



**dig**  
Dolan Integration Group

## Geochemistry for Energy

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### **Hydrocarbon Gas Composition and Stable Isotopes Data and Interpretation**

**Job #:** 18071735  
**Lab #:** DIG-015526  
**Client:** Air Pollution Testing  
**Well Name:** Maul 20-2 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 <sub>2</sub> ppm	O <sub>2</sub> + Ar ppm	CO <sub>2</sub> ppm	C <sub>1</sub> ppm	C <sub>2</sub> ppm	C <sub>3</sub> ppm	iC <sub>4</sub> ppm	nC <sub>4</sub> ppm	iC <sub>5</sub> ppm	nC <sub>5</sub> ppm	C <sub>6</sub> + ppm	C <sub>2</sub> H <sub>4</sub> ppm	He ppm	H <sub>2</sub> ppm	C <sub>1</sub> mol%	C <sub>2</sub> mol%	C <sub>3</sub> mol%	iC <sub>4</sub> mol%	nC <sub>4</sub> mol%	iC <sub>5</sub> mol%	nC <sub>5</sub> mol%	C <sub>6</sub> + mol%	Total Gas BTU/R <sup>3</sup>		
18071735	DIG-015526	Maul 20-2 Wellhead Gas		07/23/18	9:28	7/24/2018	11713	441	27010	738016	115063	48274	6484	15306	4968	5182	15398				77.8	12.13	5.09	0.68	1.61	0.52	0.55	1.62	1271		

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 <sub>2</sub> to C <sub>5</sub>	C <sub>1</sub> /C <sub>2</sub> +C <sub>3</sub> mol/mol	Balance Ratio C <sub>1</sub> +C <sub>2</sub> /C <sub>3</sub> -C <sub>5</sub>	Mass Spec Date	δ <sup>13</sup> C <sub>1</sub> ‰ VPDB	δ <sup>13</sup> C <sub>2</sub> ‰ VPDB	δ <sup>13</sup> C <sub>3</sub> ‰ VPDB	δ <sup>13</sup> iC <sub>4</sub> ‰ VPDB	δ <sup>13</sup> nC <sub>4</sub> ‰ VPDB	δ <sup>13</sup> iC <sub>5</sub> ‰ VPDB	δ <sup>13</sup> nC <sub>5</sub> ‰ VPDB	δ <sup>13</sup> CO <sub>2</sub> ‰ VPDB	δD ‰ VSMOW	
18071735	DIG-015526	Maul 20-2 Wellhead Gas		07/23/18	9:28	948692	22.2	4.5	10.6	7/27/2018	-49.1	-32.5	-27.5	-28.8	-26.8	-27.3	-26.6	3.4	-275	

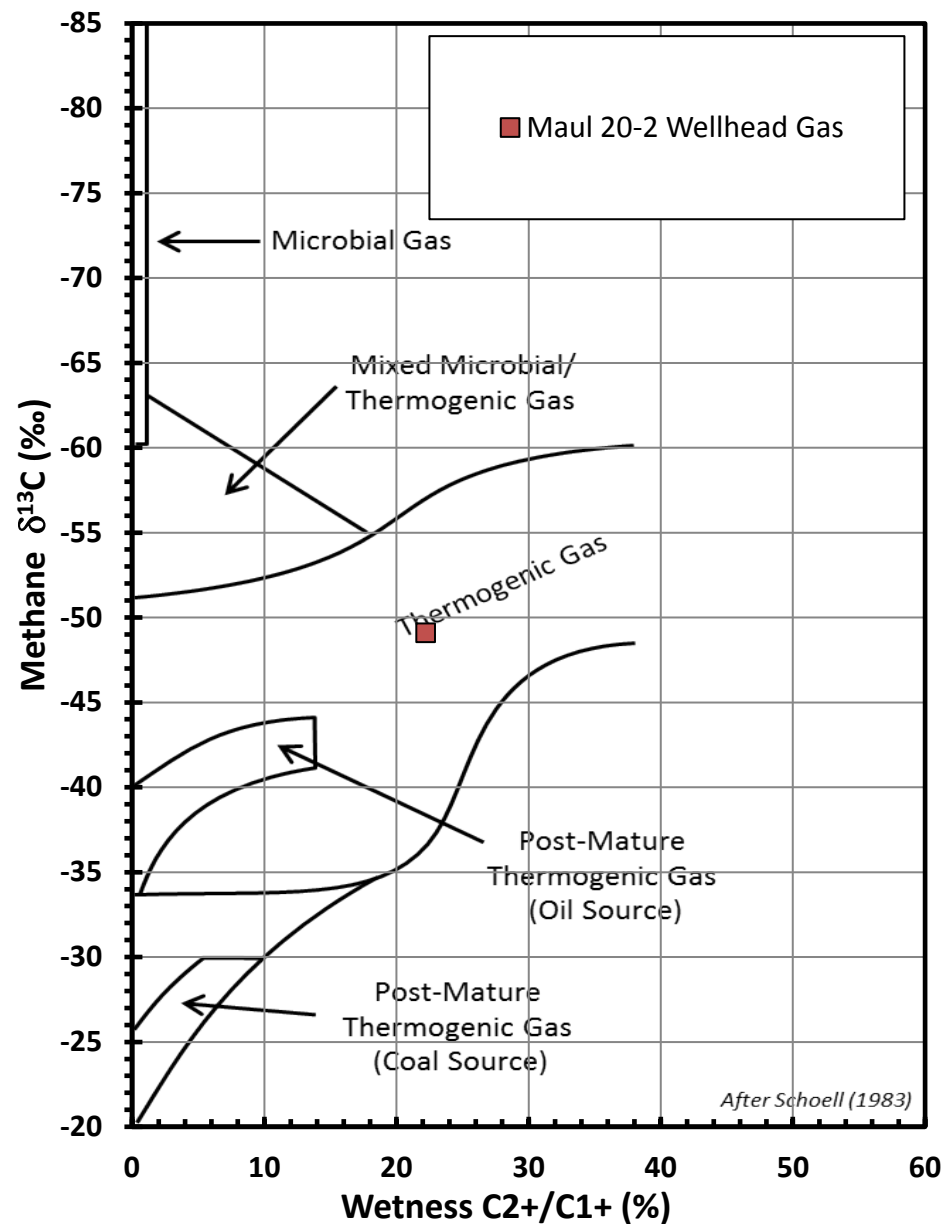
Stable isotope results based on multi-point laboratory calibration  
low signal; interpret with caution  
Precision δD < 5 ‰

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

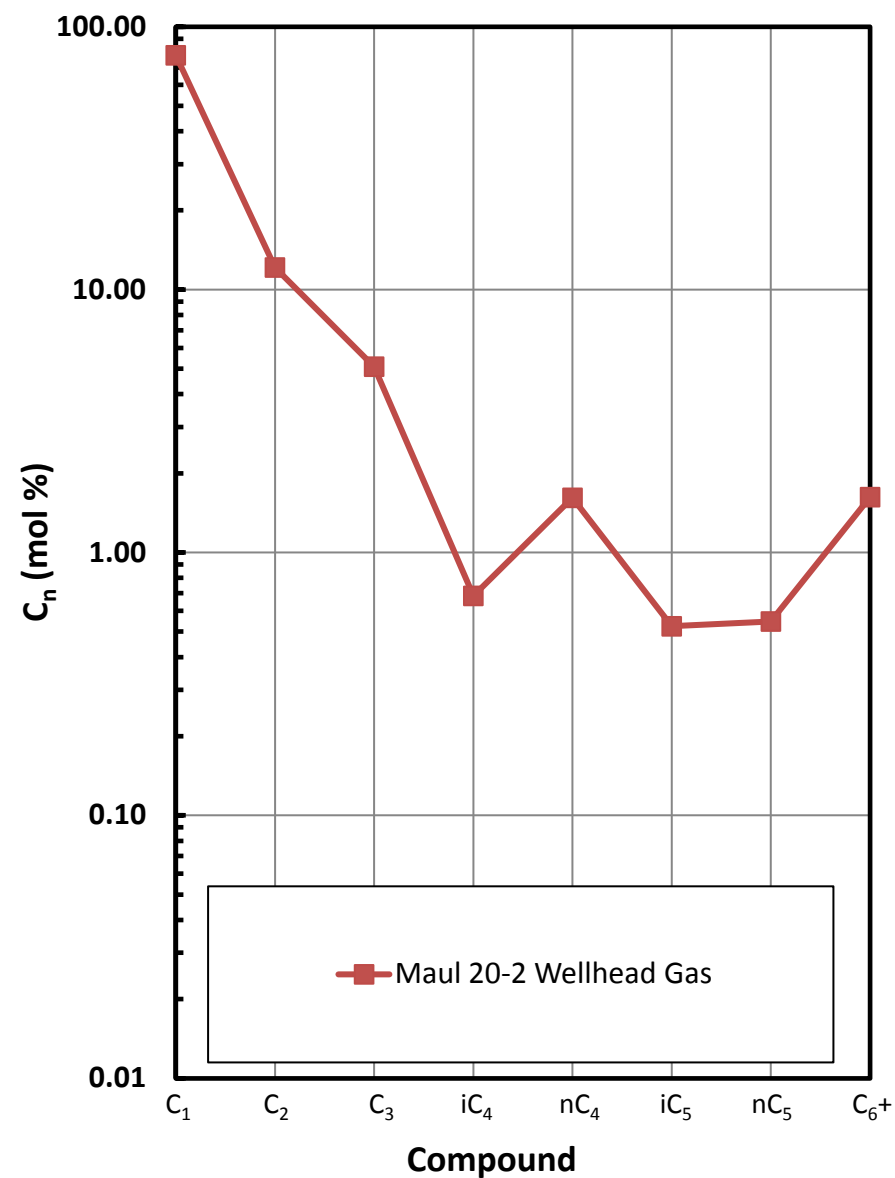
SPECIFIC GRAVITY*	
Total Gas Spec Grav	HCs only Spec Grav
0.779	0.755

## INTERPRETIVE PLOTS

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

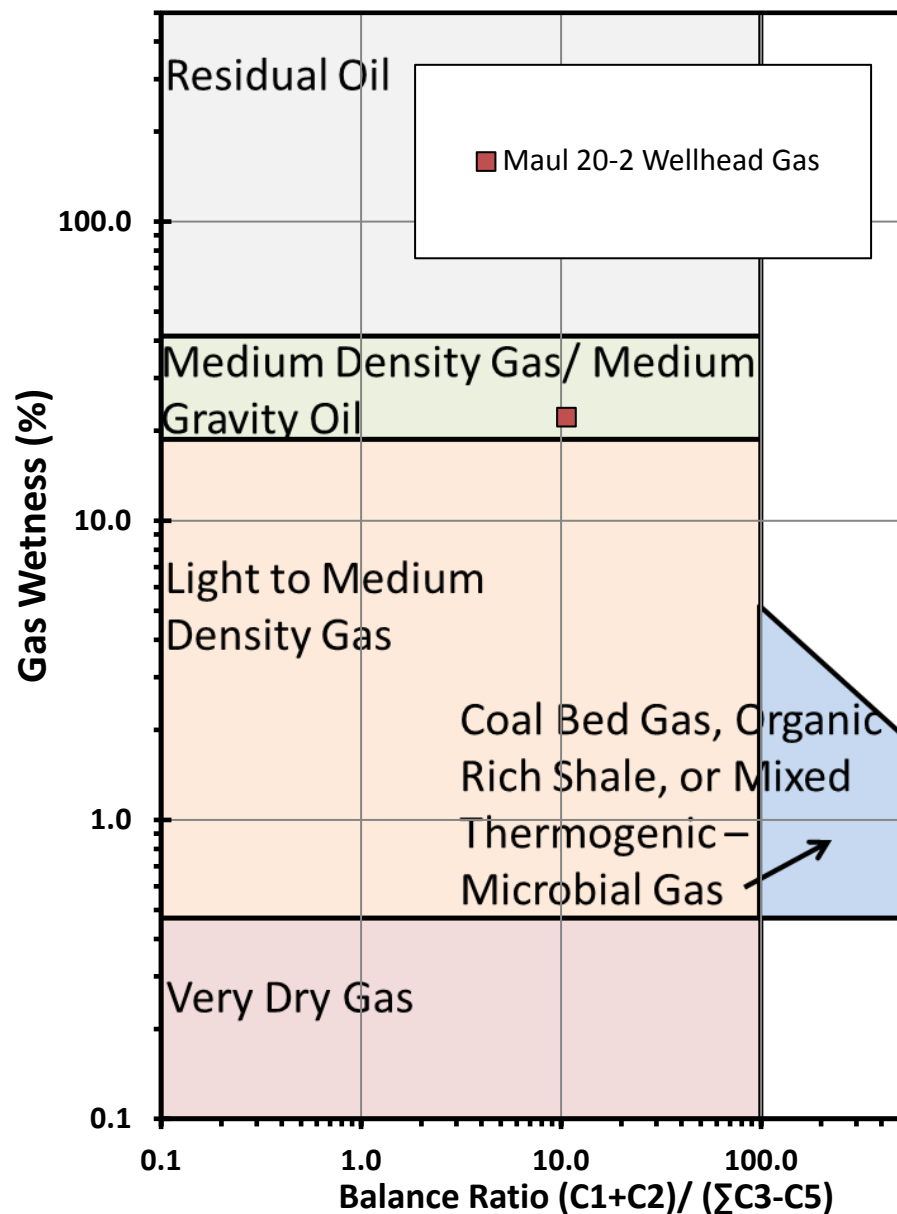


Hydrocarbon Composition Plot

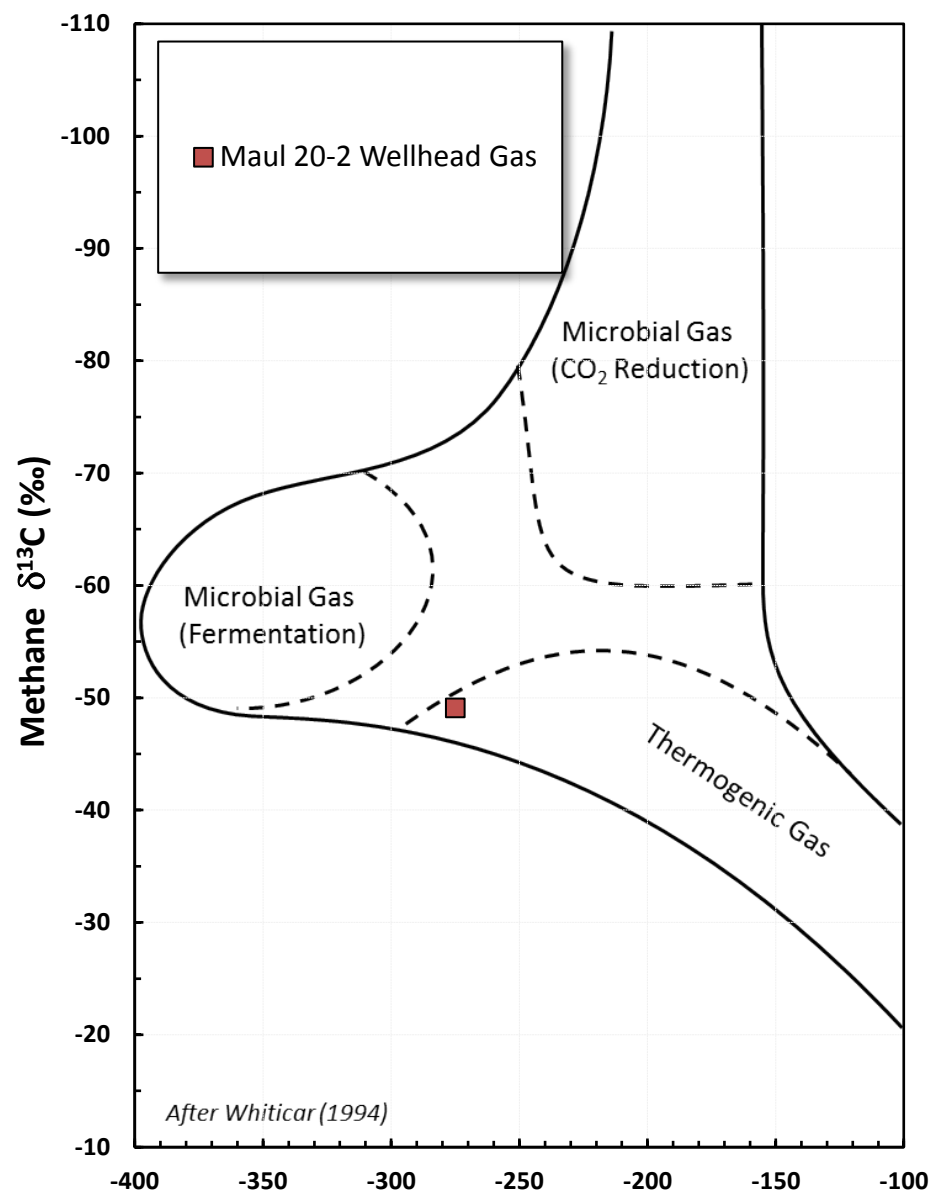


## INTERPRETIVE PLOTS

Haworth Ratio Plot - Characterization of Hydrocarbon Type



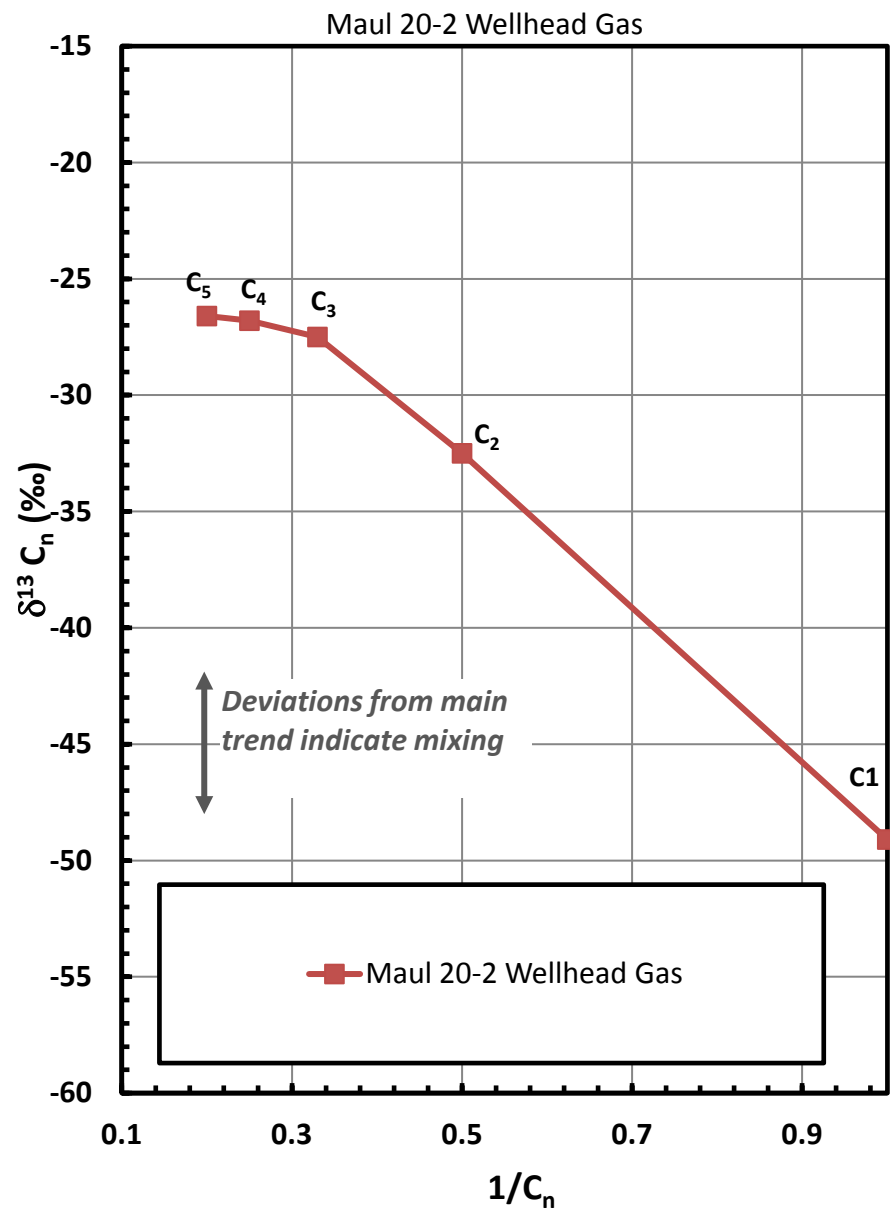
Methane  $\delta^{13}C$  vs  $\delta D$  Genetic Classification Plot



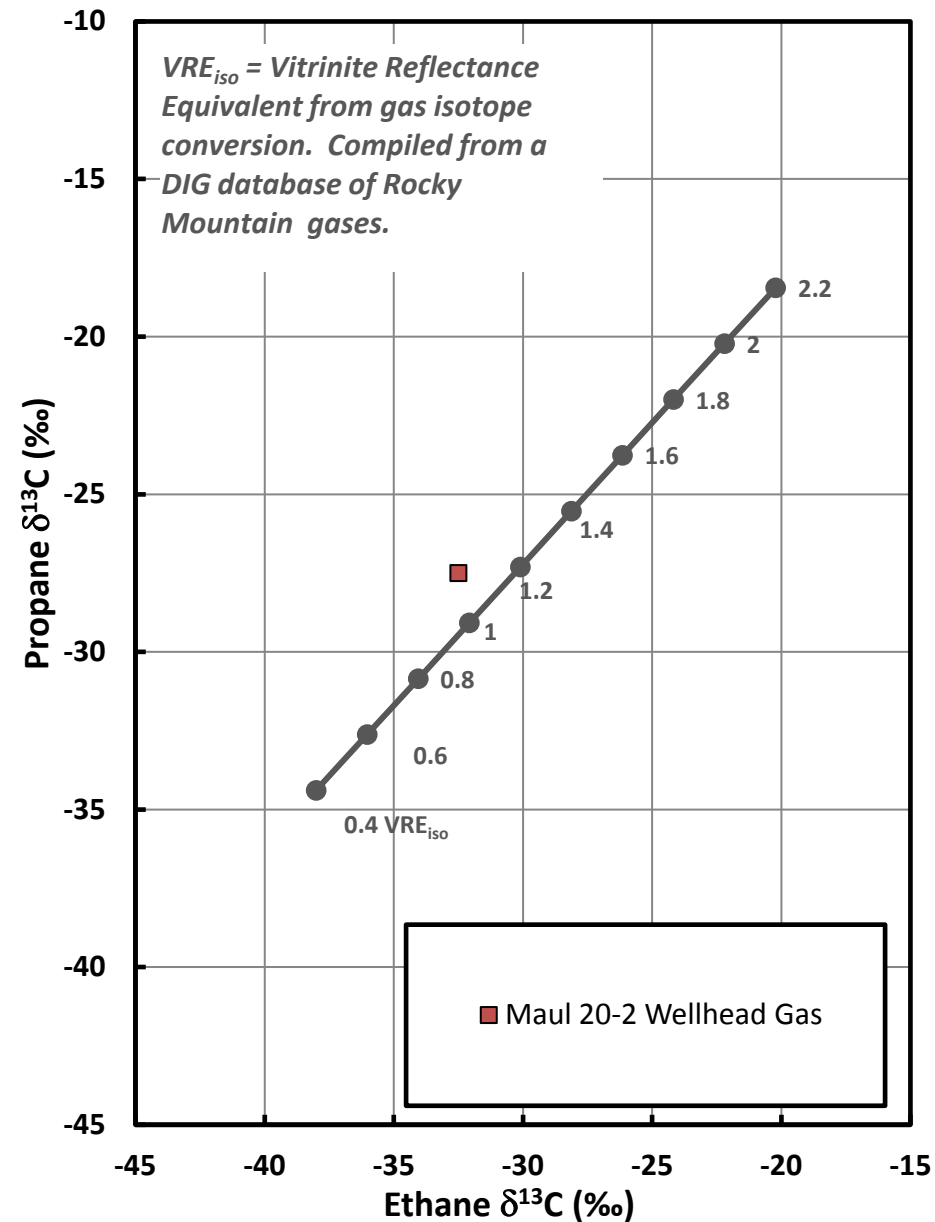
**Methane  $\delta D$  (‰)**

## INTERPRETIVE PLOTS

### Mixing Plot

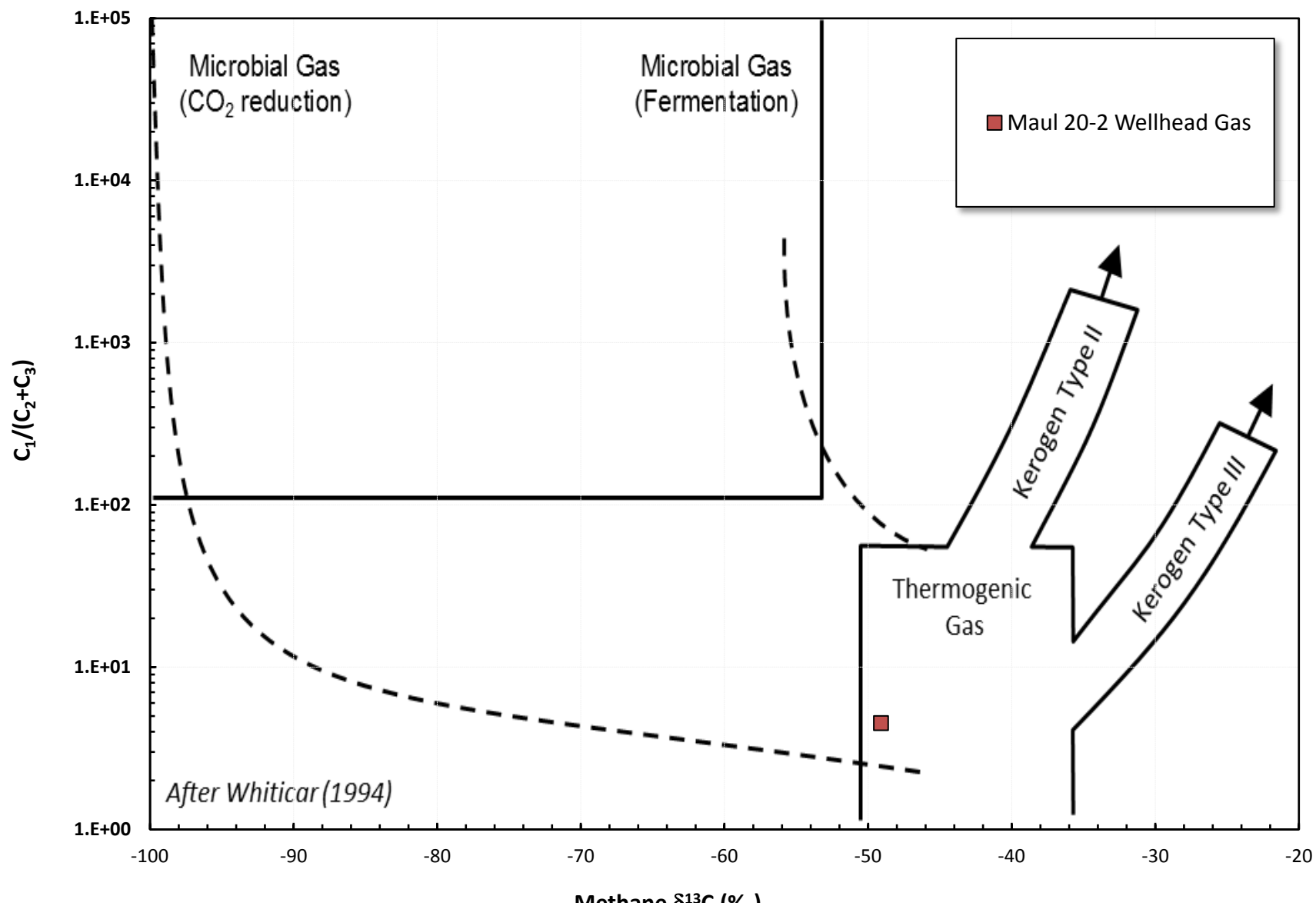


### Ethane - Propane Maturity Plot



## INTERPRETIVE PLOTS

### Methane $\delta^{13}\text{C}$ vs $\text{C}_1/(\text{C}_2+\text{C}_3)$ Genetic Classification Plot



viethane 0~C (700)



