

Sharp, Karen, EMNRD

Subject: FW: Marquardt 12 Penn Federal #1 and Gadwall 18 Federal #1
Attachments: Marquardt_12-1_PLA.pdf; Gadwall_18-1_PLA.pdf

From: Scott Gengler
Sent: Friday, December 30, 2011 4:57 PM
To: Genea Holloway; Carolyn Larson
Cc: Chad McGehee
Subject: Marquardt 12 Penn Federal #1 and Gadwall 18 Federal #1

Genea and Carolyn:

Attached are the production log analyses for the Marquardt 12 Penn Federal #1 and the Gadwall 18 Federal #1. The production splits are as follows:

Marquardt 12 Penn Federal #1

Wolfcamp – 86.5%
Cisco Canyon – 13.5%

Gadwall 18 Federal #1

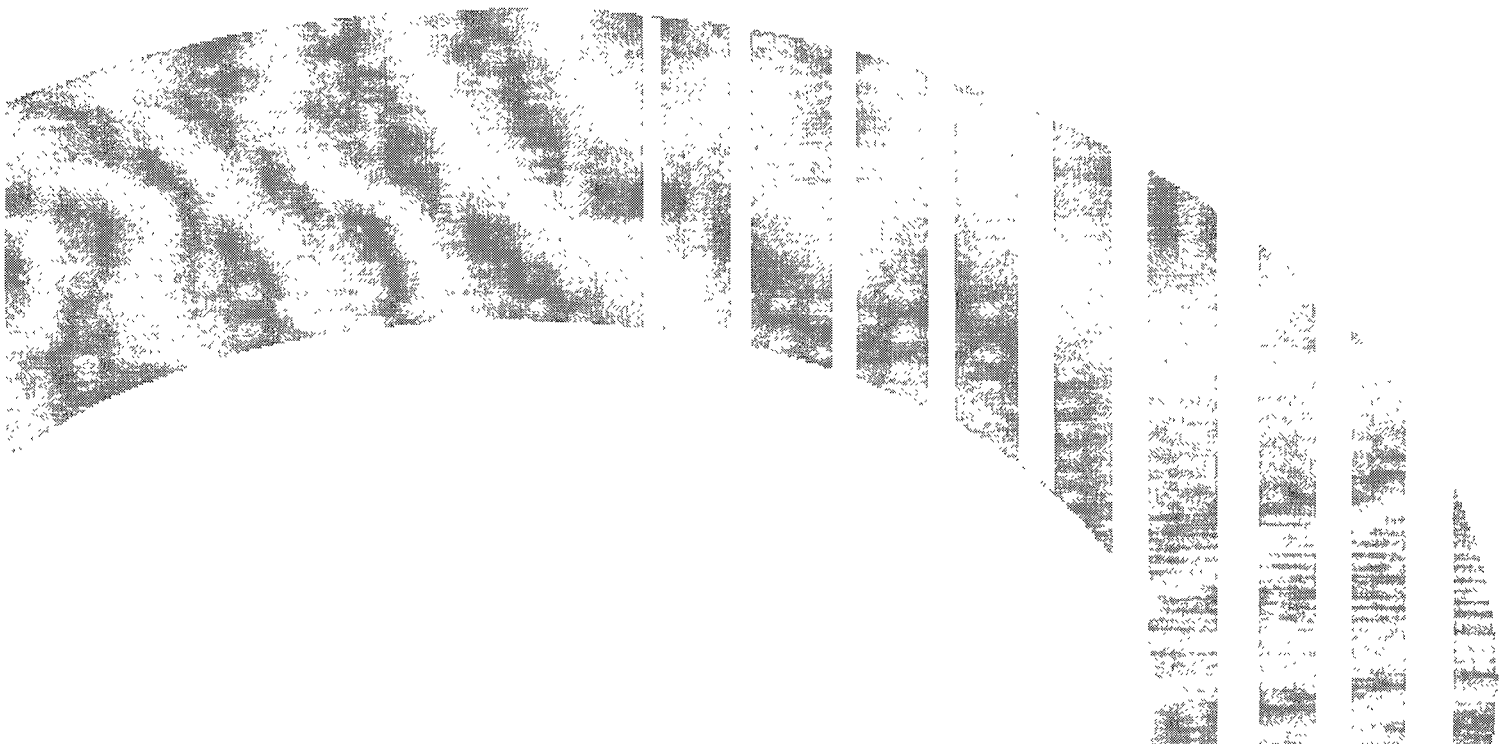
Wolfcamp – 70%
Cisco Canyon – 30%

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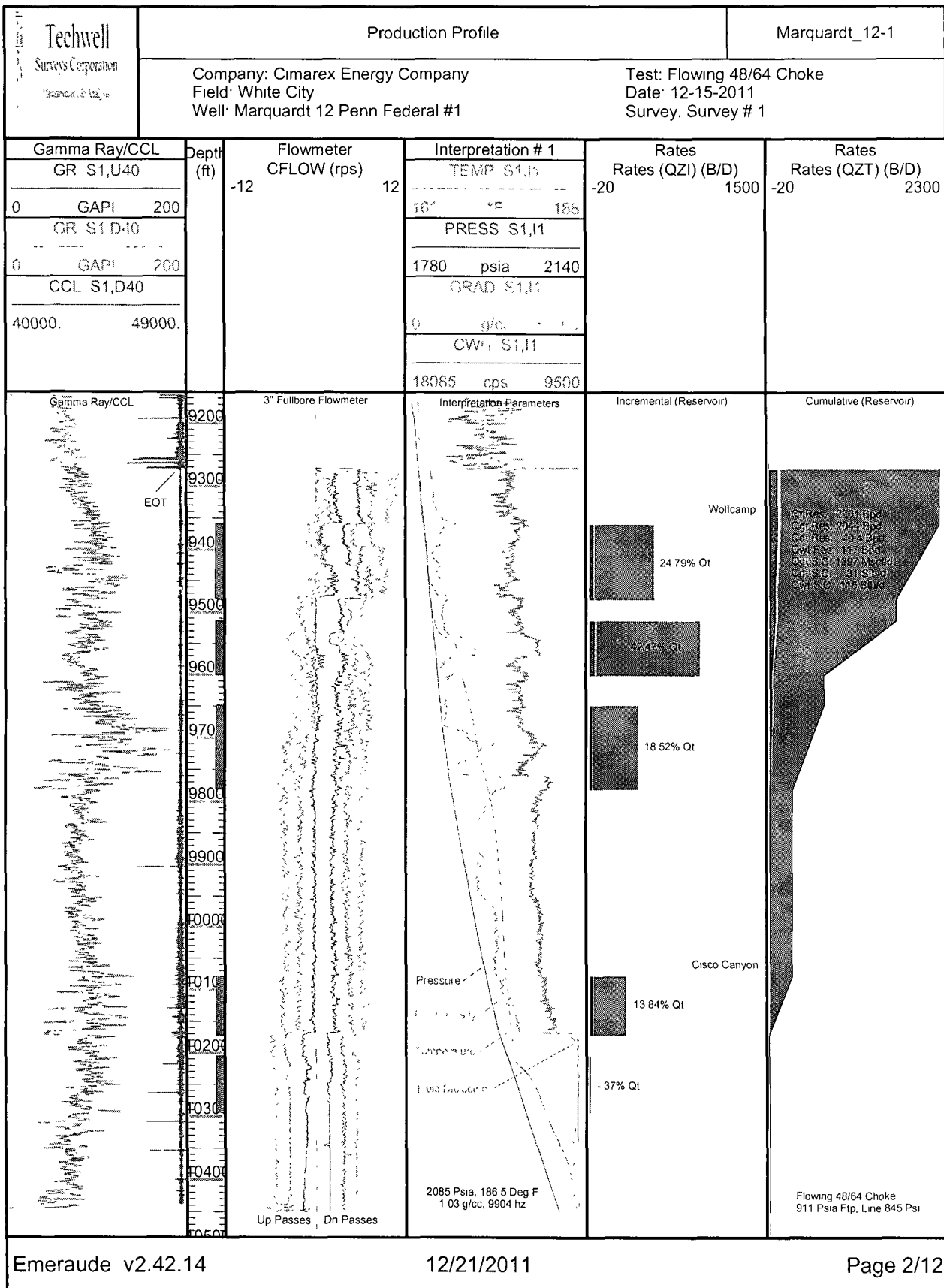
Scott Gengler
Sr. Petroleum Engineer
Cimarex Energy Co.
Permian New Mexico Team
600 N. Marienfeld St., Suite 600
Midland, Texas 79701
Office: 432-571-7852
Cell: 432-208-6974

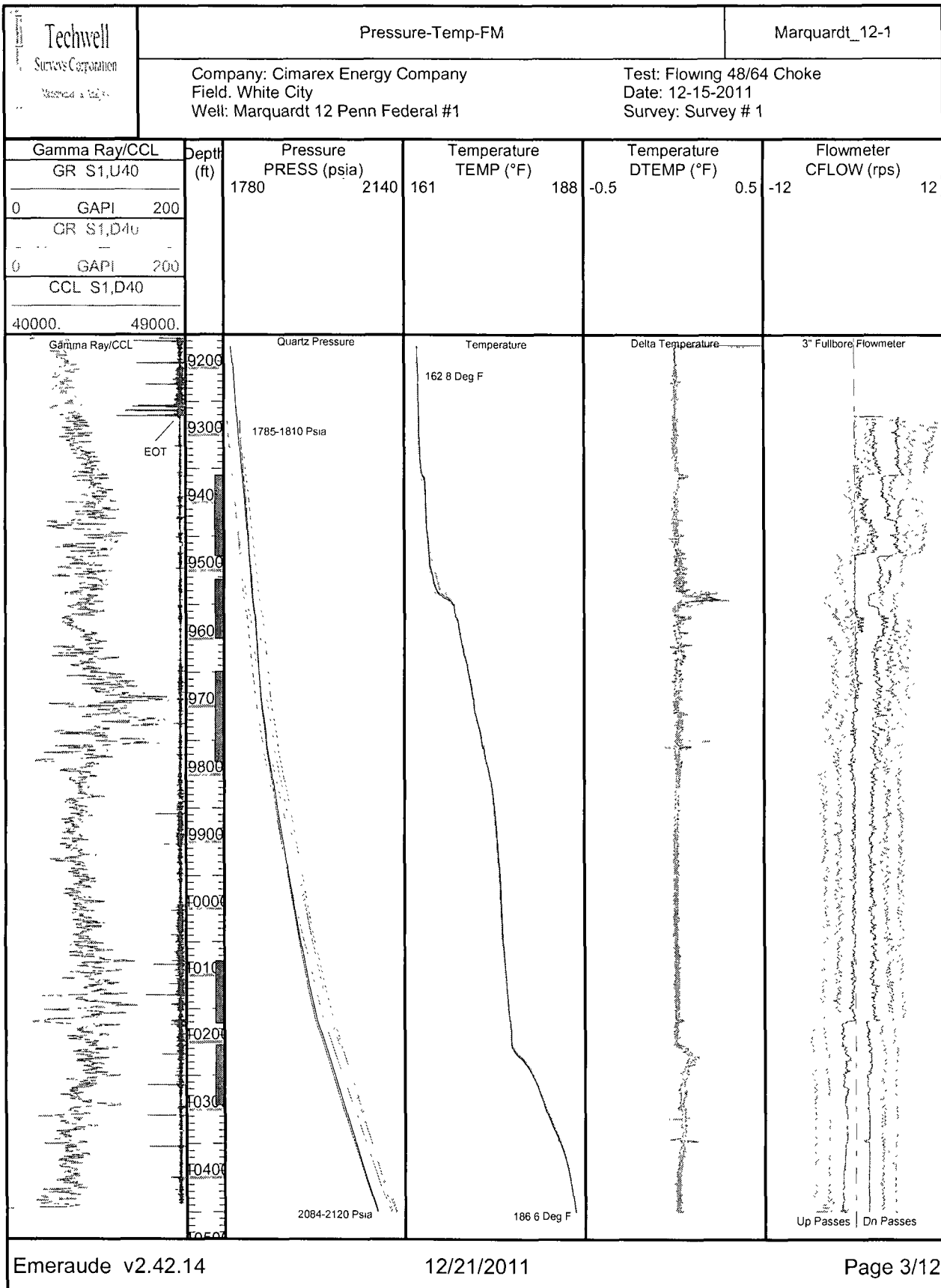
Production Profile Interpretation Report

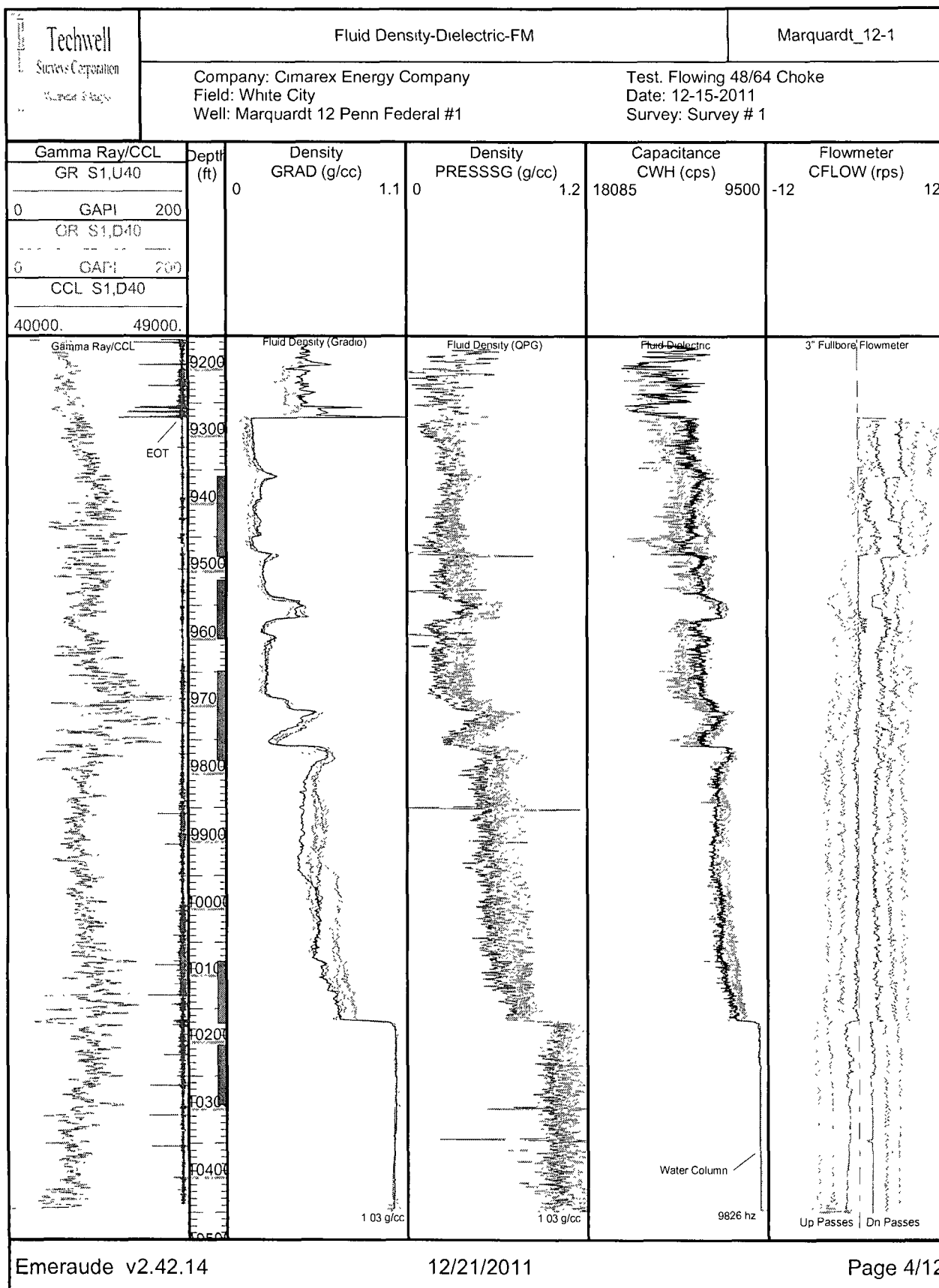
Company: Cimarex Energy Company
Field: White City
Well: Marquardt 12 Penn Federal #1
Survey Date: 12-15-2011
Service Company: Techwell Surveys Corporation
Interpretation Date: 12-21-2011
Analyst: JD Taylor
Survey #1

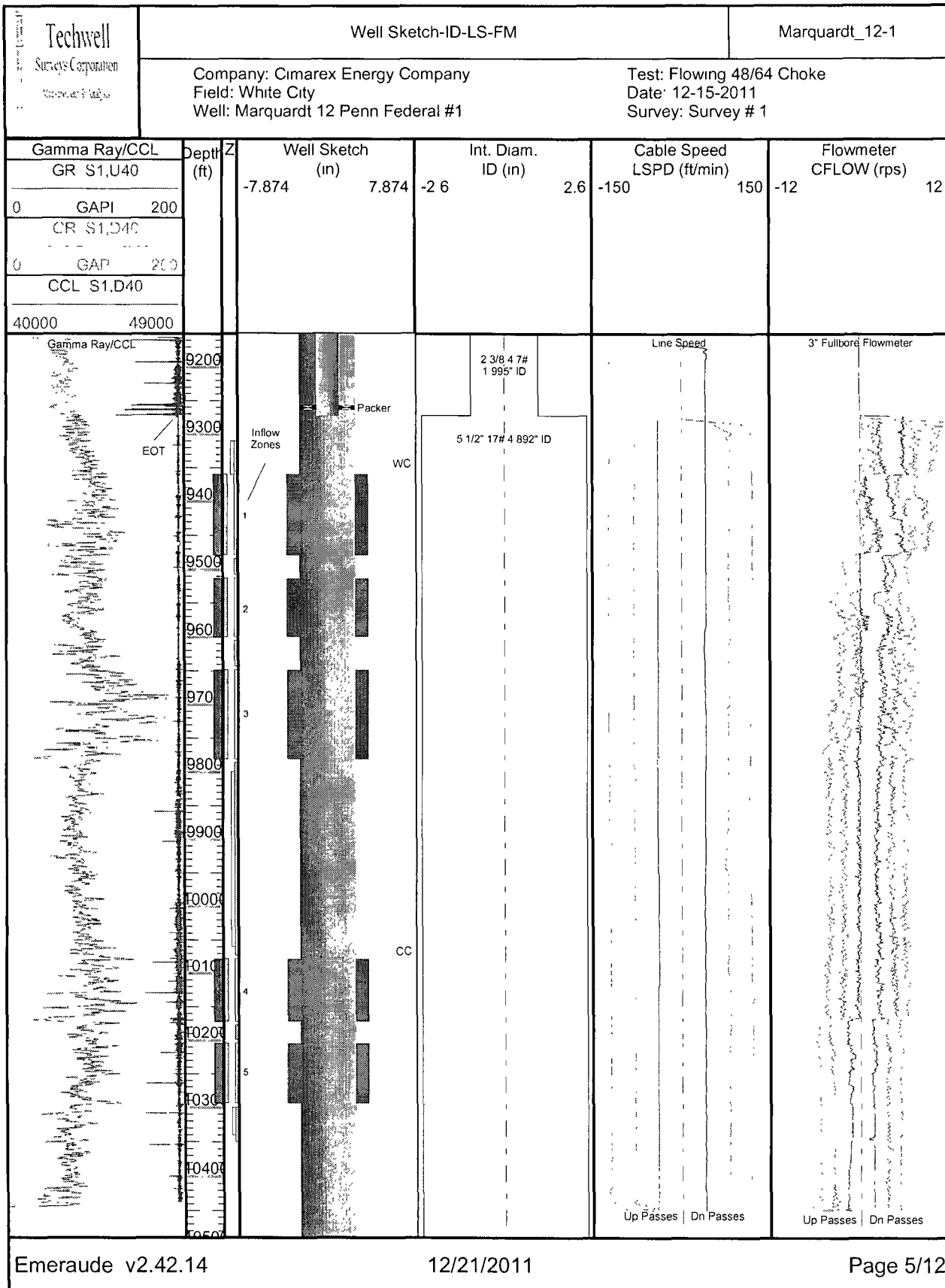


	Job Information		Marquardt_12-1																																																																																	
	Company: Cimarex Energy Company Field: White City Well: Marquardt 12 Penn Federal #1		Test: Flowing 48/64 Choke Date: 12-15-2011 Survey: Survey # 1																																																																																	
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Comments Well logged flowing to sales on a 48/64 choke with 911 Psia FTP, line pressure at 845 psia. Recorded multiple passes in both directions to obtain flow profile. Major production is from the Wolfcamp (inflow zones 1-3), minor from the Cisco Canyon (inflow zones 4-5). Minor water slippage indicated back into the formation at inflow zone 5. Depth corrected to Halliburton CBL dated 1-13-2005. Marquardt 12 Penn Federal #1 API # 30-015-33461 880' FSL & 1760' FEL of Sec. 12, T25S, R26E Eddy County, New Mexico JD Taylor Techwell Surveys Corporation 432-664-4978																																																																																				
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Techwell Survey Corporation Survey # 12-1	Zone Contributions; S.C.		Marquardt_12-1
	Company: Cimarex Energy Company Field: White City Well: Marquardt 12 Penn Federal #1		Test: Flowing 48/64 Choke Date 12-15-2011 Survey: Survey # 1

Zones ft	Water STB/D	Oil STB/D	Gas Mscf/D
9359.0-9479.0	34.42	7.76	343.17
9513.0-9600.0	43.37	13.29	602.52
9648.0-9781.0	21.60	5.74	259.29
10078.0-10172.0	23.49	4.20	192.43
10204.0-10294.0	-8.02	0.00	-7.23E-2
Total	114.86	31.00	1397.33

Emeraude v2.42.14

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Techwell Services Corporation <i>Measurement of Reserves</i>	Total Zone Rates; Res. Cond		Marquardt_12-1
	Company: Cimarex Energy Company Field: White City Well: Marquardt 12 Penn Federal #1		Test: Flowing 48/64 Choke Date: 12-15-2011 Survey: Survey # 1

Zone ft	Corr. factor	Vm ft/min	Q downhole B/D	Contribution %
9359.0-9479.0	0.88	65.753	2201.20	24.79
9513.0-9600.0	0.88	49.105	1643.90	42.47
9648.0-9781.0	0.86	21.239	711.00	18.52
10078.0-10172.0	0.85	8.878	297.20	13.84
10204.0-10294.0	0.62	-0.245	-8.20	-0.37

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
9359.0-9479.0	116.90	114.86	40.40	31.00	2043.90	1397.33
9513.0-9600.0	81.90	80.44	30.30	23.24	1531.70	1054.16
9648.0-9781.0	37.80	37.07	13.00	9.94	660.20	451.64
10078.0-10172.0	15.80	15.47	5.50	4.20	275.90	192.36
10204.0-10294.0	-8.20	-8.02	0.00	0.00	0.00	-7.23E-2

	Rates @ Calculation Zones: Detailed Results					Marquardt_12-1	
	Company Cimarex Energy Company Field: White City Well: Marquardt 12 Penn Federal #1					Test: Flowing 48/64 Choke Date: 12-15-2011 Survey: Survey # 1	

#	From-To ft	ID in	Deviation °	Rt	T °F	P psia
1	9310.0-9355.0	4.8900	0.0000	3.679E-4	163.0000	1810.9000
2	9484.0-9508.0	4.8900	0.0000	3.679E-4	165.0000	1829.9000
3	9605.0-9643.0	4.8900	0.0000	3.679E-4	170.0000	1844.5000
4	9786.0-10073.0	4.8900	0.0000	3.679E-4	175.0000	1902.9000

#	Bw	Muw cp	Rhow g/cc	Bo	Muo cp	Rhoo g/cc	Bg	Mug cp	Rhog g/cc
1	1.0178	0.4323	1.0000	1.3034	0.3390	0.6500	0.0083	0.0161	0.1000
2	1.0182	0.4268	1.0000	1.3040	0.3366	0.6500	0.0083	0.0162	0.1000
3	1.0198	0.4094	1.0000	1.3074	0.3274	0.6500	0.0083	0.0162	0.1000
4	1.0214	0.3933	1.0000	1.3097	0.3205	0.6500	0.0082	0.0164	0.1000

#	Correl.	Correl. W-O	Regime	Slip ft/min	Slip W-O ft/min
1	Dukler	ABB - Deviated	Slug liquid-gas	51.121	21.292
2	Dukler	ABB - Deviated	Slug liquid-gas	50.273	21.294
3	Dukler	ABB - Deviated	Slug liquid-gas	51.182	21.314
4	Dukler	ABB - Deviated	Bubble	59.400	21.320

#	Yw	Yo	Yg	Vw ft/min	Vo ft/min	Vg ft/min
1	0.1800	0.0093	0.8100	19.1000	130.0000	75.6000
2	0.2600	0.0103	0.7300	9.4200	88.3000	62.7000
3	0.6200	0.0109	0.3700	1.8200	35.5000	53.6000
4	0.8600	0.0065	0.1400	0.5500	25.3000	60.1000

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	Rates @ Calculation Zones: Detailed Results					Marquardt_12-1	
	Company: Cimarex Energy Company Field: White City Well: Marquardt 12 Penn Federal #1					Test: Flowing 48/64 Choke Date: 12-15-2011 Survey: Survey # 1	

#	From-To ft	ID in	Deviation °	Rt	T °F	P psia
5	10177.0-10199.0	4.8900	0.0000	3.679E-4	177.0000	1973.5000
6	10300.0-10350.0	4.8900	0.0000	3.679E-4	183.0000	2031.3000

#	Bw	Muw cp	Rhow g/cc	Bo	Muo cp	Rhoo g/cc	Bg	Mug cp	Rhog g/cc
5	1.0218	0.3874	1.0000	1.3095	0.3197	0.6500	0.0079	0.0167	0.1100
6	1.0239	0.3692	0.9900	1.3128	0.3113	0.6500	0.0078	0.0169	0.1100

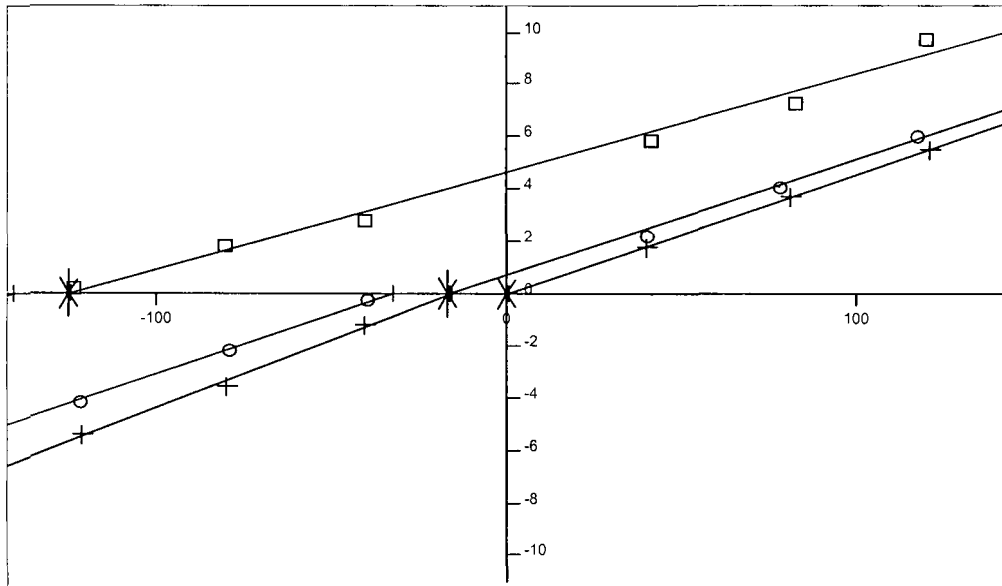
#	Correl.	Correl. W-O	Regime	Slip ft/min	Slip W-O ft/min
5	Dukler	ABB - Deviated	Single phase liquid	0.000	N/A
6	Dukler	ABB - Deviated	No flow	0.000	N/A

#	Yw	Yo	Yg	Vw ft/min	Vo ft/min	Vg ft/min
5	1.0000	0.0000	0.0000	-0.2400	0.0000	0.0000
6	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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	PVT		Marquardt_12-1
	Company: Cimarex Energy Company Field: White City Well: Marquardt 12 Penn Federal #1		Test: Flowing 48/64 Choke Date: 12-15-2011 Survey: Survey # 1
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 0.77 sp. gr. GOR 561.458 cf/bbl Pb Standing Rs Standing Bo Standing co Vasquez and Beggs Muo Beggs and Robinson WATER Salinity, ppm 22000 Rsw Katz cw Dodson and Standing Muw Van-Wingen+Frick			
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	Calibration		Marquardt_12-1
	Company: Cimarex Energy Company Field: White City Well: Marquardt 12 Penn Federal #1		Test: Flowing 48/64 Choke Date: 12-15-2011 Survey: Survey # 1



rps versus ft/min

Threshold (+) 0.5773 ft/min

Threshold (-) -15.6685 ft/min

Calib. Zone ft	Slope (+)	Slope (-)	Int (+) ft/min	Int (-) ft/min	Int. Diff. ft/min
□ 9310.0-9360.0	0.037	0.037	-124.45	-140.69	16.25
○ 9800.0-10060.0	0.044	0.046	-16.31	-32.55	16.25
+ 10300.0-10340.0	0.045	0.052	0.58	-15.67	16.25