



**dig**  
Dolan Integration Group

## Geochemistry for Energy

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

**Job #:** 22027167  
**Lab #:** DIG-027381  
**Client:** Summit Scientific  
**Sample Name(s):** INF-022322-1153

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# Analytical Report



Job #: 22027167  
 Lab #: DIG-027381  
 Client: Summit Scientific  
 Sample Name: INF-022322-1153  
 Date Sampled: 02/23/22  
 Time Sampled: 11:53  
 Sample Description: Isoflask  
 Sampling Notes:  
 Date Received: 02/24/22  
 Date Analyzed: Gas Composition: 02/24/22  $\delta^{13}\text{C}$ : 02/26/22  $\delta\text{D}$ : 02/24/22  
 Date Reported: 02/28/22  
 Comments:

Measured Values:	Measured ppm	Analyte mol % <sup>a</sup>	HC mol %	$\delta^{13}\text{C}$ ‰ VPDB	$\delta\text{D}$ ‰ VSMOW	Comments
Nitrogen (N <sub>2</sub> )	403301	41.13	-	-	-	
Oxygen + Argon (O <sub>2</sub> +Ar)	54283	5.54	-	-	-	
Carbon Dioxide (CO <sub>2</sub> )	841	0.09	-	-	-	
Helium (He) <sup>b</sup>	na	na	-	-	-	Helium added to create headspace.
Hydrogen (H <sub>2</sub> )	na	na	-	-	-	
Methane (CH <sub>4</sub> )	464662	47.38	88.98	-61.8	-267	
Ethane (C <sub>2</sub> H <sub>6</sub> )	36404	3.71	6.97		-	
Ethene (C <sub>2</sub> H <sub>4</sub> )	nd	nd	nd		-	
Propane (C <sub>3</sub> H <sub>8</sub> )	15681	1.60	3.00		-	
iso-Butane (C <sub>4</sub> H <sub>10</sub> )	1886	0.19	0.36		-	
n-Butane (C <sub>4</sub> H <sub>10</sub> )	2710	0.28	0.52		-	
iso-Pentane (C <sub>5</sub> H <sub>12</sub> )	434	0.04	0.08		-	
n-Pentane (C <sub>5</sub> H <sub>12</sub> )	305	0.03	0.06		-	
Hexanes + (C <sub>6</sub> H <sub>14</sub> )	115	0.01	0.02		-	

Calculated Values:	
Total HCs (ppm)	522197
Gas Wetness (mol % C <sub>2</sub> +C <sub>1</sub> +) )	11.02
C <sub>1</sub> /(C <sub>2</sub> +C <sub>3</sub> ) (mol/mol)	9

<sup>a</sup> Analyte concentrations normalized to 100% (Mol. % is approximately equal to Vol. % )

<sup>b</sup> Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.

HC= Hydrocarbons

nd = not detected

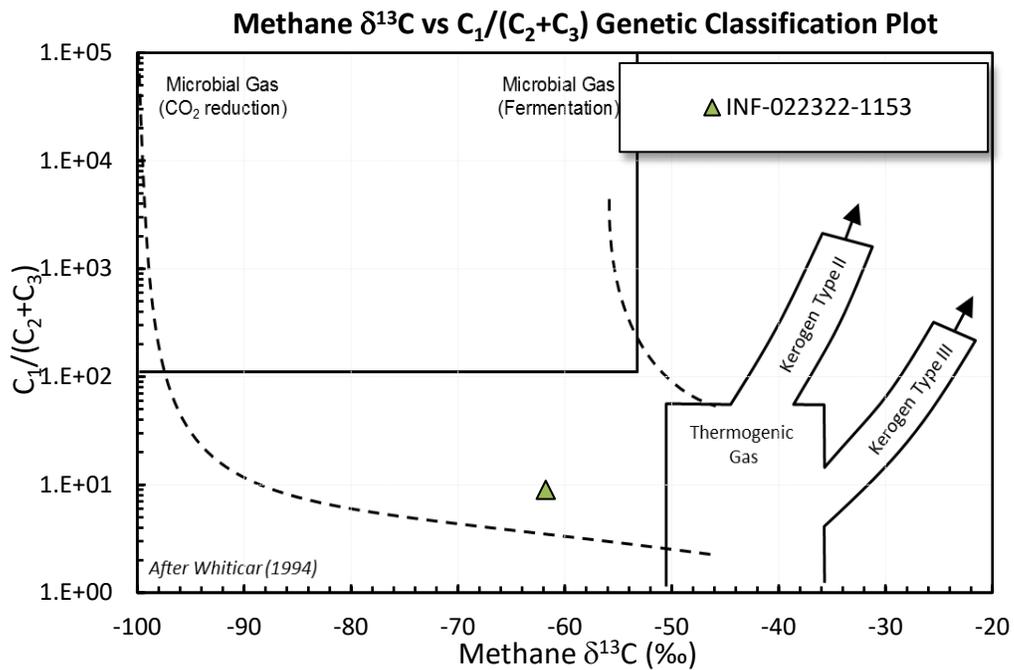
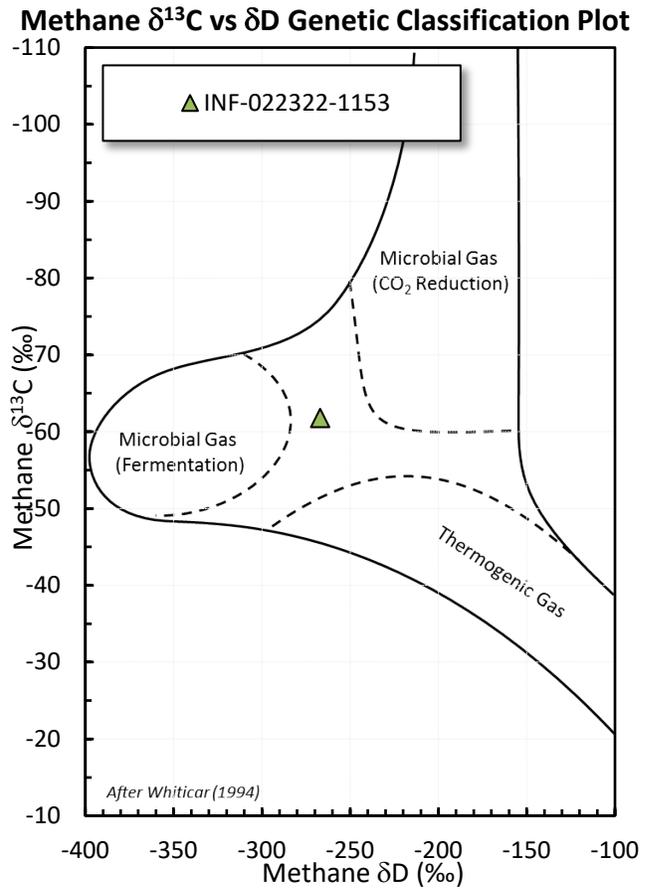
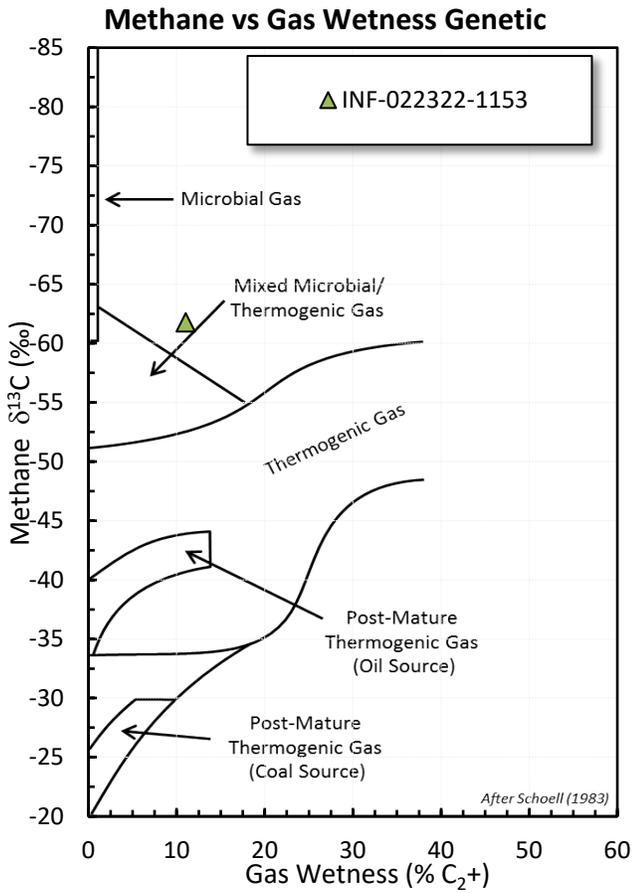
na = not analyzed

Stable isotope results based on multi-point laboratory calibration

Error  $\delta^{13}\text{C}$  < 0.5 ‰

Error  $\delta\text{D}$  < 5.0 ‰

# Stable Isotope Interpretive Plots



# Chain of Custody Form



JOB 22027167

DIG - 027



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Send Data to:		Send Invoice to (if different):	
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Company: Summit Scientific		Company: Summit Scientific	Pro
Address: 4653 Table Mountain Drive		Address: 4653 Table Mountain Drive	PO
City, State: Golden, CO 80403		City, State: Golden, CO 80403	Loc
Phone: 303-277-9310		Phone: 303-277-9310	San
Email: mpremer@s2scientific.com / pshrewsbury@s2scientific.com		Email: bshrewsbury@s2scientific.com	API

Turnaround Time\*\*:  Standard (≤ 10 Business days)  Rush (≤ 5 Business days)

Container Number	Sample Identification	Date Sampled	Time	Sample Type*	Gas Composition	d13C of Methane (C1)	d13C of Ethane (C2)
	INF-022322-1153	2/23/22	11:53	Other	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
				Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Chain of Custody Record Comments:

Relinquished by Signature	Company	Date	Time	Received by Signature
	Summit Scientific	2/24/22	12:19	Patrick Traver

\*Gas composition vs RSK-175 - Gas composition is a basic analysis of the concentration (ppm) of gases within the headspace of the sample (headspace is created at the lab calculations to give the total dissolved gas of each species in the water sample (mg/L). Why one or the other? Gas composition gives us a quick, general look at relative concentrations of gas present in the sample (headspace and dissolved in the water). Questions? Give us a call at 303-531-2030.  
\*\* Rush and Expedited Rush turnaround time analysis will incur additional costs at 2x and 3x the standard turnaround time pricing.