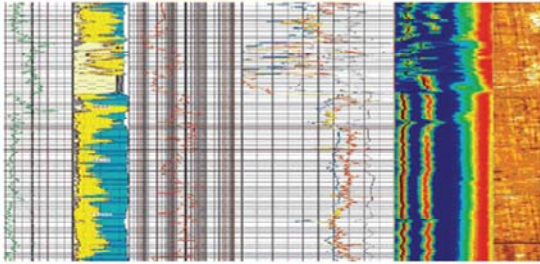
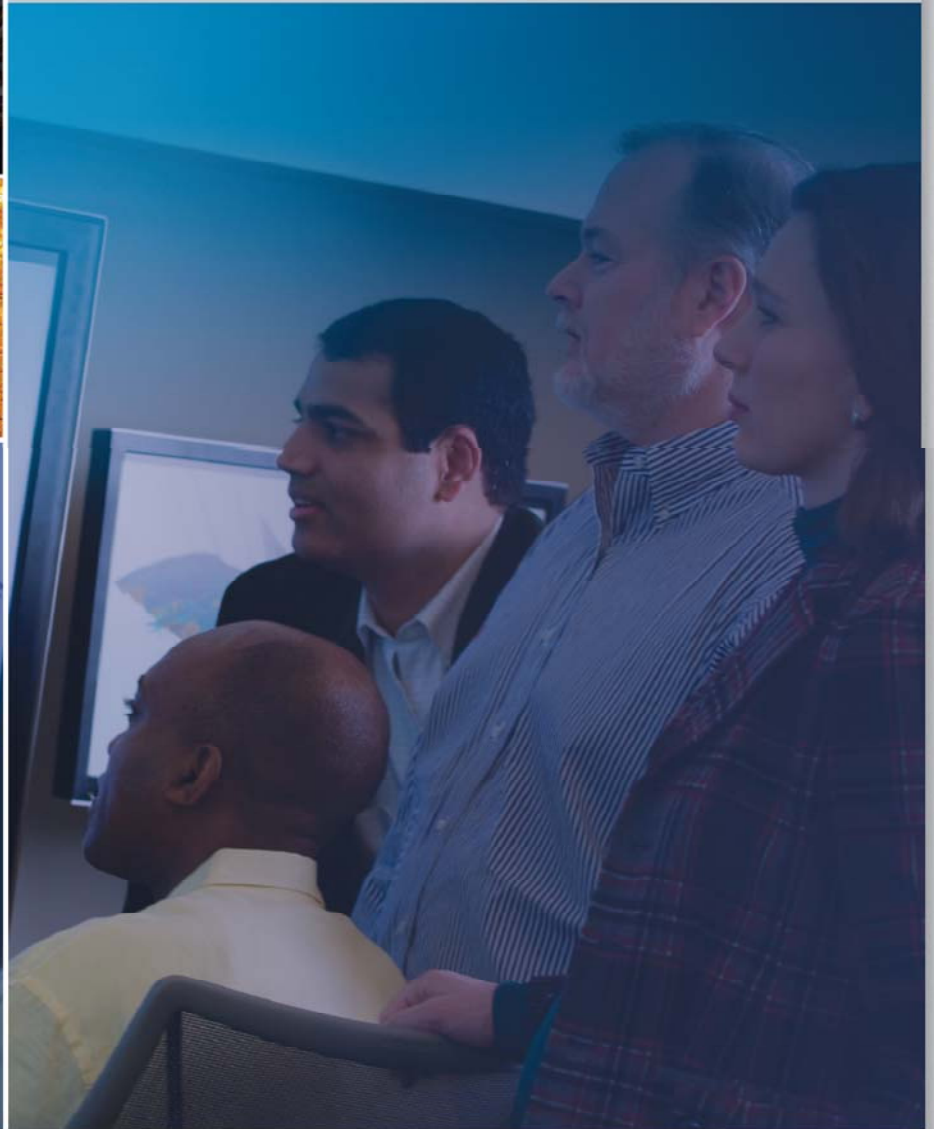


PetroTechnical Services



Company : Altamont Oil and Gas
Well: Danielson 33-17
Field: Oilmont
State: Montana
County: Toole

Job #: DSP-2015-01524
Report Date: 20-Jan-2015
Analyst: Hebert



Pressure Buildup Analysis

Schlumberger

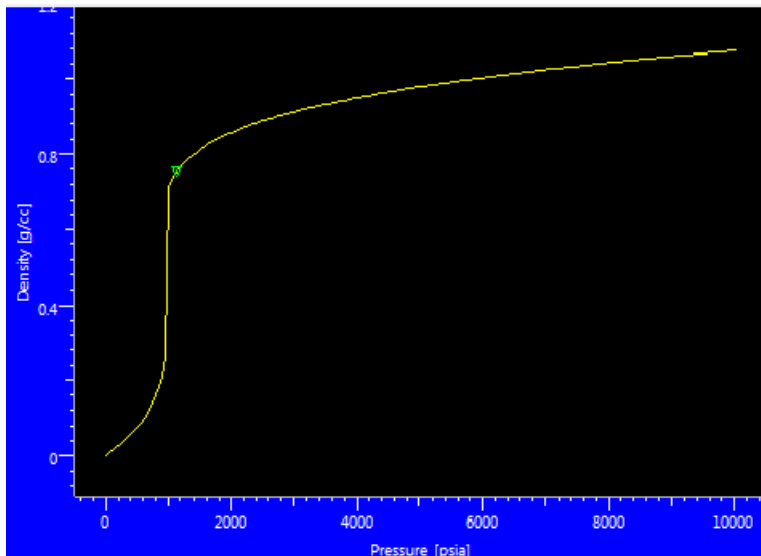
Report Summary

The following report summarizes the well test data acquired on the Danielson 33-17 well on starting on 26-Dec-2014 and ending 07-Jan-2015. The production history for the well started with intermittent flow periods and finished with a final flow period of 40 Mscfd prior to shut-in. After shutin, the well was allowed to buildup for approximately 227 hours in an attempt to obtain reservoir properties. Flow from the well was from the Middle Duperow, Testing Zone 5.

As noted in the log-log plot on the following page, the buildup response appears to be affected by changing storage and there appears to be an area at around 80 hours of shut-in time where the derivative response appears to be highly affected by a non-reservoir response. Based on the PVT properties, there appears to be a dramatic change in fluid properties as the pressure build above 1000 psi so the effects noted are likely due to phase changes in the wellbore and reservoir. Once these effects subside the derivative response appears to be attempting to re-establish the infinite acting radial flow plateau so it is believed the later time data acquired is reflecting the radial flow portion and the results obtained reflect that.

The table below summarizes the main inputs and results with additional results presented on the plots that are presented to show the models match to the acquired data on the following pages. PVT results are at reservoir pressure and temperature.

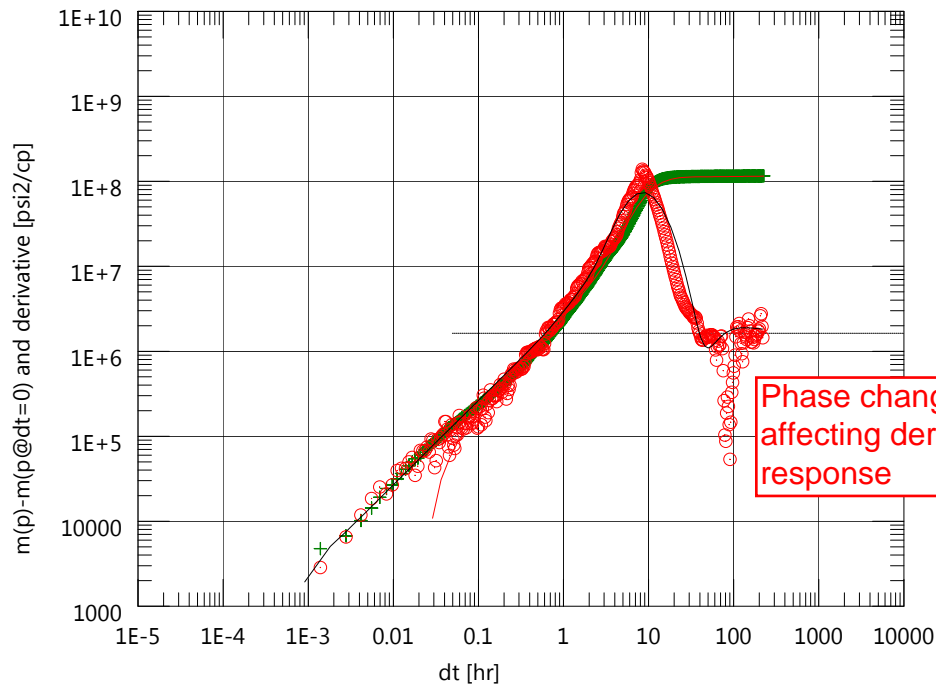
Input Parameters	
Porosity (PU)	6
Temperature (degF)	74
Wellbore radius (ft)	0.3
Viscosity (cP)	0.064
Total FormVolFractor (cf/scf)	0.00246
Thickness (ft)	58
Final Rate (Mscfd)	40
Results	
Reservoir Model	Homogeneous
Permeability-Thickness (md-ft)	9.41
Permeability (mD)	0.162
Skin	26.40
Dpskin	524.80
Radius of Investigation (ft)	224.00
Reservoir Pressure (psia)	1161.80



Density vs. Pressure indicates change in fluid properties as pressure nears 1000 psi.

Company Altamont Oil and Gas
Well Danielson 33-13

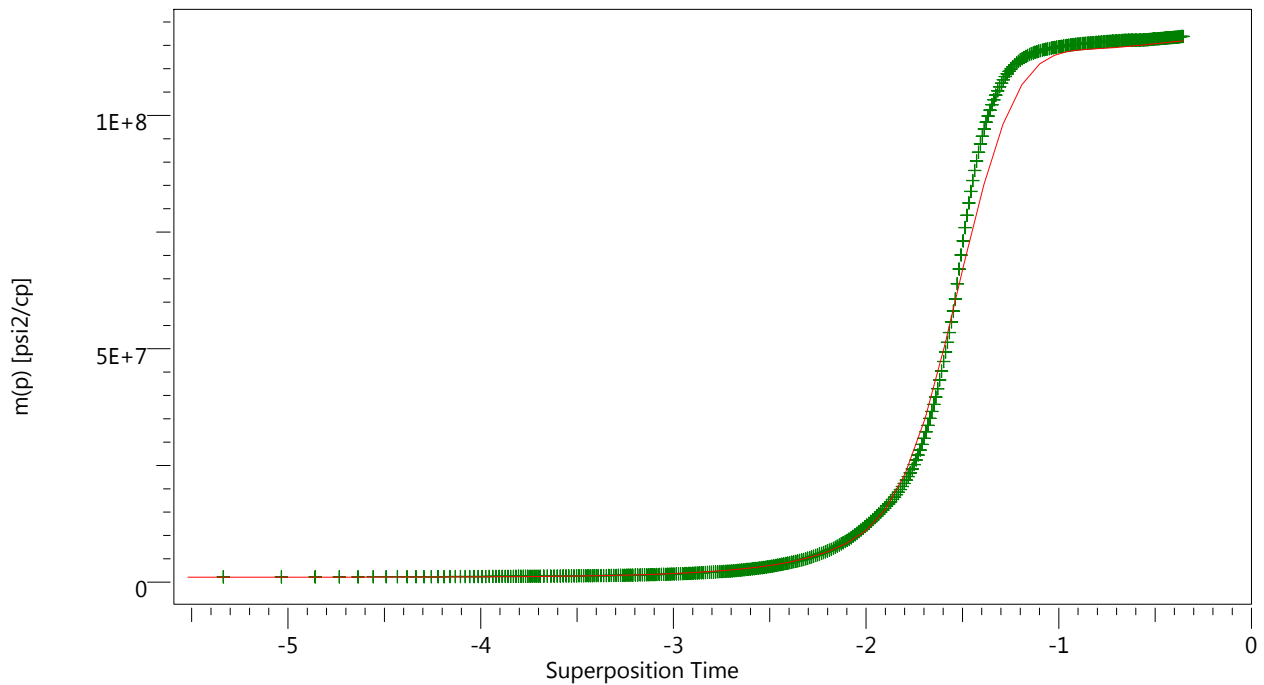
Field Oilmont
Test Name / # BHP Flow/Shut-In



BHP build-up #2		Model Parameters	
Rate	0 Mscf/D	Well & Wellbore parameters (Danielson 33-13)	
Rate change	40 Mscf/D	C	0.00433 bbl/psi
P@dt=0	126.686 psia	Ci/Cf	19.3
Pi	1161.8 psia	delta_t	22.2 hr
Smoothing	0	Skin	26.4
Default values are used!		Reservoir & Boundary parameters	
Selected Model		Pi	1161.8 psia
Model Option	Standard Model	k.h	9.41 md.ft
Well	Vertical, Changing Storage (Hegeman)	k	0.162 md
Reservoir	Homogeneous	Derived & Secondary Parameters	
Boundary	Infinite	Rinv	224 ft
Main Model Parameters		Test. Vol.	0.0976241 MMB
TMATCH	10.1 [hr] ⁻¹	Delta P (Total Skin)	524.82 psi
PMATCH	3.06E-7 [psi ² /cp] ⁻¹	Delta P (Geometrical Skin)	8.10462E-13 psi
C	0.00433 bbl/psi	Delta P Ratio (Total Skin)	0.508855 Fraction
Total Skin	26.4		
k.h, total	9.41 md.ft		
k, average	0.162 md		
Pi	1161.8 psia		

Company Altamont Oil and Gas
Well Danielson 33-13

Field Oilmont
Test Name / # BHP Flow/Shut-In



BHP build-up #2

Rate 0 Mscf/D
Rate change 40 Mscf/D
P@dt=0 126.686 psia
Pi 1161.8 psia
Smoothing 0

Default values are used!

Selected Model

Model Option Standard Model
Well Vertical, Changing Storage (Hegeman)
Reservoir Homogeneous
Boundary Infinite

Main Model Parameters

TMatch 10.1 [hr]⁻¹
PMatch 3.06E-7 [psi²/cp]⁻¹
C 0.00433 bbl/psi
Total Skin 26.4
k.h, total 9.41 md.ft
k, average 0.162 md
Pi 1161.8 psia

Model Parameters

Well & Wellbore parameters (Danielson 33-13)

C 0.00433 bbl/psi
Ci/Cf 19.3
delta_t 22.2 hr
Skin 26.4

Reservoir & Boundary parameters

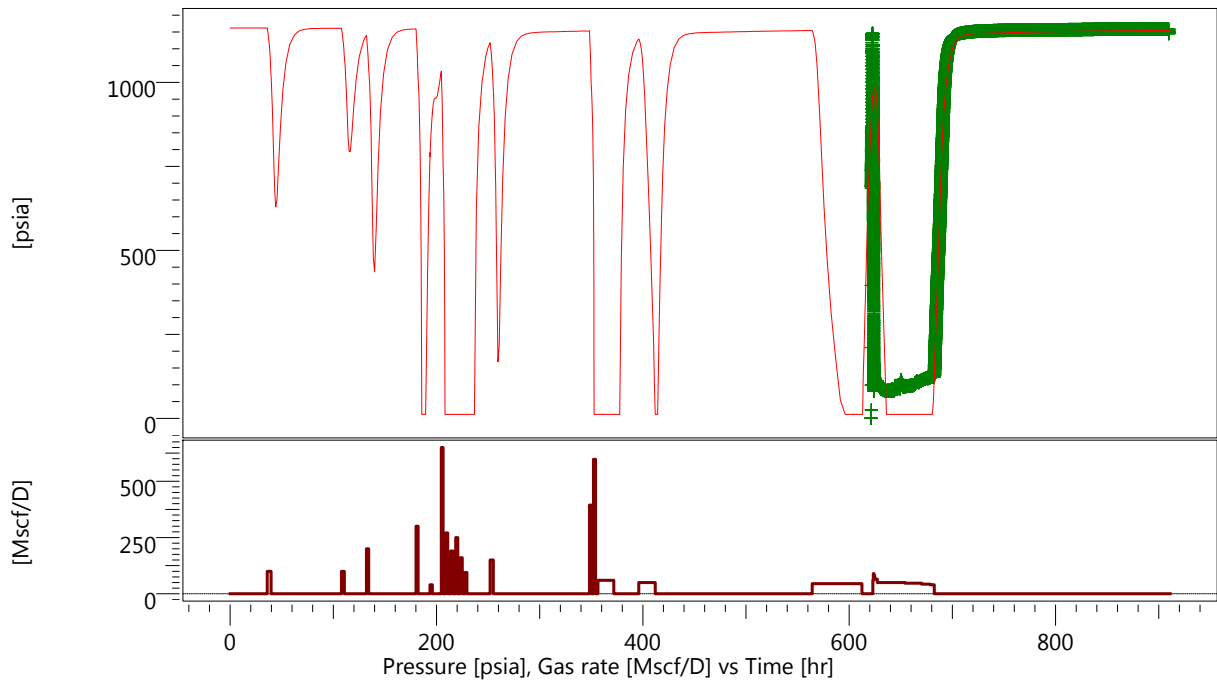
Pi 1161.8 psia
k.h 9.41 md.ft
k 0.162 md

Derived & Secondary Parameters

Rinv 224 ft
Test. Vol. 0.0976241 MMB
Delta P (Total Skin) 524.82 psi
Delta P (Geometrical Skin) 8.10462E-13 psi
Delta P Ratio (Total Skin) 0.508855 Fraction

Company Altamont Oil and Gas
Well Danielson 33-13

Field Oilmont
Test Name / # BHP Flow/Shut-In



BHP build-up #2
Rate 0 Mscf/D
Rate change 40 Mscf/D
P@dt=0 126.686 psia
Pi 1161.8 psia
Smoothing 0

Default values are used!
Selected Model
Model Option Standard Model
Well Vertical, Changing Storage (Hegeman)
Reservoir Homogeneous
Boundary Infinite

Main Model Parameters
TMatch 10.1 [hr]⁻¹
PMatch 3.06E-7 [psi²/cp]⁻¹
C 0.00433 bbl/psi
Total Skin 26.4
k.h, total 9.41 md.ft
k, average 0.162 md
Pi 1161.8 psia

Model Parameters
Well & Wellbore parameters (Danielson 33-13)
C 0.00433 bbl/psi
Ci/Cf 19.3
delta_t 22.2 hr
Skin 26.4

Reservoir & Boundary parameters
Pi 1161.8 psia
k.h 9.41 md.ft
k 0.162 md

Derived & Secondary Parameters
Rinv 224 ft
Test. Vol. 0.0976241 MMB
Delta P (Total Skin) 524.82 psi
Delta P (Geometrical Skin) 8.10462E-13 psi
Delta P Ratio (Total Skin) 0.508855 Fraction

Main results		Analysis 1	
Company Altamont Oil and Gas Well Danielson 33-13		Field Oilmont Test Name / # BHP Flow/Shut-In	
Test date / time	Dec 26, 2014 - Jan 7, 2015	Total Compr. ct	1.60612E-4 psi-1
Formation interval	Middle Duperow - Testing Zone 5	Connate Water (%)	50
Perforated interval	3208-3222 & 3288-3336	Default values are used!	
Gauge type / #	SN 90026	Selected Model	
Gauge depth	3180	Model Option	Standard Model
Analyzed by	Hebert	Well	Vertical, Changing Storage (Heg)
Analysis date / time	20-Jan-2015	Reservoir	Homogeneous
TEST TYPE	Standard	Boundary	Infinite
Porosity Phi (%)	6	Main Model Parameters	
Well Radius rw	0.3 ft	TMatch	10.1 [hr]-1
Pay Zone h	58 ft	PMatch	3.06E-7 [psi ² /cp]-1
Form. compr.	3E-6 psi-1	C	0.00433 bbl/psi
Water Salt (ppm)	10000	Total Skin	26.4
Reservoir T	80 °F	k.h, total	9.41 md.ft
Reservoir P	1147 psia	k, average	0.162 md
Fluid type	Gas	Pi	1161.8 psia
	Gas	Model Parameters	
Gas Gravity	0.7	Well & Wellbore parameters (Danielson 33-13)	
Pseudo-Critical P	663.573 psia	C	0.00433 bbl/psi
Pseudo-Critical T	377.26 °R	Ci/Cf	19.3
Sour gas composition		delta_t	22.2 hr
Hydrogen sulphide	0	Skin	26.4
Carbon dioxide	0	Reservoir & Boundary parameters	
Nitrogen	0	Pi	1161.8 psia
		k.h	9.41 md.ft
Water		k	0.162 md
Salinity, ppm	10000	Derived & Secondary Parameters	
Temperature	80 °F	Rinv	224 ft
Pressure	1147 psia	Test. Vol.	0.0976241 MMB
Properties	@ Reservoir T&P	Delta P (Total Skin)	524.82 psi
	Gas	Delta P (Geometrical Skin)	8.10462E-13 psi
Z	0.186434	Delta P Ratio (Total Skin)	0.508855 Fraction
Mug	0.0636066 cp		
Bg	0.00247904 cf/scf		
cg	3.07702E-4 psi-1		
Rhog	0.75513 g/cc		
	Water		
Rsw	167.649 scf/stb		
Bw	1.04506 B/STB		
cw	7.52225E-6 psi-1		
Muw	0.967738 cp		
Rhow	0.964246 g/cc		

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