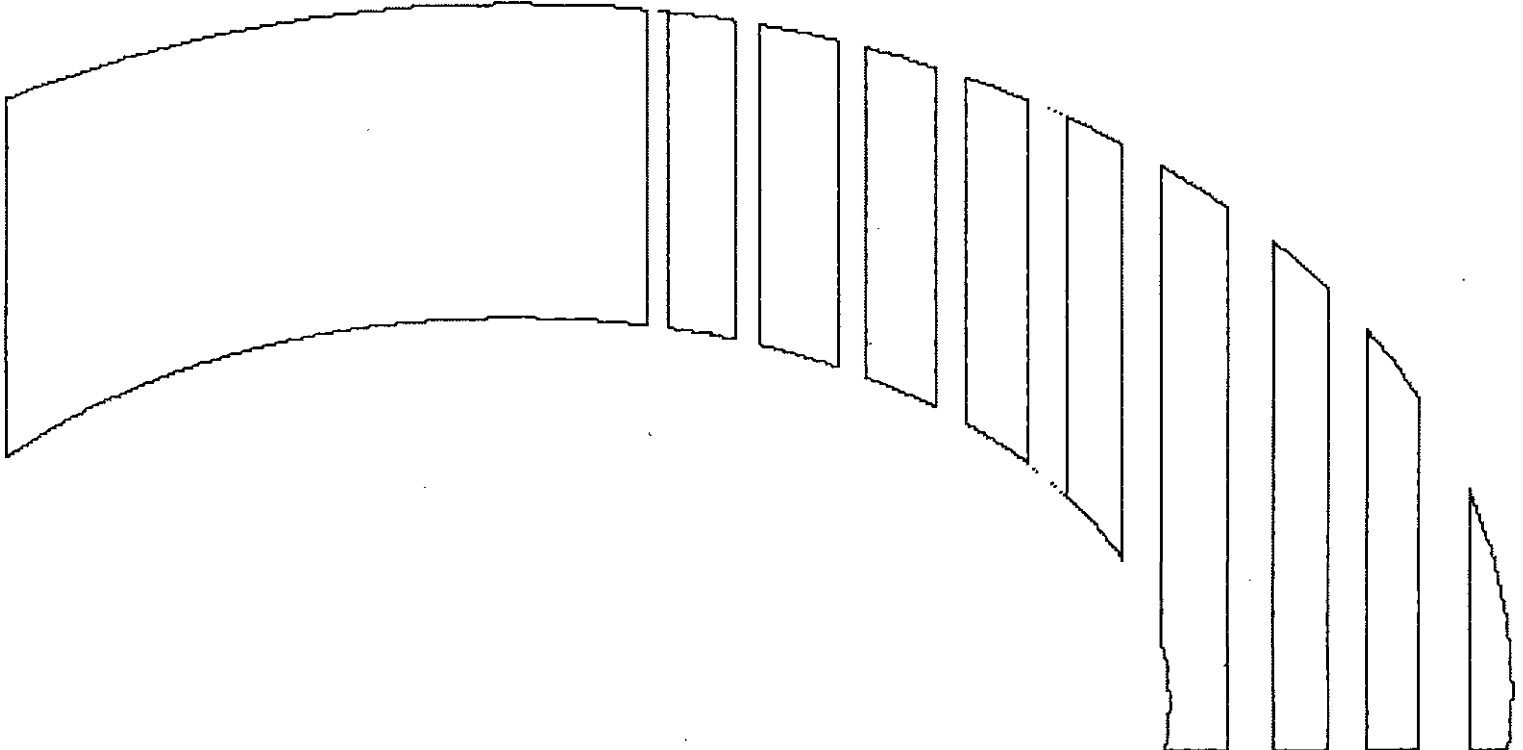
Total:	265.91	47.54	1707.73
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Wolfcamp					
Sum Gas	Gas %	Sum Oil	Oil %	Sum WTR	WTR %
1264.17	74.03%	35.74	75.18%	200.39	75.36%
Cisco-Canyon					
Sum Gas	Gas %	Sum Oil	Oil %	Sum WTR	WTR %
443.56	25.97%	11.8	24.82%	65.52	24.64%

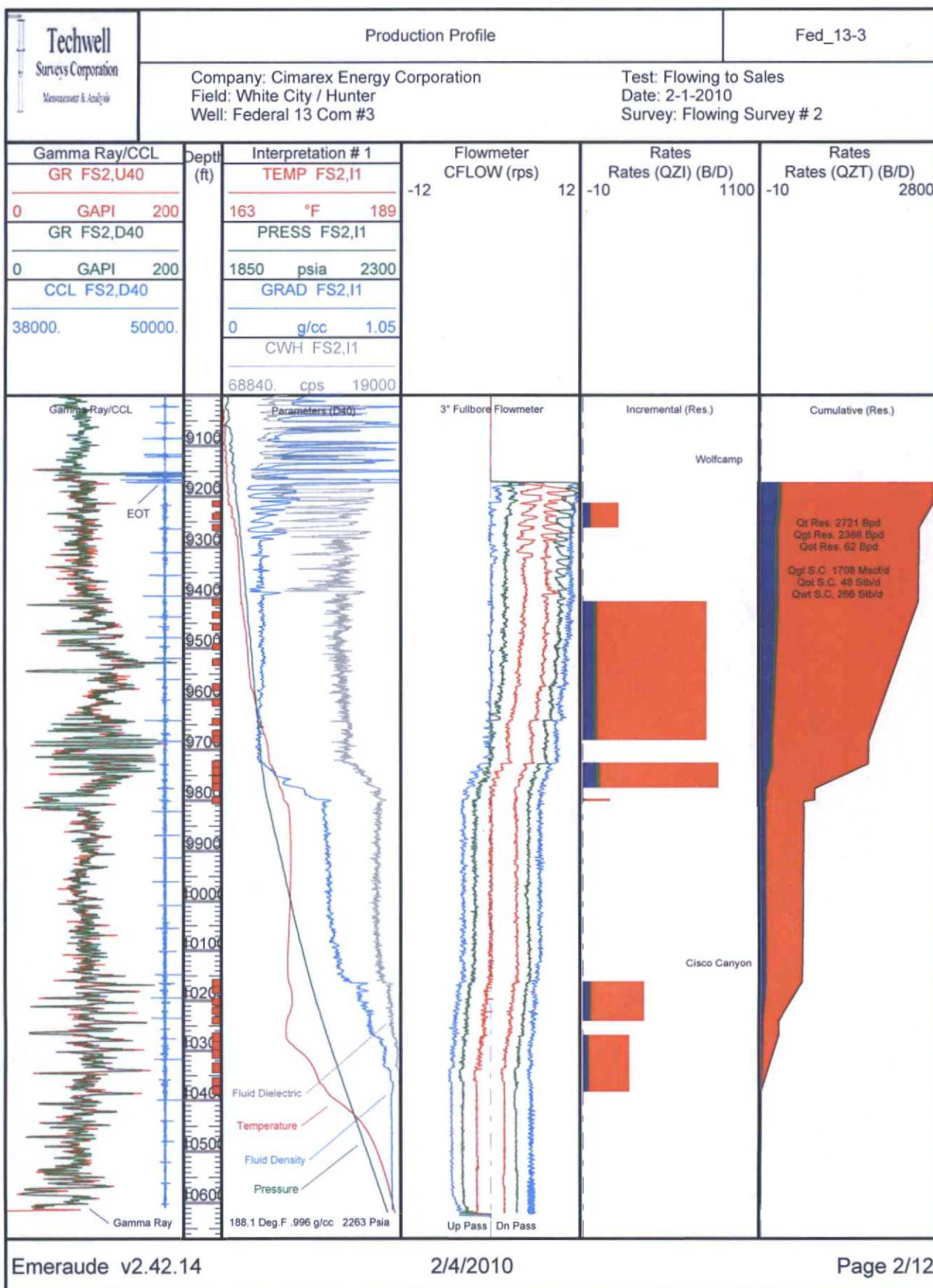
	Zone Contributions; S.C.			Fed_13-3																																	
	Company: Cimarex Energy Corporation Field: White City / Hunter Well: Federal 13 Com #3			Test: Flowing to Sales Date: 2-1-2010 Survey: Flowing Survey # 2																																	
<table> <tr> <th>Zones ft</th><th>Water STB/D</th><th>Oil STB/D</th><th>Gas Mscf/D</th></tr> <tr> <td>9213.0-9262.0</td><td>42.62</td><td>3.71</td><td>123.04</td></tr> <tr> <td>9408.0-9681.0</td><td>67.72</td><td>13.86</td><td>489.29</td></tr> <tr> <td>9726.0-9775.0</td><td>82.00</td><td>14.80</td><td>537.58</td></tr> <tr> <td>9797.0-9801.0</td><td>8.05</td><td>3.37</td><td>114.26</td></tr> <tr> <td>10162.0-10241.0</td><td>37.89</td><td>6.81</td><td>246.65</td></tr> <tr> <td>10269.0-10383.0</td><td>27.63</td><td>4.99</td><td>196.91</td></tr> <tr> <td>Total</td><td>265.92</td><td>47.54</td><td>1707.73</td></tr> </table>						Zones ft	Water STB/D	Oil STB/D	Gas Mscf/D	9213.0-9262.0	42.62	3.71	123.04	9408.0-9681.0	67.72	13.86	489.29	9726.0-9775.0	82.00	14.80	537.58	9797.0-9801.0	8.05	3.37	114.26	10162.0-10241.0	37.89	6.81	246.65	10269.0-10383.0	27.63	4.99	196.91	Total	265.92	47.54	1707.73
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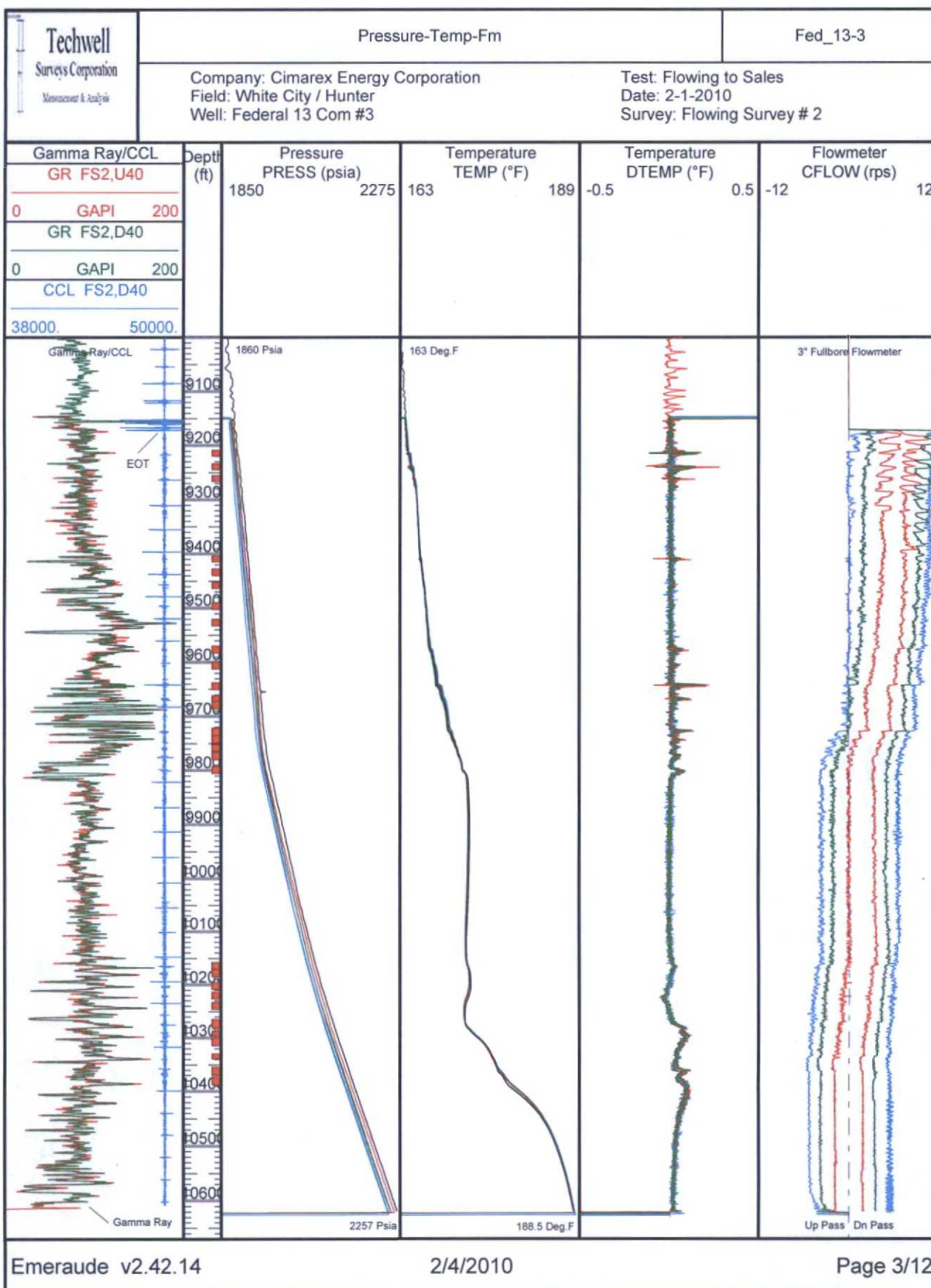
Production Profile Interpretation Report

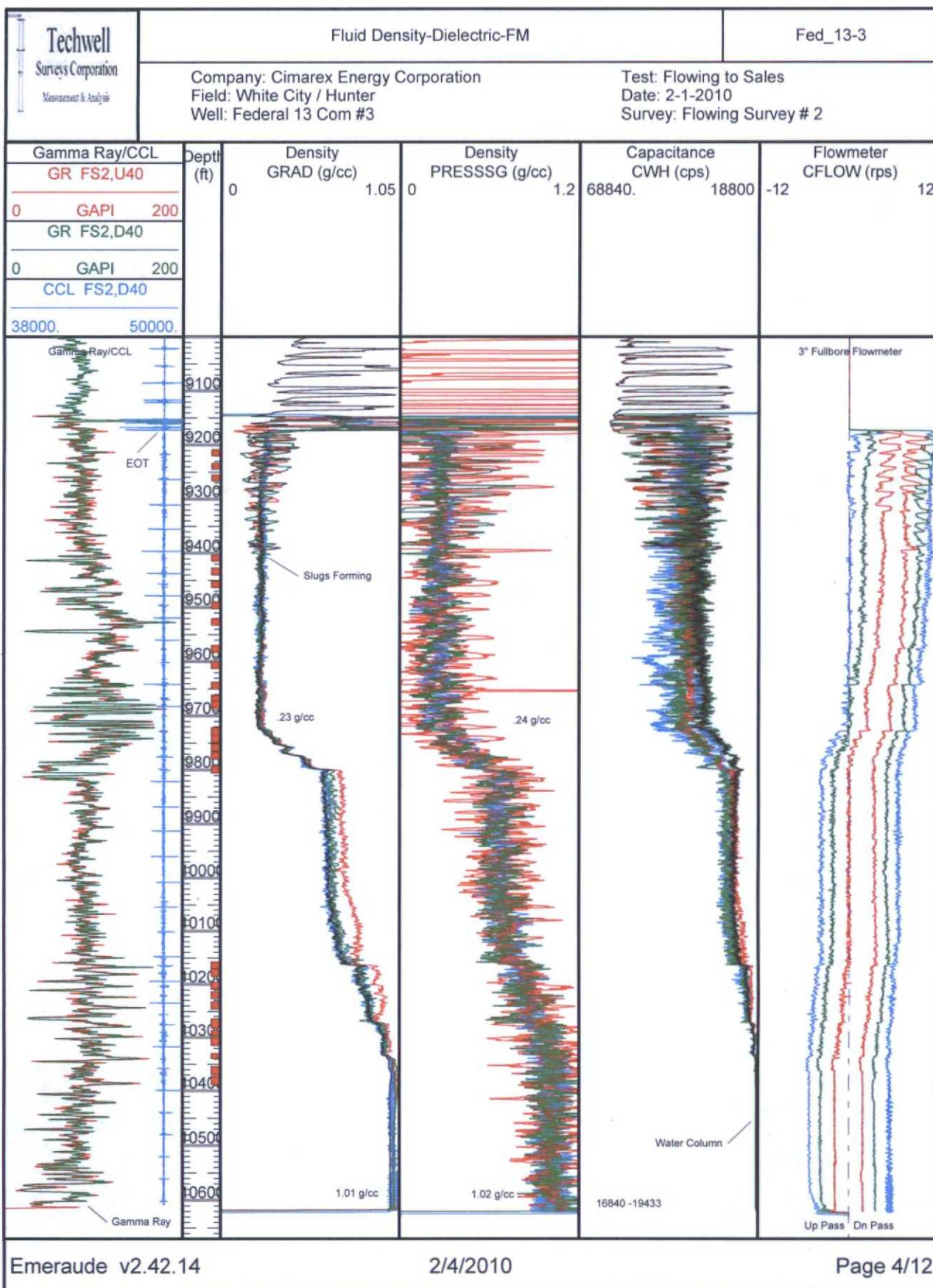
Company:	Cimarex Energy Corporation
Field:	White City / Hunter
Well:	Federal 13 Com. #3
Survey Date:	2-1-2010
Service Company:	Techwell Surveys Corporation
Interpretation Date:	2-3-2010
Analyst:	JD Taylor
PL Survey #2	"Load Recovered"

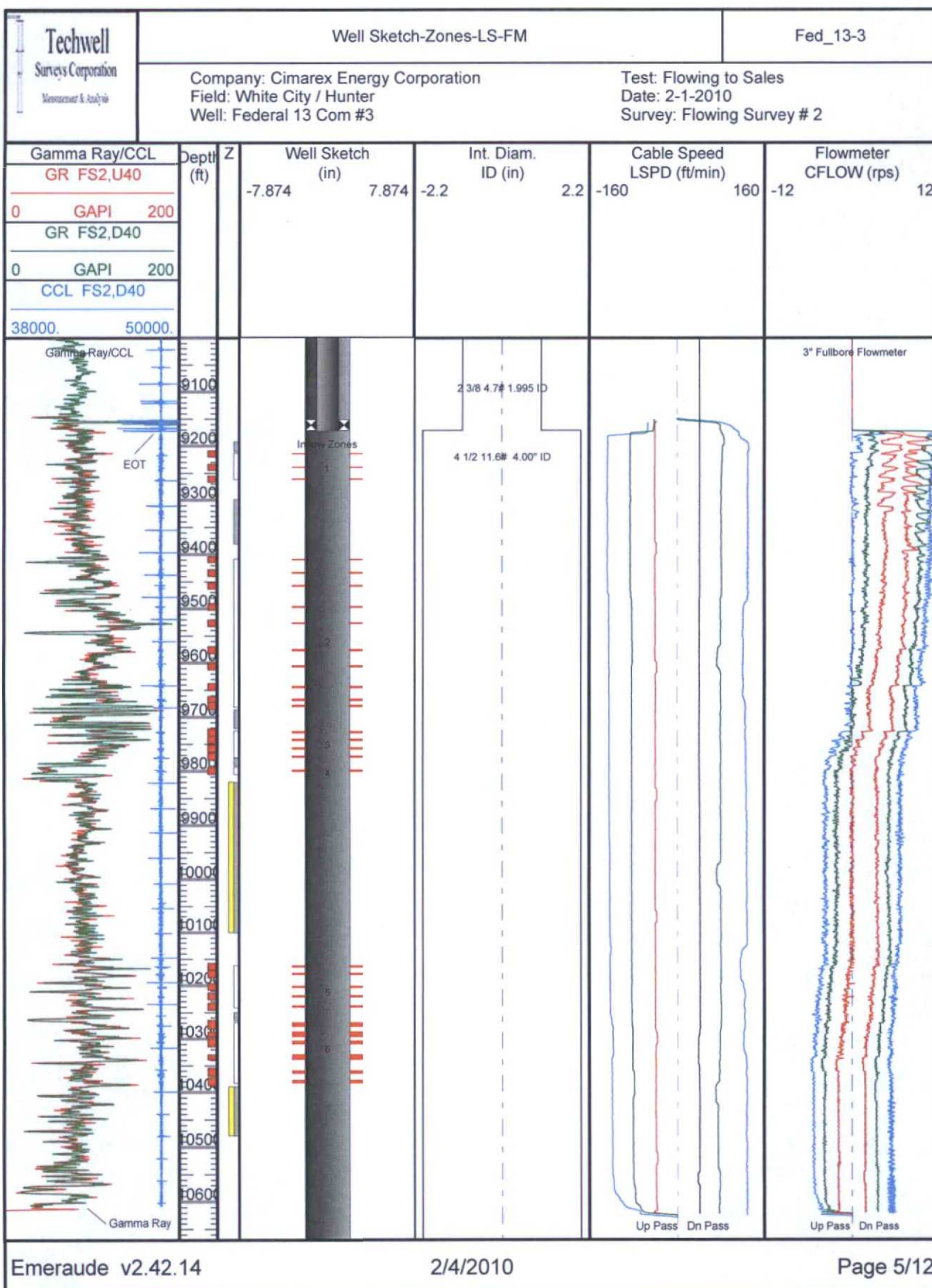


	Job Information		Fed_13-3																					
	Company: Cimarex Energy Corporation Field: White City / Hunter Well: Federal 13 Com #3		Test: Flowing to Sales Date: 2-1-2010 Survey: Flowing Survey # 2																					
<table border="0"> <tr> <td>Survey date</td> <td>2-1-2010</td> <td>Interpretation date</td> <td>2-3-2010</td> </tr> <tr> <td>Service company</td> <td>Techwell Surveys Corporation</td> <td>Done by</td> <td>JD Taylor</td> </tr> </table>					Survey date	2-1-2010	Interpretation date	2-3-2010	Service company	Techwell Surveys Corporation	Done by	JD Taylor												
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<table border="0"> <tr> <td colspan="2">SURVEY</td> <td colspan="2">Flowing Survey # 2</td> </tr> <tr> <td>Surface rates</td> <td></td> <td>Gas</td> <td>1708 Mscf/D</td> </tr> <tr> <td>Oil</td> <td>48 STB/D</td> <td>Water</td> <td>266 STB/D</td> </tr> </table>					SURVEY		Flowing Survey # 2		Surface rates		Gas	1708 Mscf/D	Oil	48 STB/D	Water	266 STB/D								
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<table border="0"> <tr> <td colspan="2">TOOLS</td> <td colspan="2">Capacitance</td> </tr> <tr> <td>String O.D.</td> <td>1.375 in</td> <td>Calib. type</td> <td>Yw vs norm. resp.</td> </tr> <tr> <td>Spinner blade O.D.</td> <td>3. in</td> <td>Default chart</td> <td>CWH Water-Hydrocarbon</td> </tr> <tr> <td>Density</td> <td>Corrected</td> <td>100% Water</td> <td>19335 cps</td> </tr> <tr> <td></td> <td></td> <td>100% HC</td> <td>68840. cps</td> </tr> </table>					TOOLS		Capacitance		String O.D.	1.375 in	Calib. type	Yw vs norm. resp.	Spinner blade O.D.	3. in	Default chart	CWH Water-Hydrocarbon	Density	Corrected	100% Water	19335 cps			100% HC	68840. cps
TOOLS		Capacitance																						
String O.D.	1.375 in	Calib. type	Yw vs norm. resp.																					
Spinner blade O.D.	3. in	Default chart	CWH Water-Hydrocarbon																					
Density	Corrected	100% Water	19335 cps																					
		100% HC	68840. cps																					
<table border="0"> <tr> <td>INTERPRETATION</td> <td>Interpretation # 1</td> </tr> <tr> <td>Density offset</td> <td>0 g/cc</td> </tr> <tr> <td>Capacitance offset</td> <td>0 cps</td> </tr> </table>					INTERPRETATION	Interpretation # 1	Density offset	0 g/cc	Capacitance offset	0 cps														
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Comments RIH with PL Stack (Flowmeter, Temperature, Quartz Pressure, Fluid Density, Fluid Dielectric, Gamma Ray/CCL, Telemetry). Well logged flowing to sales on a 26/64 choke with 800 psi on tbq. string and 1250 psi csg., line pressure 709 psi., gas injection system inactive! Recorded multiple passes in both directions to obtain flow profile followed by stationary measurements every 1000' from 9200' to surface. Slug phase flow pattern is developing at 9400' and continues to surface. Major production sourced from the wolfcamp (75% of Qt). Line pressure up from 132 psi to 709 psi since the previous survey (1-4-10) while BHP has dropped from 4060 psia to 2263 psia. Apparent down flow (ADF) reduced but still indicated at 10348 with minor oil phase entering the casing string at 10360 (deviated hole @10.5 deg.). Depth corrected to Techwell PL log dated 1-4-2010. Federal 13 Com #3 API # 30-015-33785 SHL: 725' FSL & 1750' FEL BHL: 1138' FSL & 1693' FEL Sec. 13, T25S, R26E Eddy Co., New Mexico JD Taylor Techwell Surveys Corporation 432-664-4978																								
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Company: Cimarex Energy Corporation
 Field: White City / Hunter
 Well: Federal 13 Com #3

Test: Flowing to Sales
 Date: 2-1-2010
 Survey: Flowing Survey # 2

Zones ft	Water STB/D	Oil STB/D	Gas Mscf/D
9213.0-9262.0	42.62	3.71	123.04
9408.0-9681.0	67.72	13.86	489.29
9726.0-9775.0	82.00	14.80	537.58
9797.0-9801.0	8.05	3.37	114.26
10162.0-10241.0	37.89	6.81	246.65
10269.0-10383.0	27.63	4.99	196.91
Total	265.92	47.54	1707.73

Techwell Surveys Corporation Measurement & Analysis	Zone Contributions; Res. Cond.		Fed_13-3
	Company: Cimarex Energy Corporation Field: White City / Hunter Well: Federal 13 Com #3		Test: Flowing to Sales Date: 2-1-2010 Survey: Flowing Survey # 2

Zones ft	Qt res. B/D	Production %
9213.0-9262.0	219.78	8.26
9408.0-9681.0	767.00	28.82
9726.0-9775.0	841.66	31.63
9797.0-9801.0	169.37	6.36
10162.0-10241.0	377.89	14.20
10269.0-10383.0	285.40	10.72

Contributions by phase

Zones ft	Qw res. B/D	Qo res. B/D	Qg res. B/D	W O G
9213.0-9262.0	43.41	4.83	171.54	
9408.0-9681.0	69.00	18.06	679.94	
9726.0-9775.0	83.65	19.32	738.70	
9797.0-9801.0	8.22	4.40	156.76	
10162.0-10241.0	38.69	8.89	330.32	
10269.0-10383.0	28.20	6.50	250.70	

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Company: Cimarex Energy Corporation
Field: White City / Hunter
Well: Federal 13 Com #3

Test: Flowing to Sales
Date: 2-1-2010
Survey: Flowing Survey # 2

Zone ft	Corr. factor	Vm ft/min	Q downhole B/D	Contribution %
9213.0-9262.0	0.74	121.555	2720.60	8.26
9408.0-9681.0	0.74	111.145	2487.60	28.82
9726.0-9775.0	0.74	76.103	1703.30	31.63
9797.0-9801.0	0.73	38.460	860.80	6.36
10162.0-10241.0	0.73	30.235	676.70	14.20
10269.0-10383.0	0.72	12.752	285.40	10.72

Total rates by phase

Zone ft	Qw res. B/D	Qw s.c. STB/D	Qo res. B/D	Qo s.c. STB/D	Qg res. B/D	Qg s.c. Mscf/D
9213.0-9262.0	270.80	265.92	61.90	47.54	2387.90	1707.73
9408.0-9681.0	227.50	223.30	57.10	43.83	2203.00	1584.69
9726.0-9775.0	158.70	155.57	39.10	29.96	1505.50	1095.41
9797.0-9801.0	75.10	73.57	19.80	15.16	765.90	557.83
10162.0-10241.0	66.90	65.53	15.40	11.79	594.40	443.57
10269.0-10383.0	28.20	27.63	6.50	4.99	250.70	196.91

 Techwell Surveys Corporation Measurement & Analysis	Rates @ Calculation Zones: Detailed Results					Fed_13-3	
	Company: Cimarex Energy Corporation Field: White City / Hunter Well: Federal 13 Com #3					Test: Flowing to Sales Date: 2-1-2010 Survey: Flowing Survey # 2	

#	From-To ft	ID in	Deviation °	Rt	T °F	P psia
1	9192.0-9210.6	4.0000	0.0000	4.500E-4	164.0000	1884.4000
2	9298.7-9380.5	4.0000	0.0000	4.500E-4	165.0000	1903.4000
3	9686.6-9721.1	4.0000	0.0000	4.500E-4	170.0000	1946.1000
4	9776.0-9790.1	4.0000	0.0000	4.500E-4	172.0000	1959.1000

#	Bw	Muw cp	Rhow g/cc	Bo	Muo cp	Rhoo g/cc	Bg	Mug cp	Rhog g/cc
1	1.0184	0.4456	1.0100	1.3020	0.3391	0.6500	0.0080	0.0163	0.1000
2	1.0188	0.4397	1.0100	1.3028	0.3366	0.6500	0.0079	0.0164	0.1000
3	1.0201	0.4248	1.0100	1.3049	0.3302	0.6500	0.0078	0.0166	0.1100
4	1.0207	0.4179	1.0100	1.3061	0.3269	0.6500	0.0078	0.0166	0.1100

#	Correl.	Correl. W-O	Regime	Slip ft/min	Slip W-O ft/min
1	Dukler	N/A	Slug liquid-gas	50.819	N/A
2	Dukler	N/A	Slug liquid-gas	49.800	N/A
3	Dukler	N/A	Slug liquid-gas	50.004	N/A
4	Dukler	N/A	Slug liquid-gas	49.257	N/A

#	Yw	Yo	Yg	Vw ft/min	Vo ft/min	Vg ft/min
1	0.1500	0.0345	0.8100	80.2000	80.2000	131.0000
2	0.1400	0.0363	0.8200	70.3000	70.3000	120.0000
3	0.1900	0.0462	0.7700	37.8000	37.8000	87.8000
4	0.3300	0.0882	0.5800	10.0000	10.0000	59.3000

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Company: Cimarex Energy Corporation
Field: White City / Hunter
Well: Federal 13 Com #3

Test: Flowing to Sales
Date: 2-1-2010
Survey: Flowing Survey # 2

#	From-To ft	ID in	Deviation °	Rt	T °F	P psia
5	9820.2-10100.4	4.0000	0.0000	4.500E-4	173.0000	2010.7000
6	10249.8-10265.6	4.0000	0.0000	4.500E-4	172.0000	2108.8000
7	10389.2-10479.0	4.0000	0.0000	4.500E-4	182.0000	2184.5000

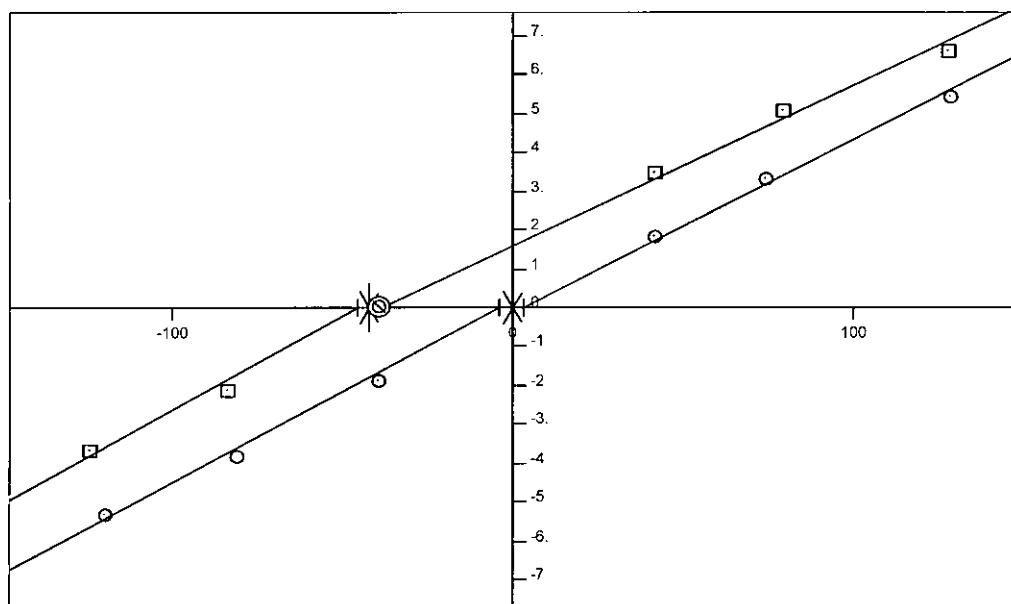
#	Bw	Muw cp	Rhow g/cc	Bo	Muo cp	Rhoo g/cc	Bg	Mug cp	Rhog g/cc
5	1.0210	0.4142	1.0100	1.3058	0.3268	0.6500	0.0076	0.0168	0.1100
6	1.0205	0.4161	1.0100	1.3035	0.3317	0.6500	0.0073	0.0171	0.1100
7	1.0237	0.3849	1.0100	1.3091	0.3172	0.6500	0.0072	0.0173	0.1200

#	Correl.	Correl. W-O	Regime	Slip ft/min	Slip W-O ft/min
5	Dukler	N/A	Slug liquid-gas	50.743	N/A
6	Dukler	N/A	Bubble	58.928	N/A
7	Dukler	N/A	No flow	0.000	N/A

#	Yw	Yo	Yg	Vw ft/min	Vo ft/min	Vg ft/min
5	0.4400	0.1000	0.4600	6.8300	6.8300	57.6000
6	0.6600	0.1500	0.1800	1.9000	1.9000	60.8000
7	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	PVT		Fed_13-3
	Company: Cimarex Energy Corporation Field: White City / Hunter Well: Federal 13 Com #3		Test: Flowing to Sales Date: 2-1-2010 Survey: Flowing Survey # 2
FLUID TYPE Water - Oil+Gas GAS Specific gravity 0.68 N2 % 0 CO2 % 0 H2S % 0 Z Beggs and Brill Mug Lee et al. OIL Gravity 0.7694 sp. gr. GOR 561.458 cf/bbl Pb Standing Rs Standing Bo Standing co Vasquez and Beggs Muo Beggs and Robinson WATER Salinity, ppm 40000. Rsw Katz cw Dodson and Standing Muw Van-Wingen+Frick			
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	Calibration		Fed_13-3
	Company: Cimarex Energy Corporation Field: White City / Hunter Well: Federal 13 Com #3		Test: Flowing to Sales Date: 2-1-2010 Survey: Flowing Survey # 2



rps versus ft/min

Threshold (+) 3.5 ft/min

Threshold (-) -3.5 ft/min

Calib. Zone ft	Slope (+)	Slope (-)	Int (+) ft/min	Int (-) ft/min	Int. Diff. ft/min
□ 9819.7-10099.6	0.041	0.048	-38.46	-45.46	7.00
○ 10389.2-10478.9	0.045	0.047	3.32	-3.68	7.00