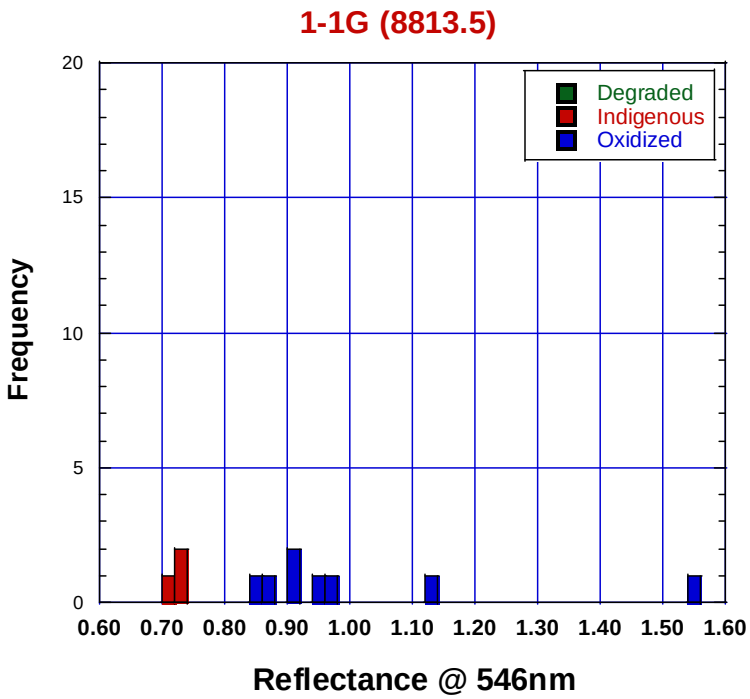
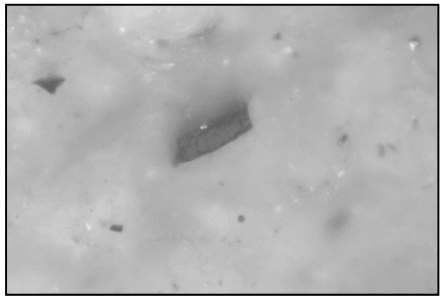
Weatherford LABORATORIES

Project CO-70317

Vitrinite Reflectance and MOA





Comments: Sample preparation consists of core mounted in an epoxy plug and polished. There is no transmitted light preparation for this sample, and thus no TAI evaluation (spore color). Isolating the kerogen for making a transmitted light slide greatly enhances maturity evaluation because of the very good correlation between spore color and vitrinite reflectance, particularly throughout the oil and wet gas windows. Polish on the reflected light preparation is good. Organic matter generally consists of rare and very small humic debris, many of which are oxidized or degraded. There appears to be a minor amount of liptinitic material. Vitrinite particles large enough to measure are very rare and all possible particles were measured. Based on only 3 of 11 measurements, the average Ro is 0.72%. Due to the lack of particles, this value may not necessary represent the maturity of this sample. More than one population of vitrinite may be present. These data may be parsed differently if other independent maturity data are available. As there is no transmitted light preparation included with this sample, the TAI value is not available. Fluorescence photomicrograph (left) shows bright yellow / orange fluorescence. Reflected light photomicrograph (right) shows a very small and somewhat degraded reflecting particle embedded in the surrounding matrix.

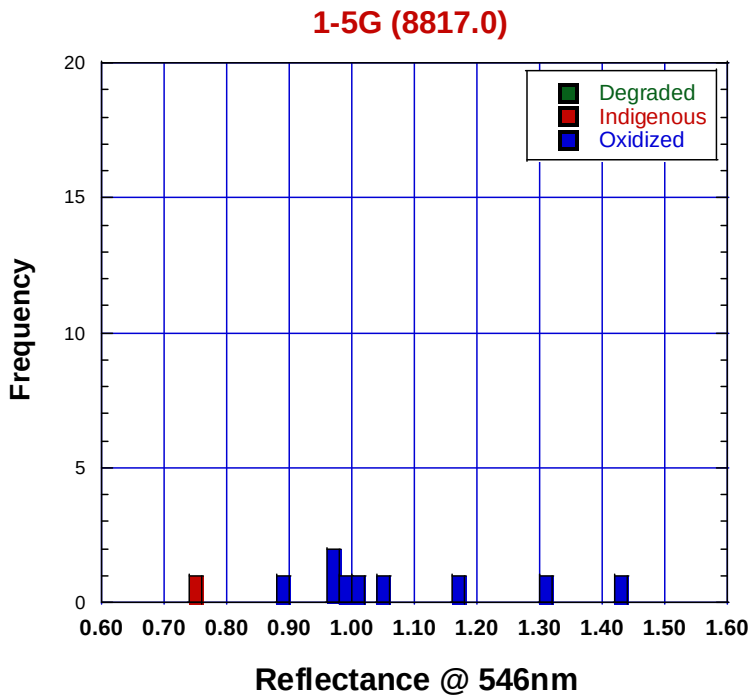
Ordered Ro Values

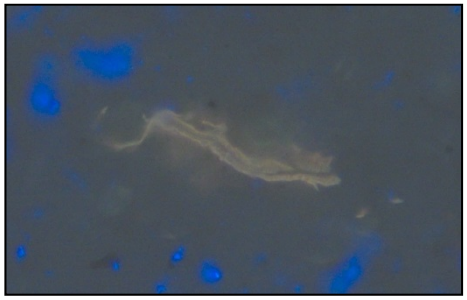
0.71 0.72 0.72 0.84 0.86 0.91 0.91 0.94 0.97 1.13 1.54

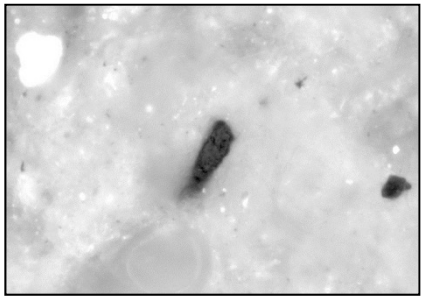
1-1G	8813.5
Minimum	0.71
Maximum	0.72
Points	3
Std Deviation	0.01
Mean	**0.72**

Visual Kerogen Analysis

Client ID	Sample ID	Ave. Depth	% Alg.	% Lipt.	% Vit.	% SHC	% Inert.	Liptinite Fluores.	% Oil Prone	% Gas Prone	TAI	Spore Color
1-1G	1-1G	8,813.5	0	13	79	1	7	Y - Y/O	13	79	NA	NA







Comments: Sample preparation consists of core mounted in an epoxy plug and polished. There is no transmitted light preparation for this sample, and thus no TAI evaluation (spore color). Isolating the kerogen for making a transmitted light slide greatly enhances maturity evaluation because of the very good correlation between spore color and vitrinite reflectance, particularly throughout the oil and wet gas windows. Polish on the reflected light preparation is good. Organic matter generally consists of rare and very small humic debris, many of which are oxidized or degraded. There appears to be a minor amount of liptinitic material. Vitrinite particles large enough to measure are very rare and all possible particles were measured. Based on only 1 of 10 measurements, the average Ro is 0.75%. Due to the lack of particles, this value may not necessary represent the maturity of this sample. More than one population of vitrinite may be present. These data may be parsed differently if other independent maturity data are available. As there is no transmitted light preparation included with this sample, the TAI value is not available. Fluorescence photomicrograph (left) shows bright yellow / orange fluorescence. Reflected light photomicrograph (right) shows a very small and somewhat degraded reflecting particle embedded in the surrounding matrix.

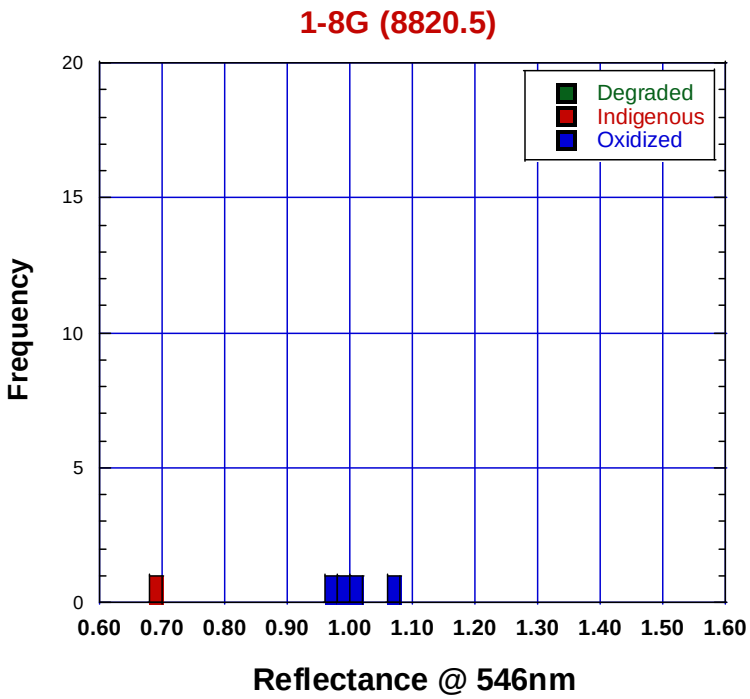
Ordered Ro Values

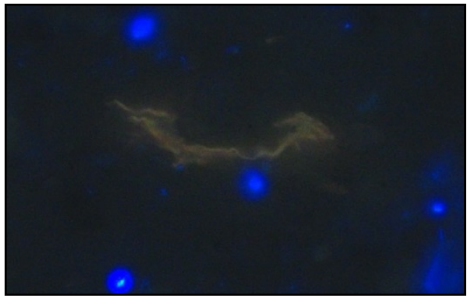
0.75 0.89 0.97 0.97 0.99 1.01 1.05 1.17 1.31 1.42

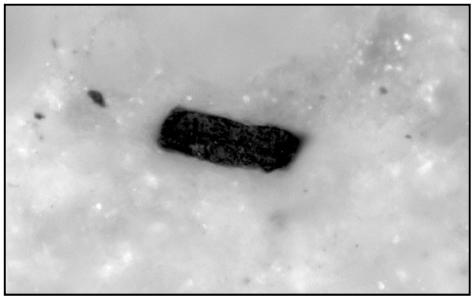
1-5G	8817.0
Minimum	0.75
Maximum	0.75
Points	1
Std Deviation	NA
Mean	**0.75**

Visual Kerogen Analysis

Client ID	Sample ID	Ave. Depth	% Alg.	% Lipt.	% Vit.	% SHC	% Inert.	Liptinite Fluores.	% Oil Prone	% Gas Prone	TAI	Spore Color
1-5G	1-5G	8,817.0	0	14	77	1	8	Y - Y/O	14	77	NA	NA







Comments: Sample preparation consists of core mounted in an epoxy plug and polished. There is no transmitted light preparation for this sample, and thus no TAI evaluation (spore color). Isolating the kerogen for making a transmitted light slide greatly enhances maturity evaluation because of the very good correlation between spore color and vitrinite reflectance, particularly throughout the oil and wet gas windows. Polish on the reflected light preparation is good. Organic matter generally consists of rare and very small humic debris, many of which are oxidized or degraded. There appears to be a minor amount of liptinitic material. Vitrinite particles large enough to measure are very rare and all possible particles were measured. Based on only 1 of 5 measurements, the average Ro is 0.69%. Due to the lack of particles, this value may not necessary represent the maturity of this sample. More than one population of vitrinite may be present. These data may be parsed differently if other independent maturity data are available. As there is no transmitted light preparation included with this sample, the TAI value is not available. Fluorescence photomicrograph (left) shows bright yellow / orange fluorescence. Reflected light photomicrograph (right) shows a very small and somewhat degraded reflecting particle embedded in the surrounding matrix.

Ordered Ro Values

0.69 0.96 0.99 1.00 1.07

1-8G	8820.5
Minimum	0.69
Maximum	0.69
Points	1
Std Deviation	NA
Mean	**0.69**

Visual Kerogen Analysis

Client ID	Sample ID	Ave. Depth	% Alg.	% Lipt.	% Vit.	% SHC	% Inert.	Liptinite Fluores.	% Oil Prone	% Gas Prone	TAI	Spore Color
1-8G	1-8G	8,820.5	0	16	76	1	7	Y - Y/O	16	76	NA	NA

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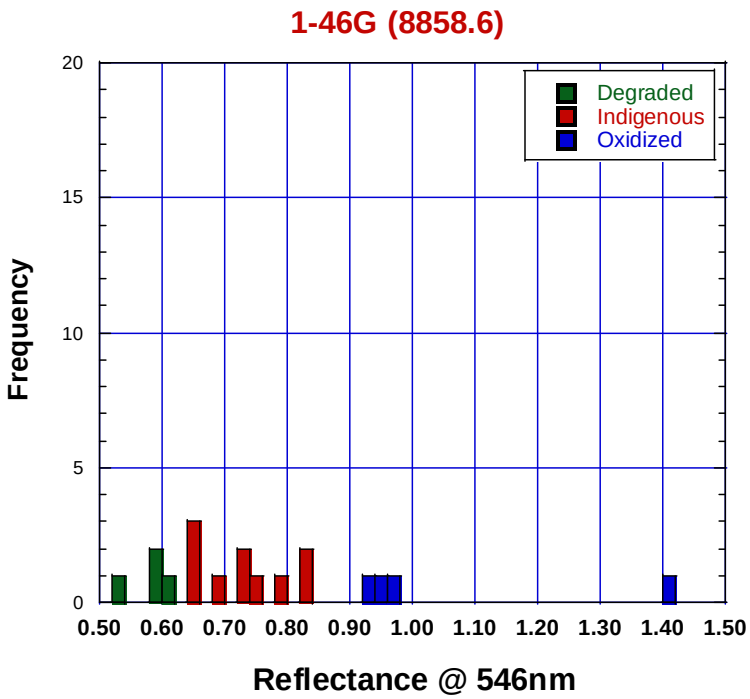

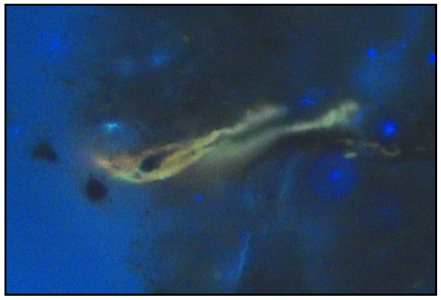

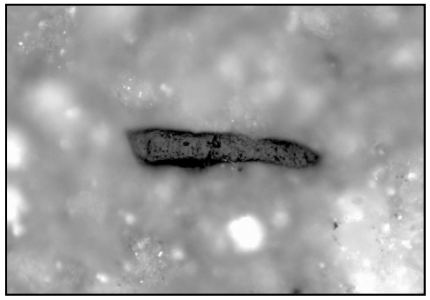

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Ordered Ro Values

0.52	0.59	0.59	0.61	0.64	0.64	0.65	0.68	0.72	0.72	0.74	0.78
0.82	0.83	0.92	0.95	0.97	1.41						

1-46G	8858.6
Minimum	0.64
Maximum	0.83
Points	10
Std Deviation	0.07
Mean	**0.72**

Visual Kerogen Analysis

Client ID	Sample ID	Ave. Depth	% Alg.	% Lipt.	% Vit.	% SHC	% Inert.	Liptinite Fluores.	% Oil Prone	% Gas Prone	TAI	Spore Color
1-46G	1-46G	8,858.6	0	23	69	2	6	Y - Y/O	23	69	NA	NA