



dig
Dolan Integration Group

Geochemistry for Energy

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Hydrocarbon Gas Composition and Stable Isotopes Data and Interpretation

Job #: 14120377
Lab #: DIG-006938-006939
Client: Noble Energy
Well Name: Davis 2-33 Prod & Braden Gases



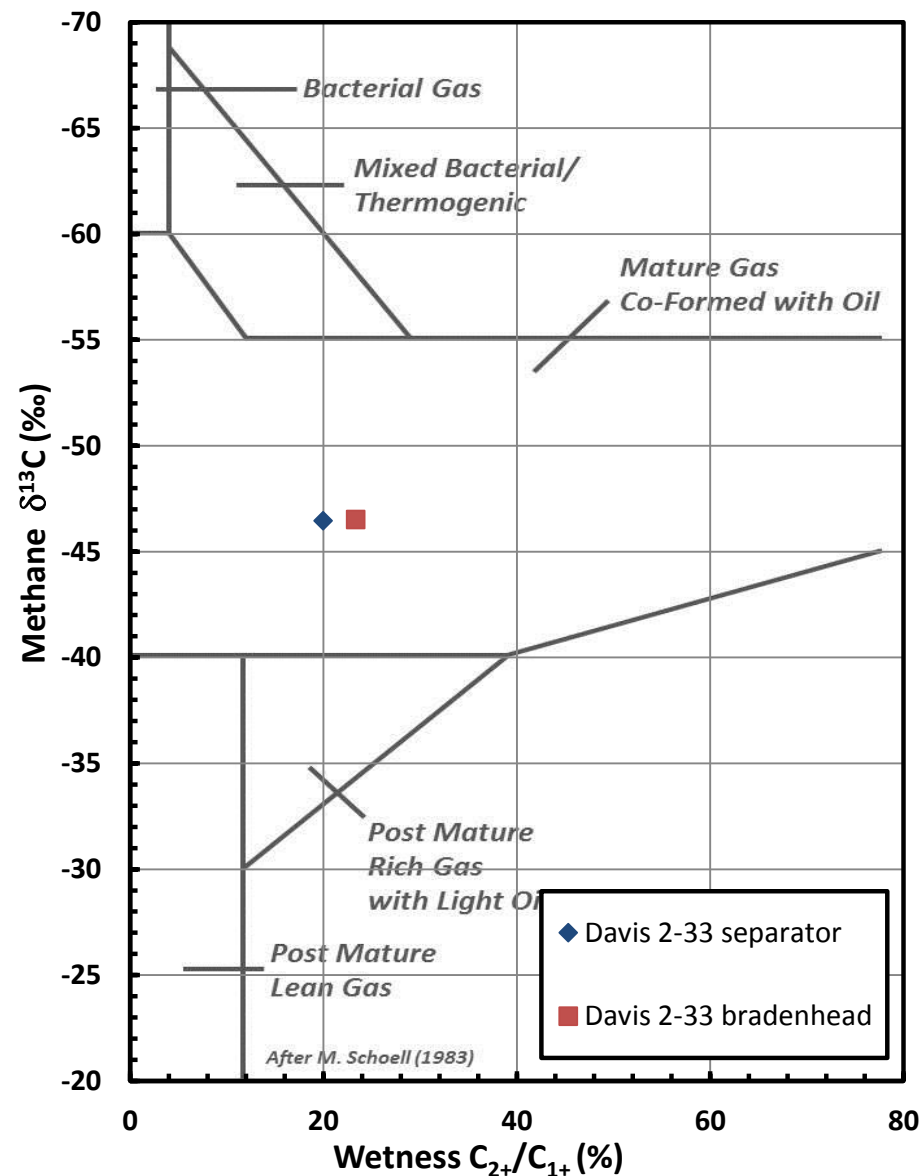
Client/Well Name: Noble Energy / Davis 2-33 prod and braden samples
Job #: 14120377
Lab #: DIG-006938-006939

SAMPLE INFORMATION					COMPLETE GAS ANALYSIS														HYDROCARBON GAS ANALYSIS							
Job Number	Lab Number	Well Name	Sample Date	Sample Type	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	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%
14120377	DIG-006938	Davis 2-33 separator	12/22/14	production	12/24/14	3300	208	18260	757105	131533	40155	4314	9735	1631	1523	824	621		80.0	13.9	4.2	0.5	1.0	0.2	0.2	0.1
14120377	DIG-006939	Davis 2-33 bradenhead	12/22/14	bradenhead	12/24/14	3367	171	17853	727663	133527	55712	7952	17623	3763	2691	18	652		76.7	14.1	5.9	0.8	1.9	0.4	0.3	0.0

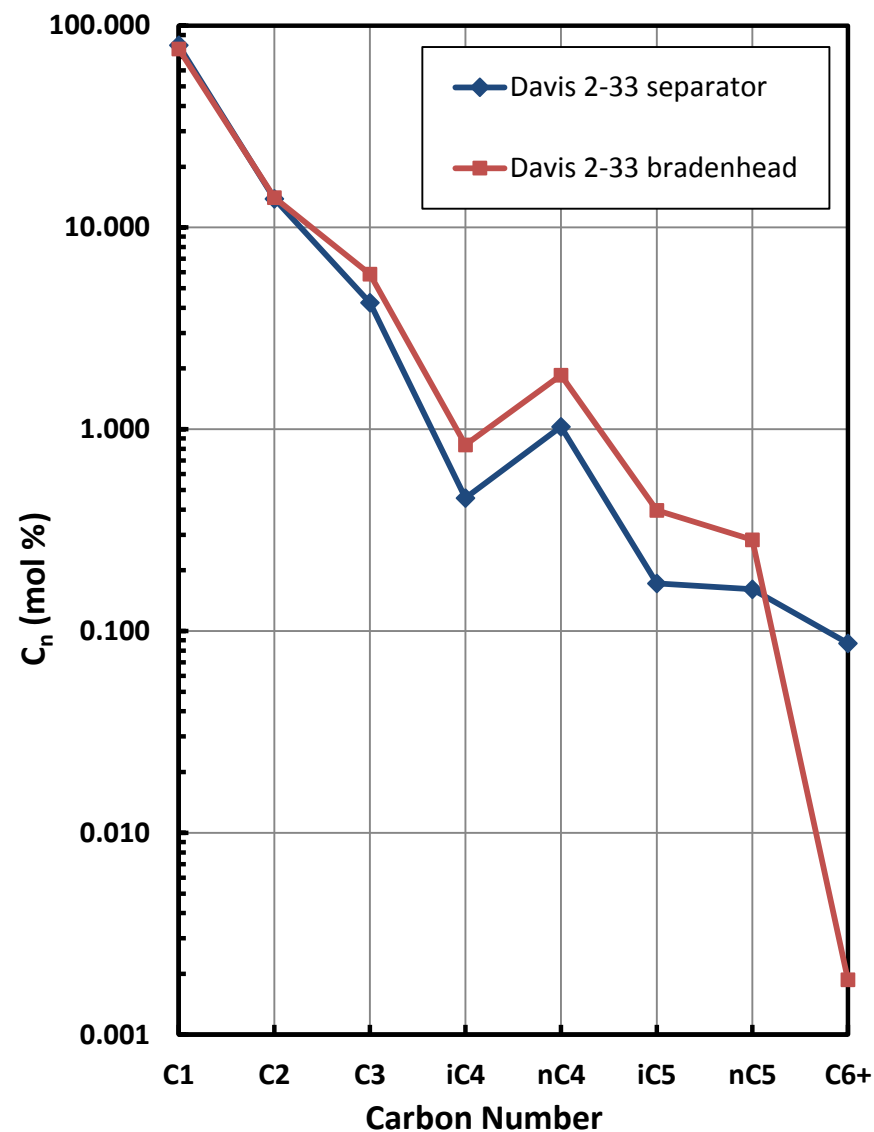
SAMPLE INFORMATION					HYDROCARBON RATIOS				STABLE ISOTOPE ANALYSIS										Comments
Job Number	Lab Number	Well Name	Sample Date	Sample Type	Total HC ppm	Wetness % C ₁ to C ₅	C ₂ /C ₁ mol/mol	iC ₄ /nC ₄ mol/mol	Mass Spec Date	δ ¹³ C ₁ ‰ VPDB	δ ¹³ C ₂ ‰ VPDB	δ ¹³ C ₃ ‰ VPDB	δ ¹³ iC ₄ ‰ VPDB	δ ¹³ nC ₅ ‰ VPDB	δ ¹³ iC ₅ ‰ VPDB	δ ¹³ nC ₆ ‰ VPDB	δD _{C1} ‰ VPDB		
14120377	DIG-006938	Davis 2-33 separator	12/22/14	production	946821	20.0	5.8	0.4	12/31/14	-46.5	-30.8	-27.4		-27.2				-244	
14120377	DIG-006939	Davis 2-33 bradenhead	12/22/14	bradenhead	948947	23.3	5.4	0.5	12/31/14	-46.5	-31.2	-27.8		-26.6				-247	

* Stable isotope results based on multi-point laboratory calibration
Values in blue obtained via cryogenic enrichment
Precision δ¹³C < 0.5 ‰
Precision δD < 5 ‰
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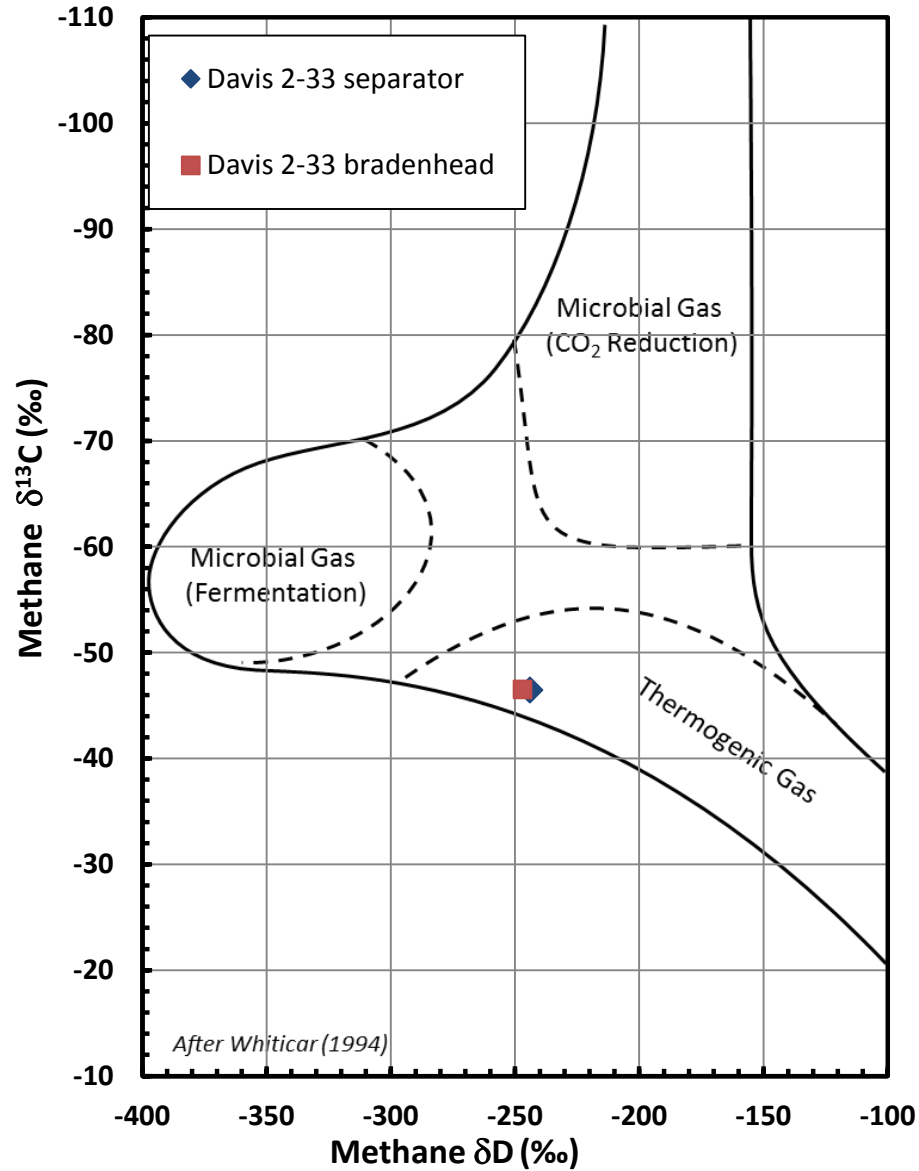
Methane $\delta^{13}\text{C}$ vs Wetness Genetic Classification Plot



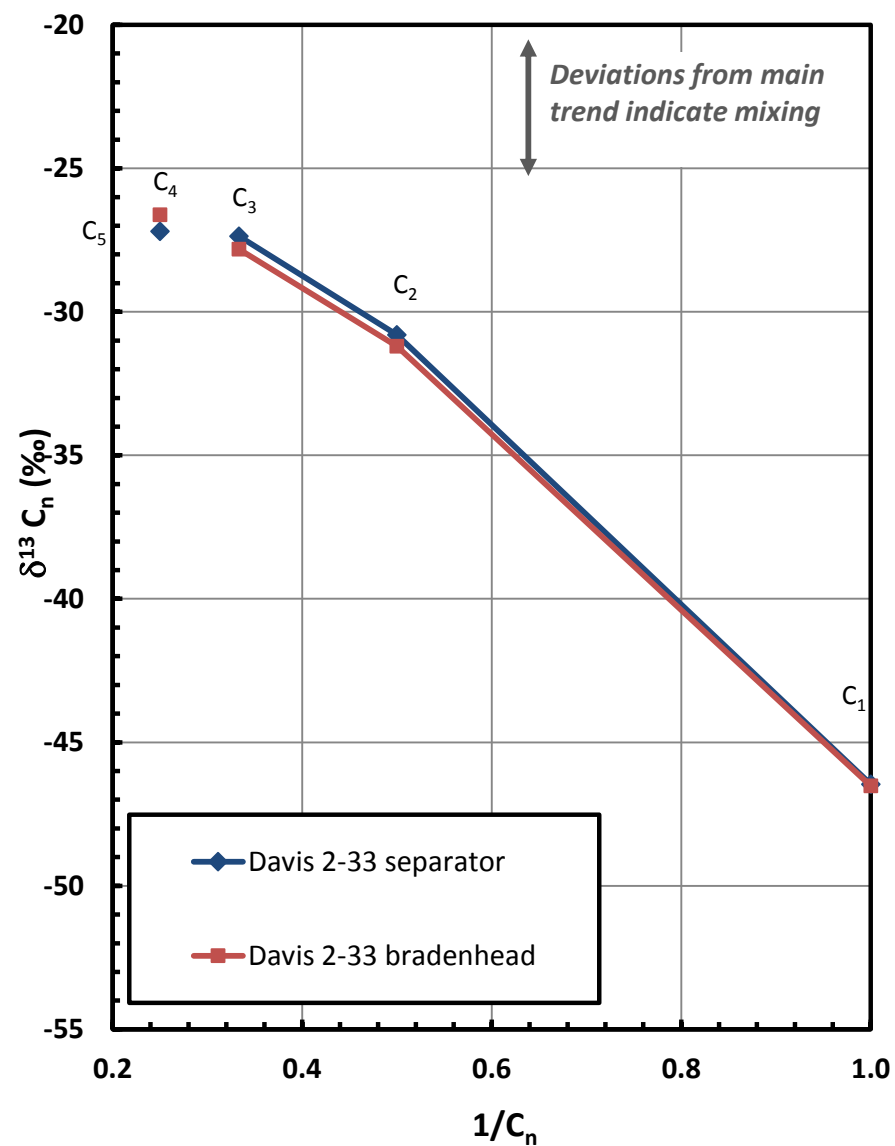
Hydrocarbon Composition Plot



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



Mixing Plot



Maturity Plot

