



dig
Dolan Integration Group

Geochemistry for Energy

11025 Dover Street Unit 800
Westminster, CO 80021
p: 303.531.2030

Hydrocarbon Gas Composition and Stable Isotopes Data and Interpretation

Job #: 21116737
Lab #: DIG-026728
Client: Southern Petroleum Labs, Inc.
Well Name: GV 22-29

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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 ₇ H ₁₆ 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/H ¹
21116737	DIG-026728	GV 22-29 Gas	Gas	11/12/21	11:00	11/26/2021	12391	1505	89	940139	24180	1871	1166	115	452	250					87.1	2.50	0.19	0.12	0.01	0.05		0.03	1022

SAMPLE INFORMATION			HYDROCARBON RATIOS				STABLE ISOTOPE ANALYSIS										Comments		
Job Number	Lab Number	Well Name	Sample Type	Sample Date	Sample Time	Total HC ppm	Witness % C ₁ to C ₂	C ₂ /C ₁ *C ₃ mol/mol	Balance Ratio C ₁ +C ₂ /C ₃ -C ₅	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 ₅ ‰ VPDB	δ ¹³ C ₆ ‰ VPDB	δ ¹³ C ₇ ‰ VPDB	δ ¹³ CO ₂ ‰ VPDB	δ ¹⁸ O ‰ VSMOW
21116737	DIG-026728	GV 22-29 Gas	Gas	11/12/21	11:00	968173	2.8	36.1	287.6	12/2/2021	-30.6	-25.0							-183

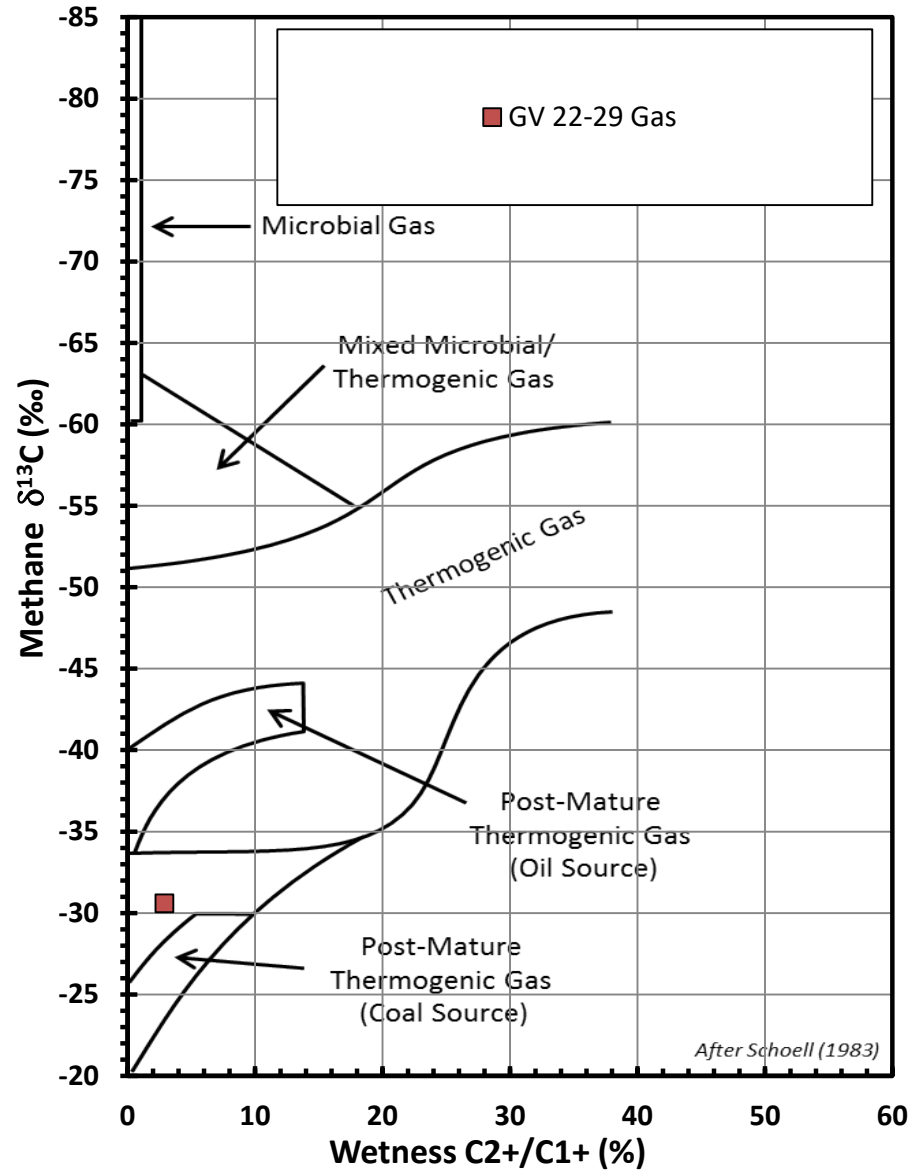
Stable isotope results based on multi-point laboratory calibration
 Values in red represent low signal; interpret with caution
 Precision δ¹³C < 0.5 ‰
 Precision δ¹⁸O < 5 ‰

SPECIFIC GRAVITY*	
Total Gas Spec Grav	HCs only Spec Grav
0.577	0.571

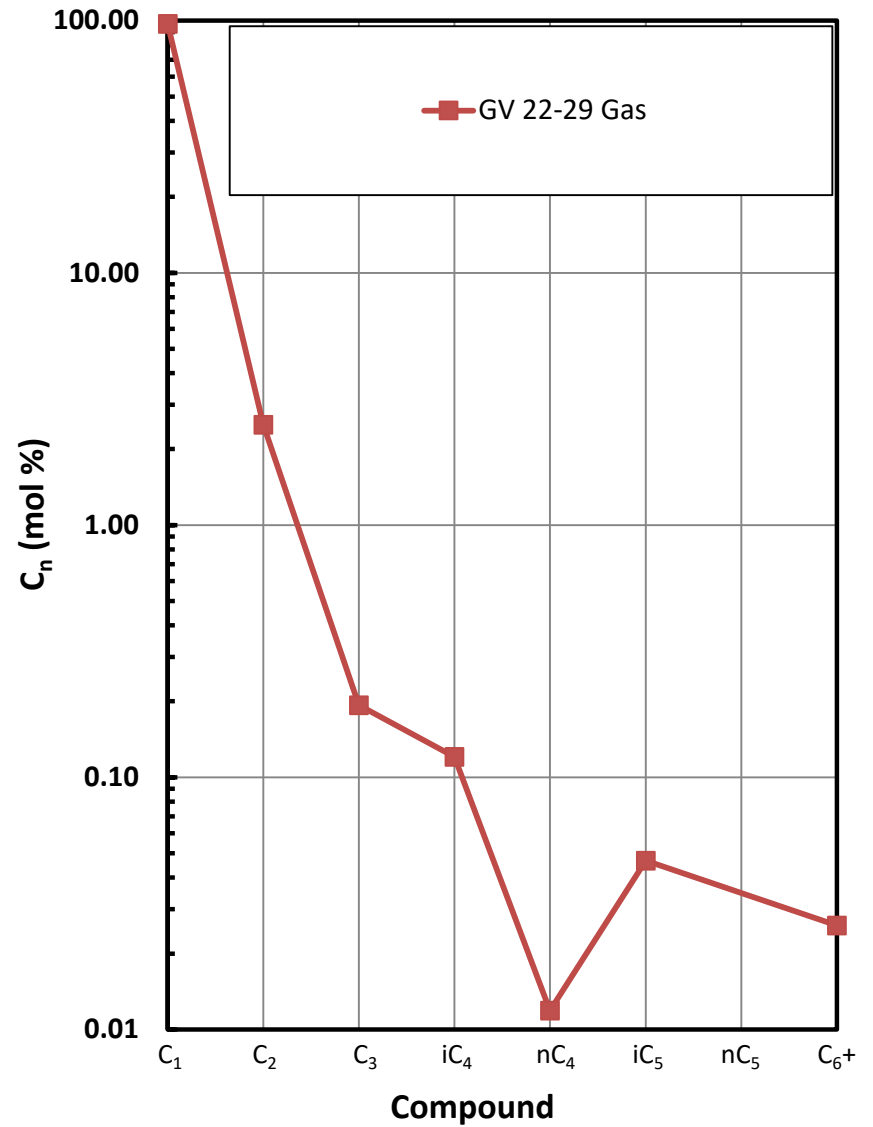
* As ideal gas, with gas concentrations normalized to 100%; calculations based on GPA 2145-09 physical constants.

INTERPRETIVE PLOTS

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

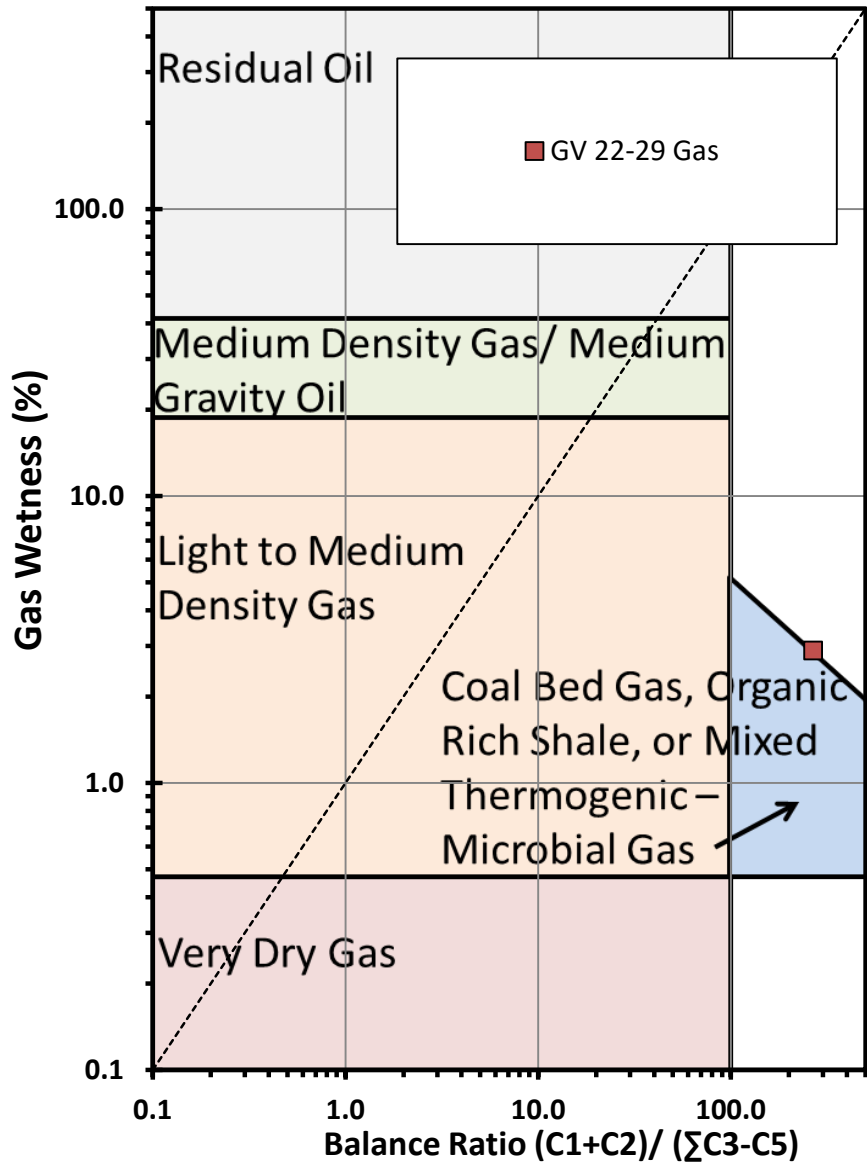


Hydrocarbon Composition Plot

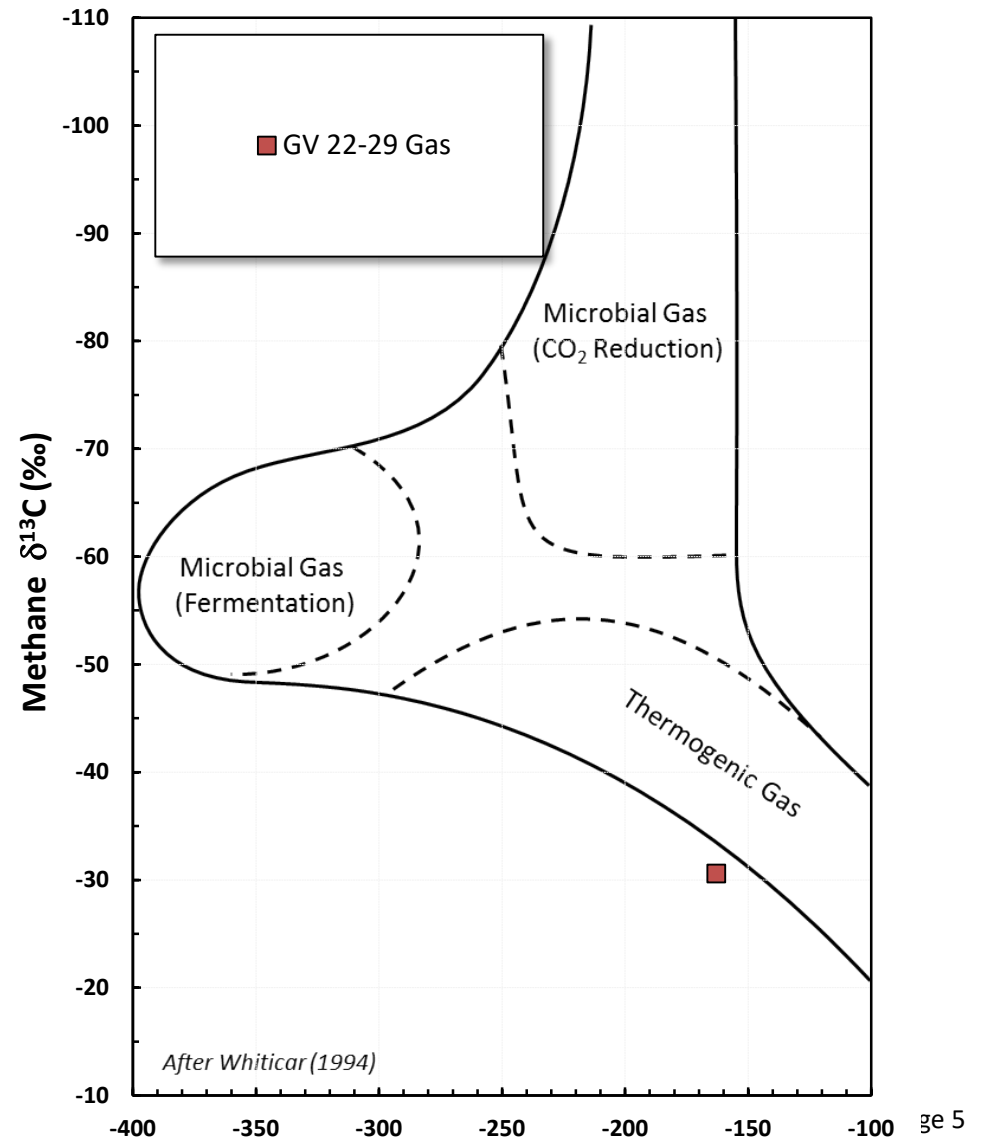


INTERPRETIVE PLOTS

Haworth Ratio Plot - Characterization of Hydrocarbon Type

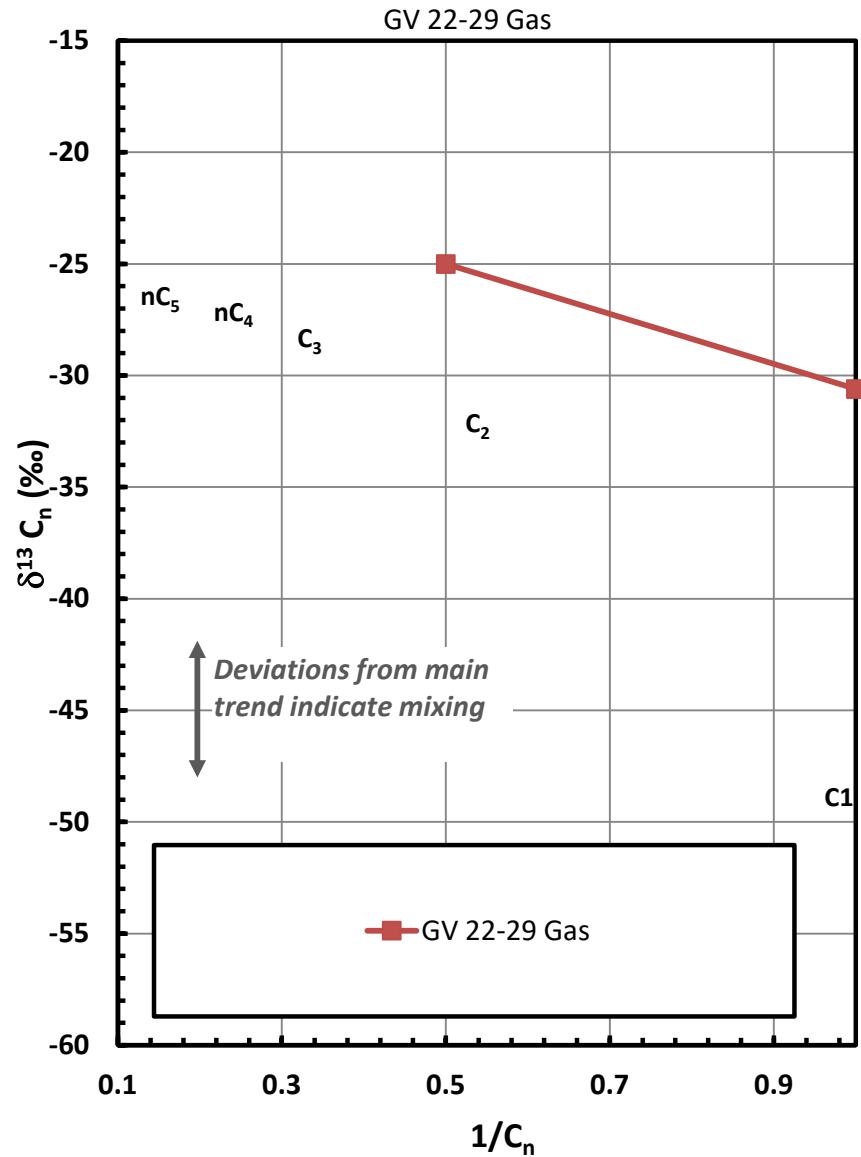


Methane $\delta^{13}\text{C}$ vs δD Genetic Classification Plot

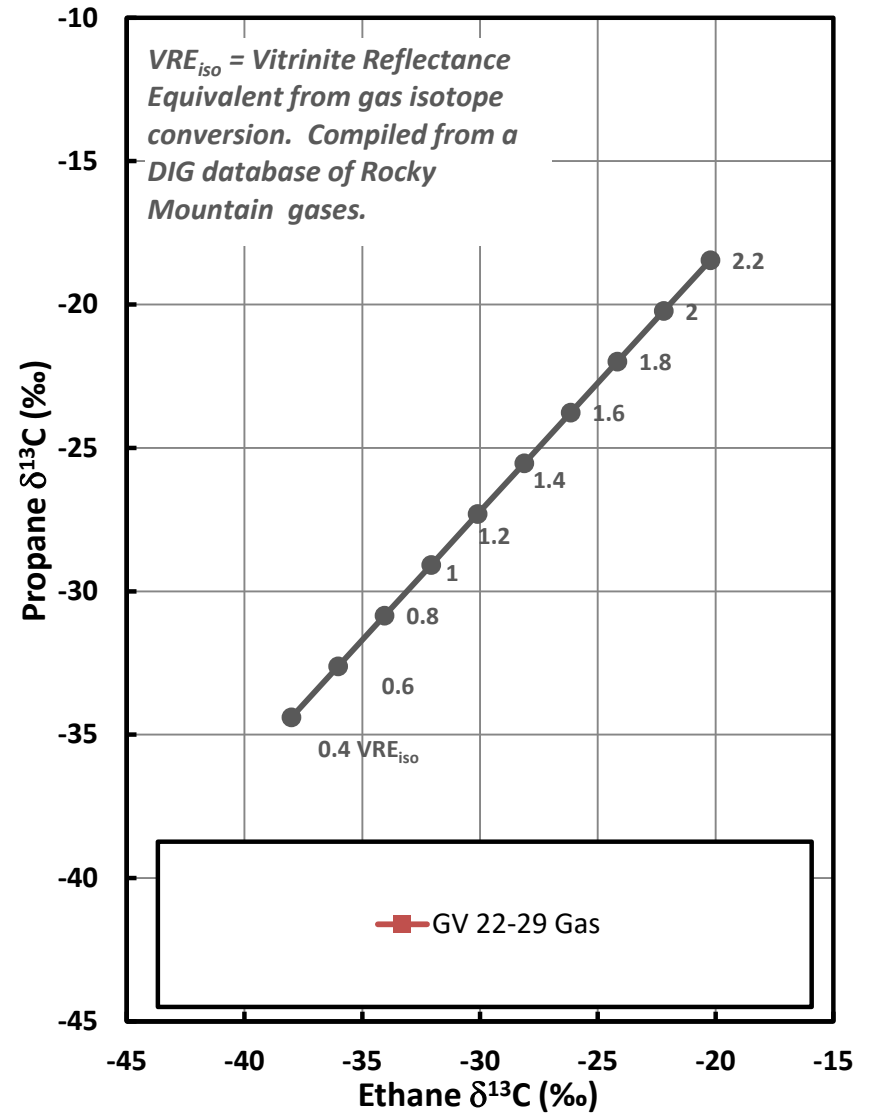


INTERPRETIVE PLOTS

Mixing Plot

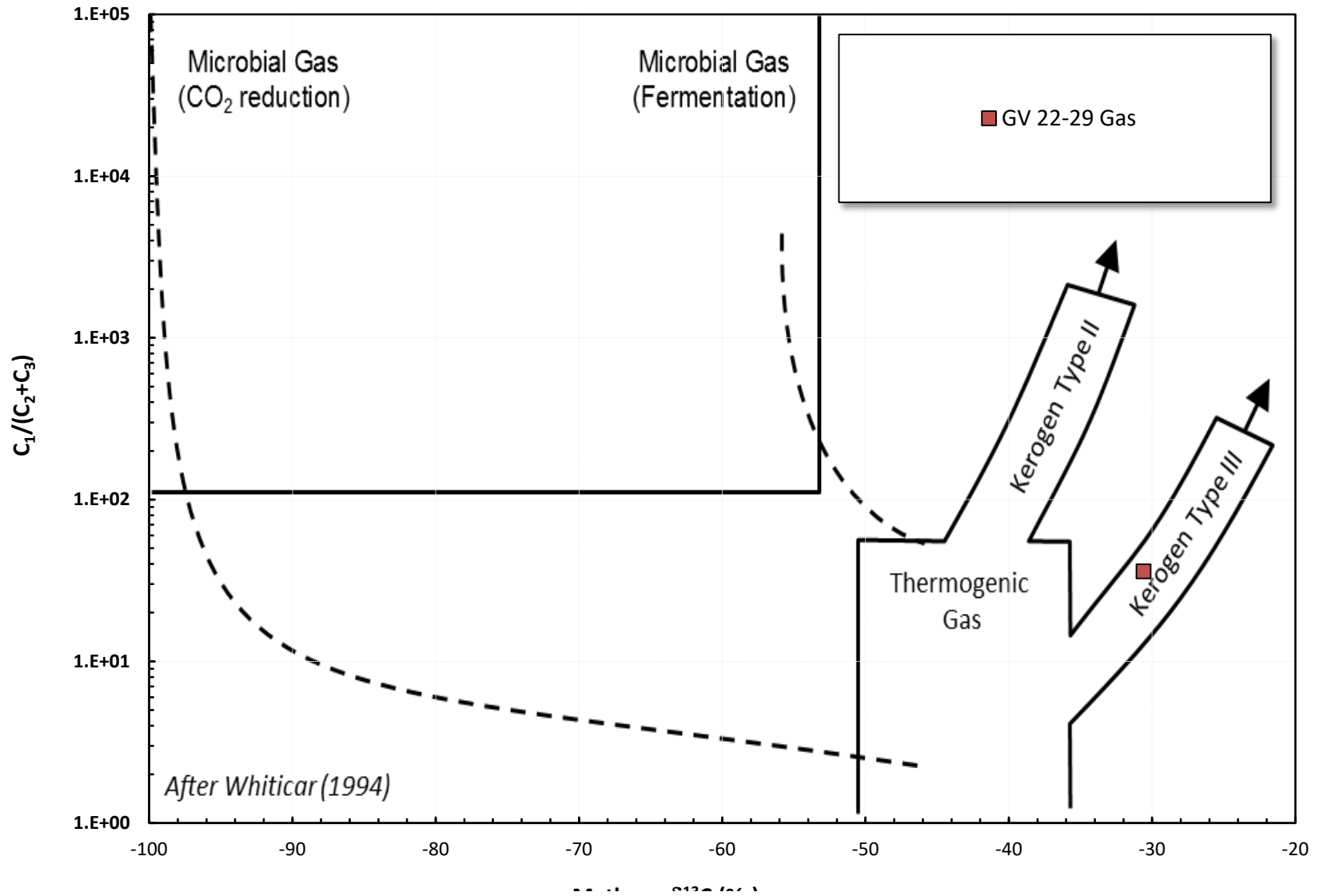


Ethane - Propane Maturity Plot




INTERPRETIVE PLOTS

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



SPL, Inc. JOB 1116736-6738 DIG-06677-719

Analysis Request Chain of Custody Record

		Report To: (Company Name): Address:		SPL Inc. Greeley, CO						
City/State/Zip: Contact: Phone:		Net 30 day Acct. Credit Card		Project/Station Number: Project/Station Location:						
Invoice To: (Company Name): Address:		Requested Analysis (Place an "X" next to Sample ID below)		Requested TAT 6-10 Business days						
City/State/Zip: Contact: Phone:		Terms: Cylinders will be rented for \$10/cyl. All cylinders checked out are to be returned within 21 days whether they contain sample or not. Cylinders not returned after 30 days will be considered lost and will be billed at current replacement cost.		* Surcharges May Apply (See quote for details)						
Client PO# or Ref. No.: Contract/Proposal #: (i.e. SPLC###)		Gas Compositional Stable Isotope Analysis Temperature PSI		Comments						
Sample ID used to log/track sample	Sample Date	Sample Time	Sample Type (Gas/Liq./Solid)	Duplicate	Composite	Spot	Cylinder Tracking Info Cylinder# Date Out Date In			
RMV 29-27	11/12/2021	10:00 a.m.	Gas				-00887	X	X	
RMV 29-27	11/12/2021	10:00 a.m.	Gas				-01823	X	X	
GV 22-29	11/12/2021	11:00 a.m.	Gas				-00808	X	X	DUPLICATE
GV 22-29	11/12/2021	11:15 a.m.	Gas				-01848	X	X	DUPLICATE
GM 230-34	11/12/2021	11:30 a.m.	Gas				-01047	X	X	DUPLICATE
GM 230-34	11/12/2021	11:45 a.m.	Gas				-00479	X	X	

Implyed By-Print Name: Signature:	Received By-Company: SPL INC
Acquired By-Print Name: Signature:	Received By-Print Name: WYLEIGH JACOBS
Acquired By-Print Name: Signature:	Received By-Print Name: Signature:
Acquired By-Print Name: Signature:	Received By-Print Name: Signature:
Date: 11/12/2021 Time: 12:30 a.m.	Date: 11/15/21 Time: 10:00
Date: 11/12/2021 Time: 11:45 a.m.	Date: 11-15-21 Time: 1300

Note - As a convenience to our clients, this form is available in an electronic format. Please contact one of our offices above for the form to be e-mailed to you.