



dig
Dolan Integration Group

Geochemistry for Energy

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Hydrocarbon Gas Composition and Stable Isotopes Data and Interpretation

Job #: 18071735
Lab #: DIG-015527
Client: Air Pollution Testing
Well Name: Johnstone 20-1 Wellhead Gas

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SAMPLE INFORMATION						COMPLETE GAS ANALYSIS														HYDROCARBON GAS ANALYSIS (normalized to total HC content)										BTU CONTENT*
Job Number	Lab Number	Well Name	Sample Type	Sample Date	Sample Time	GC Date	N ₂ ppm	O ₂ + Ar ppm	CO ₂ ppm	C ₁ ppm	C ₂ ppm	C ₃ ppm	iC ₄ ppm	nC ₄ ppm	iC ₅ ppm	nC ₅ ppm	C ₆ + ppm	C ₂ H ₄ ppm	He ppm	H ₂ ppm	C ₁ mol%	C ₂ mol%	C ₃ mol%	iC ₄ mol%	nC ₄ mol%	iC ₅ mol%	nC ₅ mol%	C ₆ + mol%	Total Gas BTU/ft ³	
18071735	DIG-015527	Johnstone 20-1 Wellhead Gas		07/23/18	9:44	7/24/2018	146371	42667	24029	647629	103391	34111	3044	5608	2050	1521	2609				81.0	12.92	4.26	0.38	0.70	0.26	0.19	0.33	965	

SAMPLE INFORMATION						HYDROCARBON RATIOS				STABLE ISOTOPE ANALYSIS										Comments
Job Number	Lab Number	Well Name	Sample Type	Sample Date	Sample Time	Total HC ppm	Wetness % C ₂ to C ₆	C ₁ /C ₂ +C ₃ mol/mol	Balance Ratio C ₁ +C ₂ /C ₁ -C ₂	Mass Spec Date	δ ¹³ C ₁ ‰ VPDB	δ ¹³ C ₂ ‰ VPDB	δ ¹³ C ₃ ‰ VPDB	δ ¹³ C ₄ ‰ VPDB	δ ¹³ C _{nC₄} ‰ VPDB	δ ¹³ C ₅ ‰ VPDB	δ ¹³ nC ₅ ‰ VPDB	δ ¹³ CO ₂ ‰ VPDB	δD ‰ VSMOW	
18071735	DIG-015527	Johnstone 20-1 Wellhead Gas		07/23/18	9:44	799964	19.0	4.7	16.2	7/25/2018	-48.8	-31.8	-26.1	-27.5	-24.2			5.1	-262	

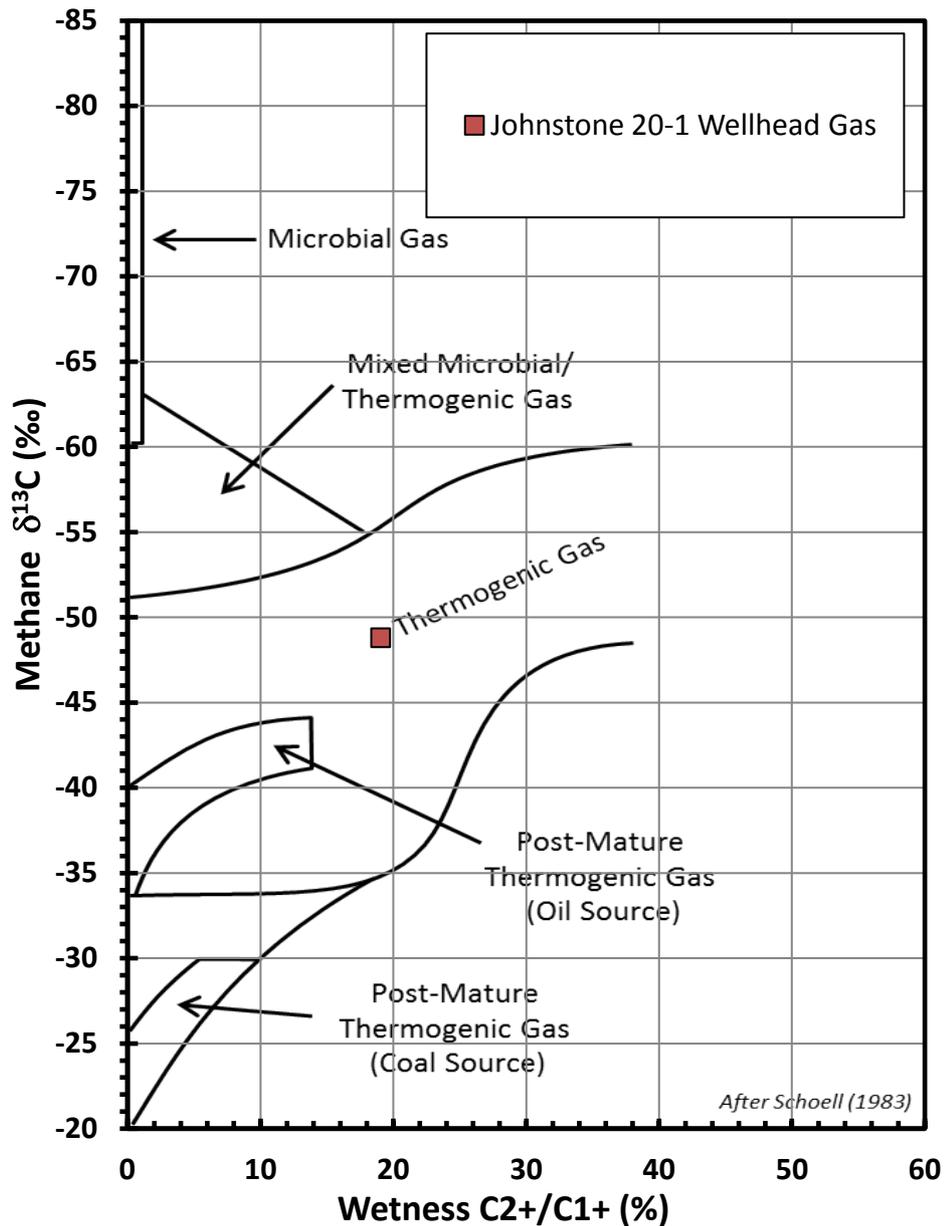
Stable isotope results based on multi-point laboratory calibration
 low signal; interpret with caution
 Precision δD < 5 ‰

* As ideal gas, with gas concentrations normalized to 100%;
 calculations based on GPA 2145-09 physical constants.

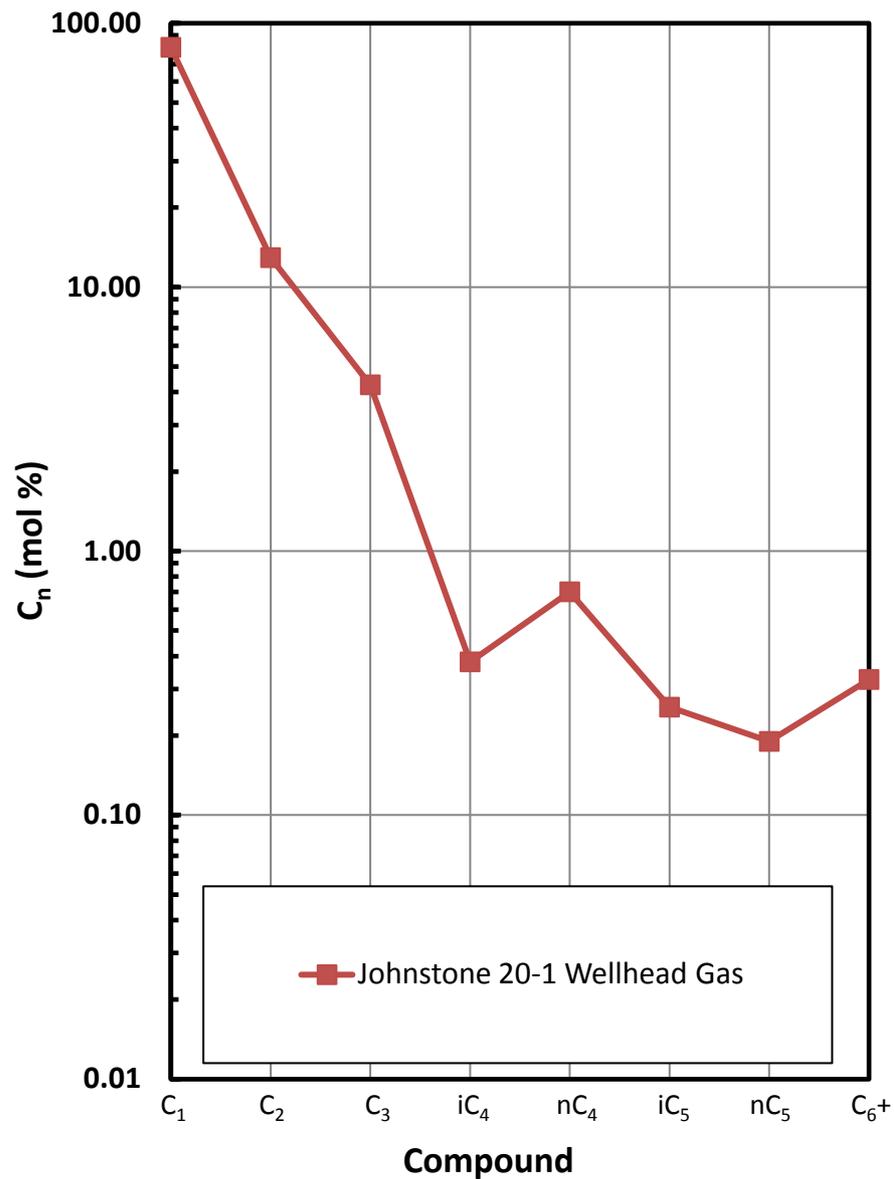
SPECIFIC GRAVITY*	
Total Gas Spec Grav	0.767
HCs only Spec Grav	0.690

INTERPRETIVE PLOTS

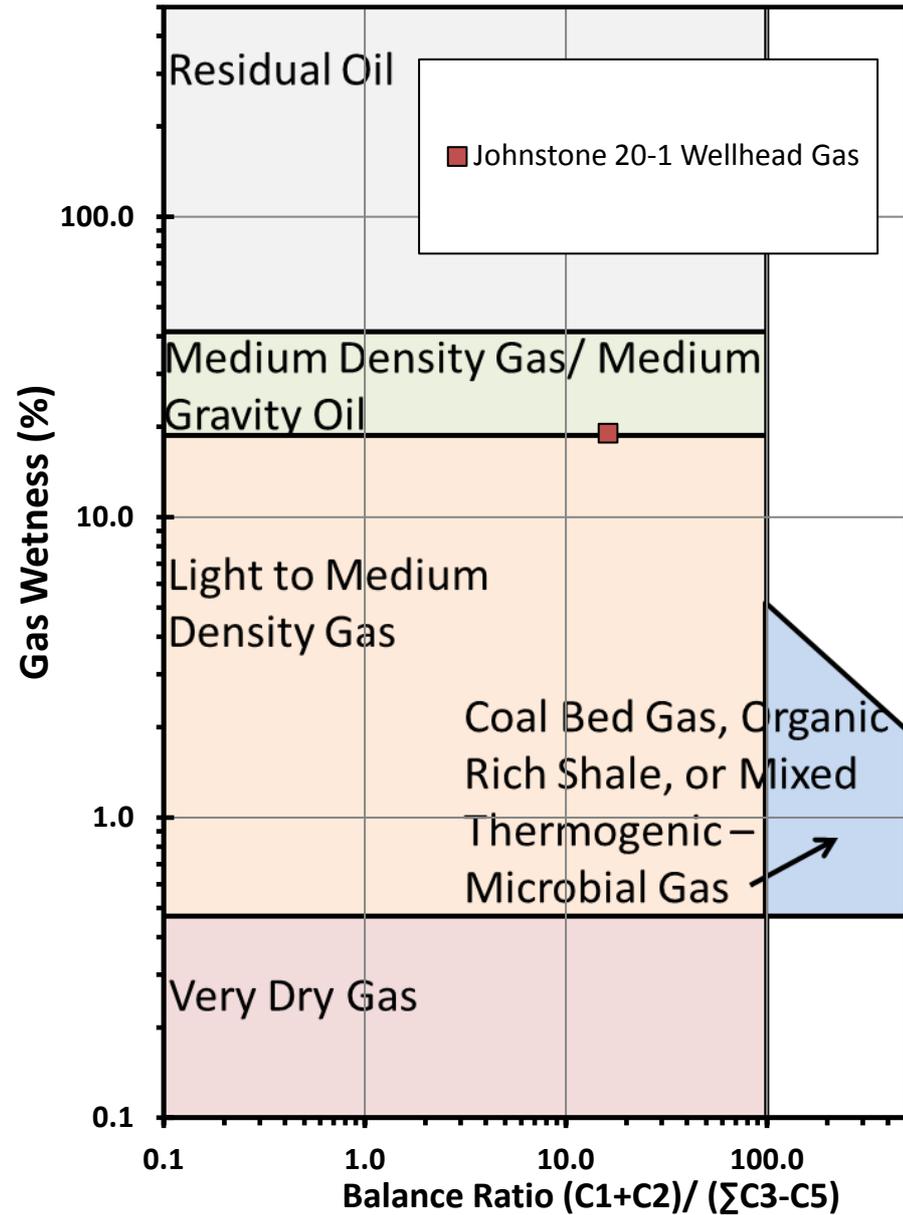
Methane $\delta^{13}C$ vs Wetness Genetic Classification Plot



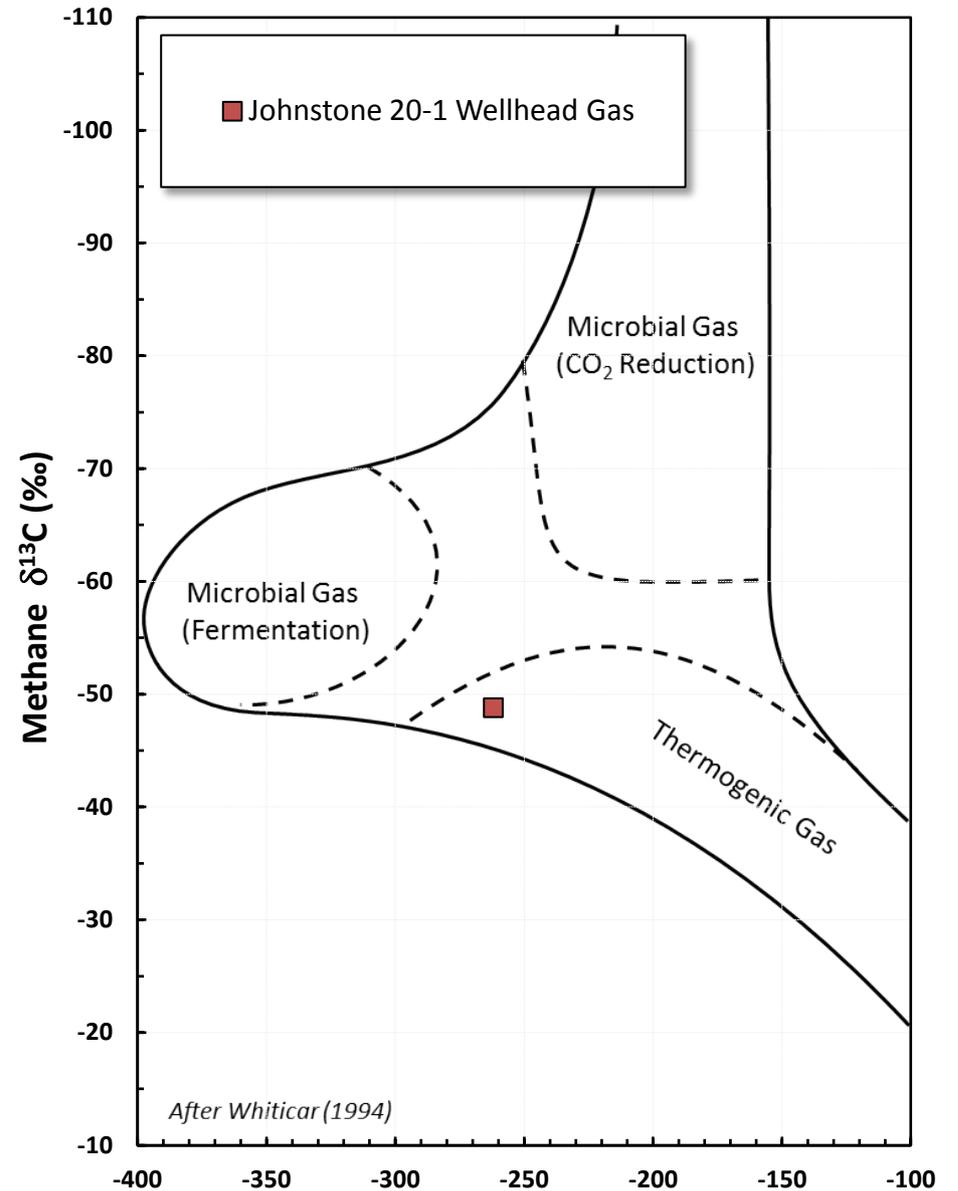
Hydrocarbon Composition Plot



Haworth Ratio Plot - Characterization of Hydrocarbon Type



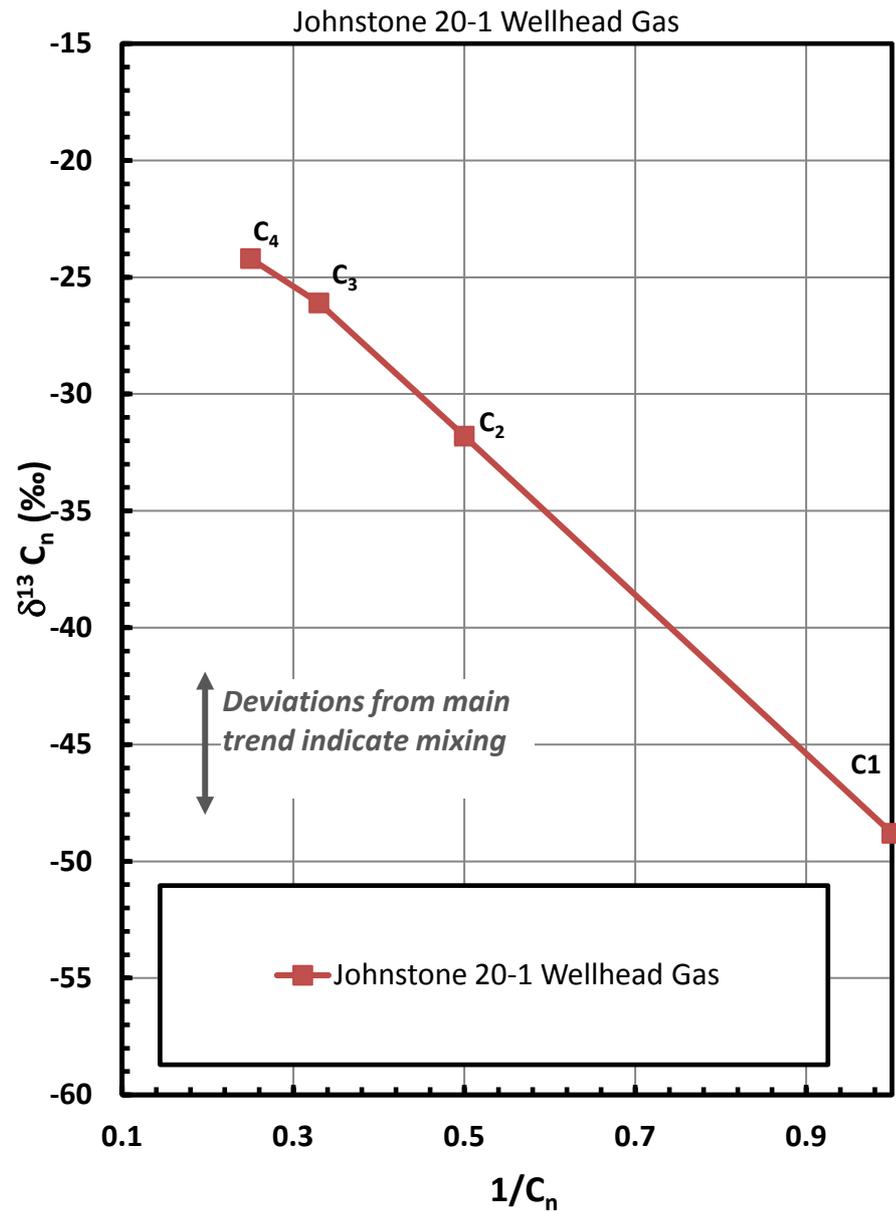
Methane $\delta^{13}\text{C}$ vs δD Genetic Classification Plot



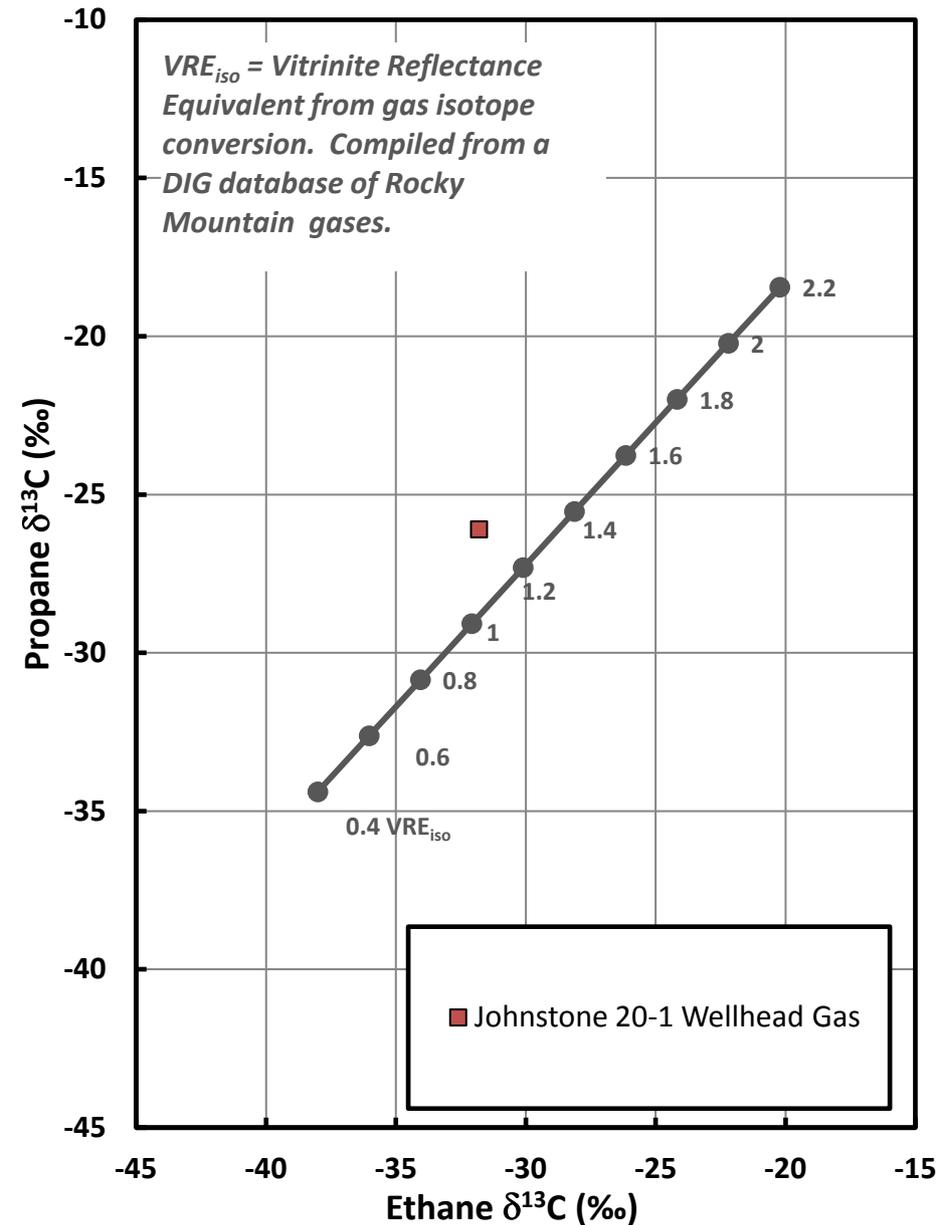
Methane δD (‰)

INTERPRETIVE PLOTS

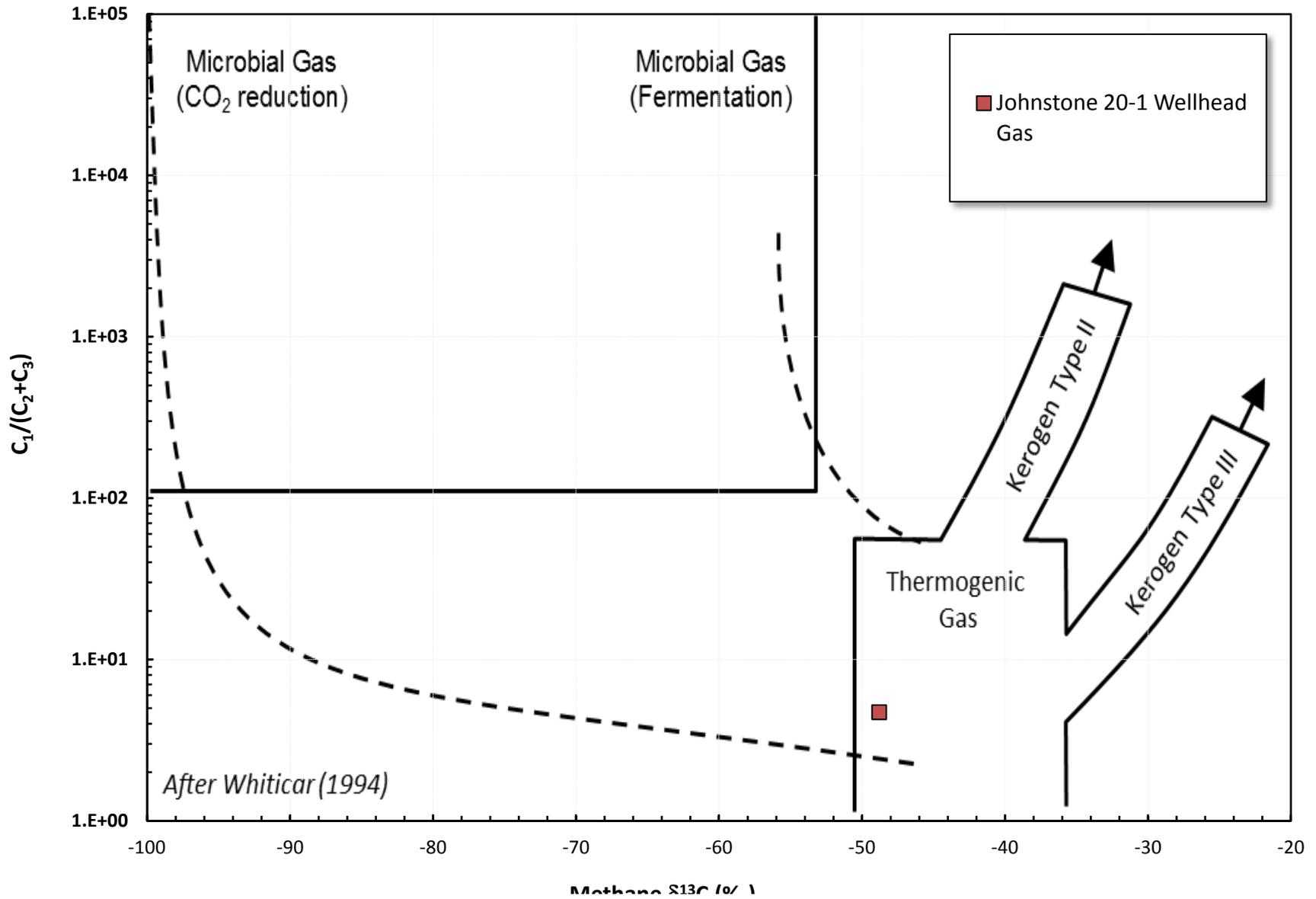
Mixing Plot



Ethane - Propane Maturity Plot



Methane $\delta^{13}C$ vs $C_1/(C_2+C_3)$ Genetic Classification Plot



viethane 0~C (700)

