



Geological Survey of Canada Open File # 4980

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Vitrinite reflectance data  
for  
Petro Canada *et al* Rut H-11

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M. P. Avery

**2005**



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# GEOLOGICAL SURVEY OF CANADA

## OPEN FILE 4980

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for  
Petro Canada et al Rut H-11

M. P. Avery  
Marine Resources Geoscience Subdivision  
Geological Survey of Canada (Atlantic), Dartmouth

2005

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Avery, M.P.  
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### Well information

**G.S.C. Locality No.:** D203    **Unique Well ID:** 300 H11 59200 62150    **Location:** 59.171242 °N, 62.279764°W

**R.T. Elevation:** 11.6

**Water Depth:** 124

**Total Depth:** 4474

**Sampled Interval:** 675 - 4470

**Interval Studied:** 1920-4093

**Depth Units:** Metres referenced to R.T.

**Rig Release Date:** September 27, 1981

### Introduction

Vitrinite reflectance has been determined on 16 rotary cutting samples from Petro Canada *et al* Rut H-11, which was classified as an exploratory well located in the Hopedale Basin on the northern Labrador Shelf. Well status is Plugged and Abandoned.

Sample preparation followed the procedures listed in Appendix I. Data acquisition and manipulation was done on a Zeiss Photometer III system with a custom interface to a computer for data storage and statistical summaries.

Analysis of the well reveals thermal maturity levels given in Table I. Specific maturity levels, as set out in this report, are based on those of Snowdon and Powell (1984) with modified terminology (Appendix II).

Table I  
**Inferred Hydrocarbon Thermal Maturity Levels**

| Depth in metres | Vitrinite Reflectance*<br>%Ro | Hydrocarbon generation levels**<br>for type II or III kerogen |
|-----------------|-------------------------------|---|
| 124 [sea floor] | (0.17)                        | immature  |
| 1410            | 0.3                           | immature  |
| 2060            | 0.4                           | immature approaching maturity                                 |
| 2560            | 0.5                           | marginally mature   |
| 2970            | 0.6                           | onset of significant oil generation                           |
| 3620            | 0.8                           | peak maturity   |
| 4474 [T.D.]     | (1.17)                        | peak maturity   |

\*( )'s indicate Ro's extrapolated from linear regression slope: 0.192 log Ro/km\*\*

Actual hydrocarbon products depend on type of organic matter present (Snowdon and Powell, 1984).

### Remarks

Sample coverage for vitrinite reflectance analysis (Figure 1, Table II) was reasonably complete over the section penetrated between 1920 and 4093 m at Rut H-11. There is a gap in sample coverage at the bottom of the well of about 400 m and a larger gap at the top of about 1250 m where kerogen samples were not available at this time. The data were plotted on a log Ro vs. linear depth scale. A regression line fitted through the data yielded a maturity slope of 0.192 log Ro/km. Because there is a significant variation in the number of readings from one sample point to another (Table II) the regression line was weighted based on the 'n' value for each point. The relative size of the point symbols provide an indication of the number of readings. The 'error bars' displayed on the maturity profile indicate one standard deviation on either side of the mean and may be deceptively small for samples with very few readings.

The histogram display (Figure 2) shows the variability in the reflectance populations, which represent the maturity of the sediments with depth. Plotting reflectance histograms on a log scale may help reveal any trends present in the Ro data. It also can help to demonstrate the effects of cavings, geology, casing points and other influences on the vitrinite reflectance populations.

These vitrinite reflectance data show that the thermal maturity of the lower section of Rut H-11 is suitable to generate and preserve hydrocarbons within the drilled section, between 2560 and 4474 m (T.D.), provided potential source rocks of the proper organic matter type and traps are present.

**Method**

Data obtained for this report were measured on polished kerogen isolate mounts. Kerogen isolates are concentrations of organic matter with most of the mineral matrix removed.

**Discussion**

The data points fit the calculated regression line quite well over the top section (1920-3040 m) and lower section (3640-4093 m) of the profile. The section in between seems to be characterized by a caved population. This observation is also supported by the similar morphology as well as reflectance of the particles observed over this interval. This caving trend actually extended into the top sample (K0210A at 3640 m) for which the author has presented two populations (see Figure 2 or Appendix III). The lower population was interpreted as cavings and the higher population used for slope calculation.

**References**

Powell, T. G. and Snowdon, L. R.  
1983: A composite hydrocarbon generation model. Erdöl und Kohle, Erdgas, Petrochemie, v. 36, p. 163-170.

|   |  |
|---|--|
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| MResG Files, Dartmouth                            | C. Beaumont, Dalhousie Univ., Halifax    |

Table II

**Summary of kerogen - based vitrinite reflectance**

| Sample*<br>Labels | Depth in metres | Mean Ro (SD)<br>non-rotated | Number of Readings |        |
|-------------------|-----------------|-----------------------------|--------------------|--------|
|                   |                 |                             | Total              | Edited |
| K0206A            | 1920            | 0.39 ( $\pm 0.08$ )         | 22                 | 22     |
| K0206B            | 2120            | 0.43 ( $\pm 0.07$ )         | 23                 | 23     |
| K0206C            | 2280            | 0.49 ( $\pm 0.07$ )         | 18                 | 18     |
| K0207A            | 2400            | 0.47 ( $\pm 0.04$ )         | 17                 | 17     |
| K0207B            | 2520            | 0.48 ( $\pm 0.05$ )         | 24                 | 24     |
| K0207C            | 2680            | 0.52 ( $\pm 0.04$ )         | 18                 | 18     |
| K0208A            | 2760            | 0.53 ( $\pm 0.05$ )         | 24                 | 24     |
| K0208B            | 2880            | 0.56 ( $\pm 0.05$ )         | 25                 | 25     |
| K0208C            | 3040            | 0.62 ( $\pm 0.05$ )         | 21                 | 20     |
| K0209A            | 3200            | 0.61 ( $\pm 0.06$ )         | 24                 | 24     |
| K0209B            | 3320            | 0.64 ( $\pm 0.04$ )         | 24                 | 24     |
| K0209C            | 3480            | 0.65 ( $\pm 0.06$ )         | 24                 | 24     |
| K0210A            | 3640            | 0.84 ( $\pm 0.07$ )         | 35                 | 14     |
| K0210B            | 3760            | 0.94 ( $\pm 0.05$ )         | 33                 | 19     |
| K0210C            | 3920            | 1.05 ( $\pm 0.06$ )         | 23                 | 22     |
| K0211A            | 4093            | 1.06 ( $\pm 0.06$ )         | 21                 | 9      |

\*Sample labels prefixes: 'K' indicates kerogen stubs prepared at GSC - Atlantic

Table III

**Formation Tops (Moir, pers. comm.)**

| Formation                   | Depth in metres |
|-----------------------------|-----------------|
| Saglek                      | 249             |
| Mokami                      | 1322            |
| Kenamu                      | 2331            |
| Leif Mb                     | 2440-2544       |
| Cartwright                  | 3125            |
| Markland                    | 3620            |
| paleocene Diabase Intrusive | 4451            |

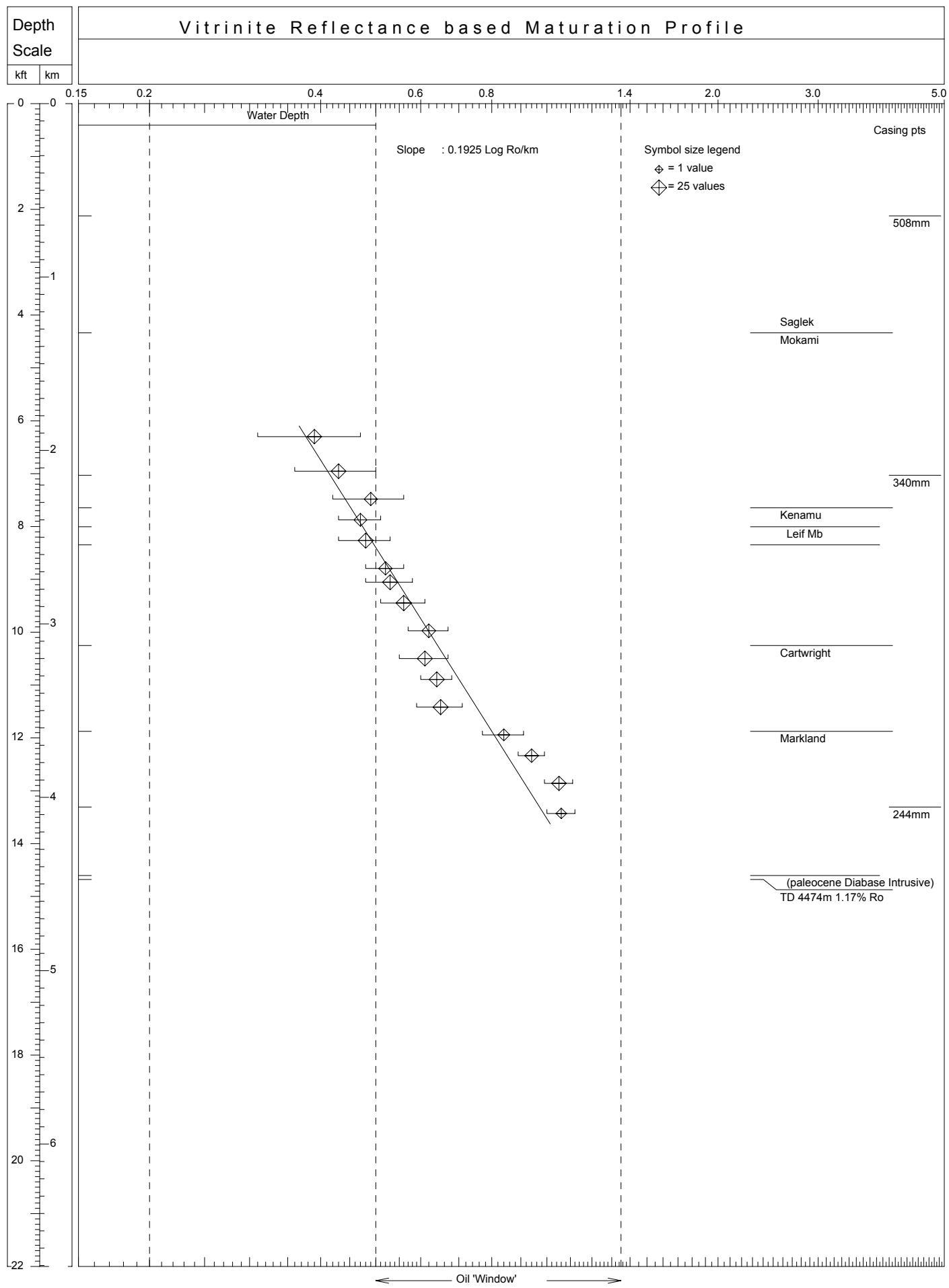


Figure 1. VR/depth plot for Rut H-11

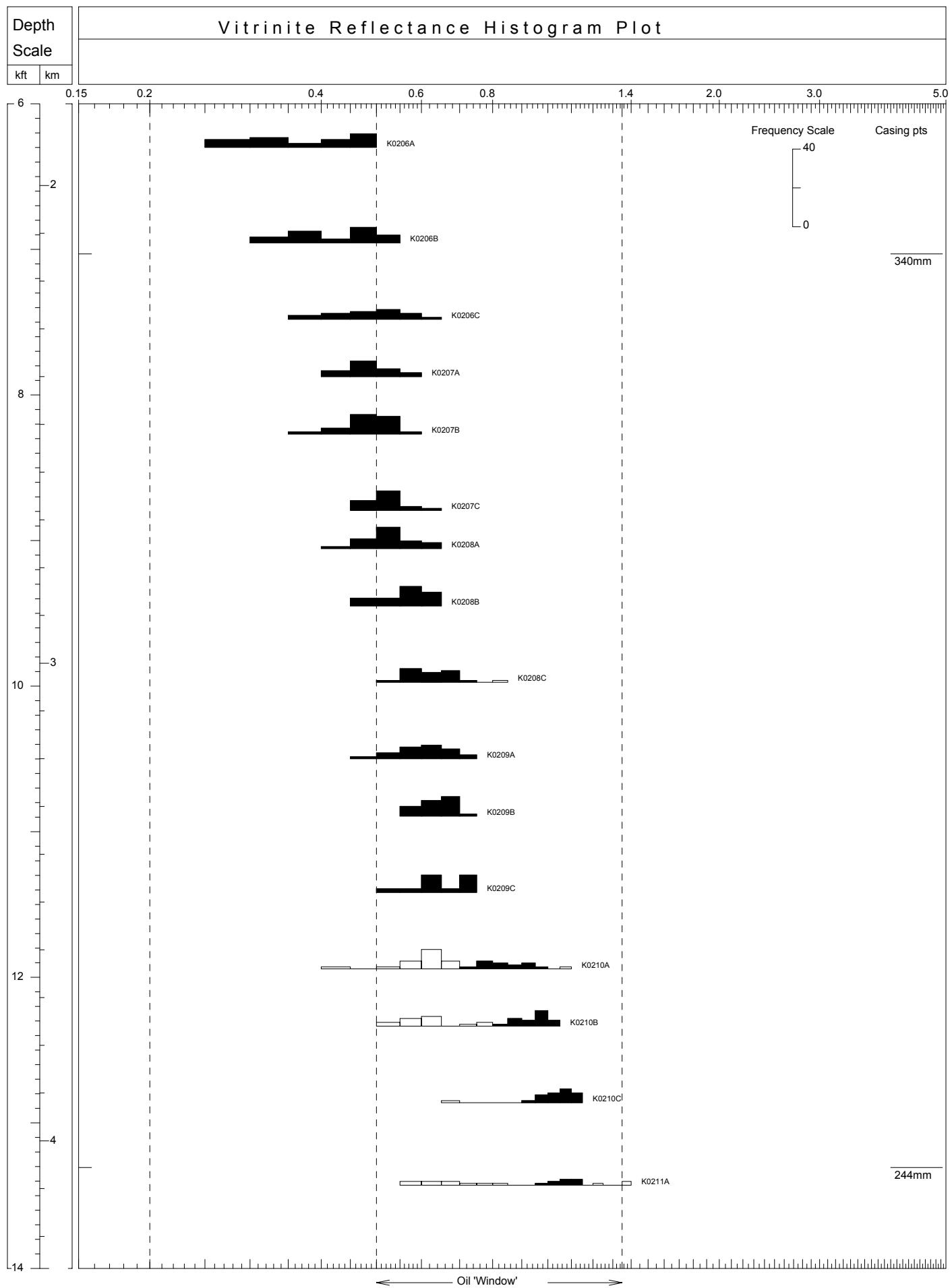


Figure 2. VR Histograms/depth plot for Rut H-11

## Appendix I

### Sample Preparation Method

#### **Kerogen concentrate sample preparation**

Preliminary wash (preparation for drill cuttings)

Dry samples in oven (25°C)

#### PALYNOLOGY Lab preparation

Place 20-30 grams in 250 ml plastic beaker.

Add 10% HCl till reaction ceases (removes carbonates).

Rinse 3 times.

Immerse in hot concentrated HF overnight (removes silicates).

Rinse 3 times.

Heat (60-65°C) in concentrated HCl (removes fluorides caused by HF).

Rinse 3 times.

Transfer to 15 ml test tube with 4-5 ml 4% Alconox.

Centrifuge at 1500 rpm for 90 sec.

Decant.

Rinse and centrifuge 3 times.

Float off organic fraction using 2.0 S.G. ZnBr solution.

Centrifuge at 1000 rpm for 8 min.

Float fraction into second test tube.

Wash and centrifuge 3 times.

Make kerogen smear slide.

Remaining kerogen material is made available to Organic Petrology Lab.

#### VITRINITE REFLECTANCE Lab preparation

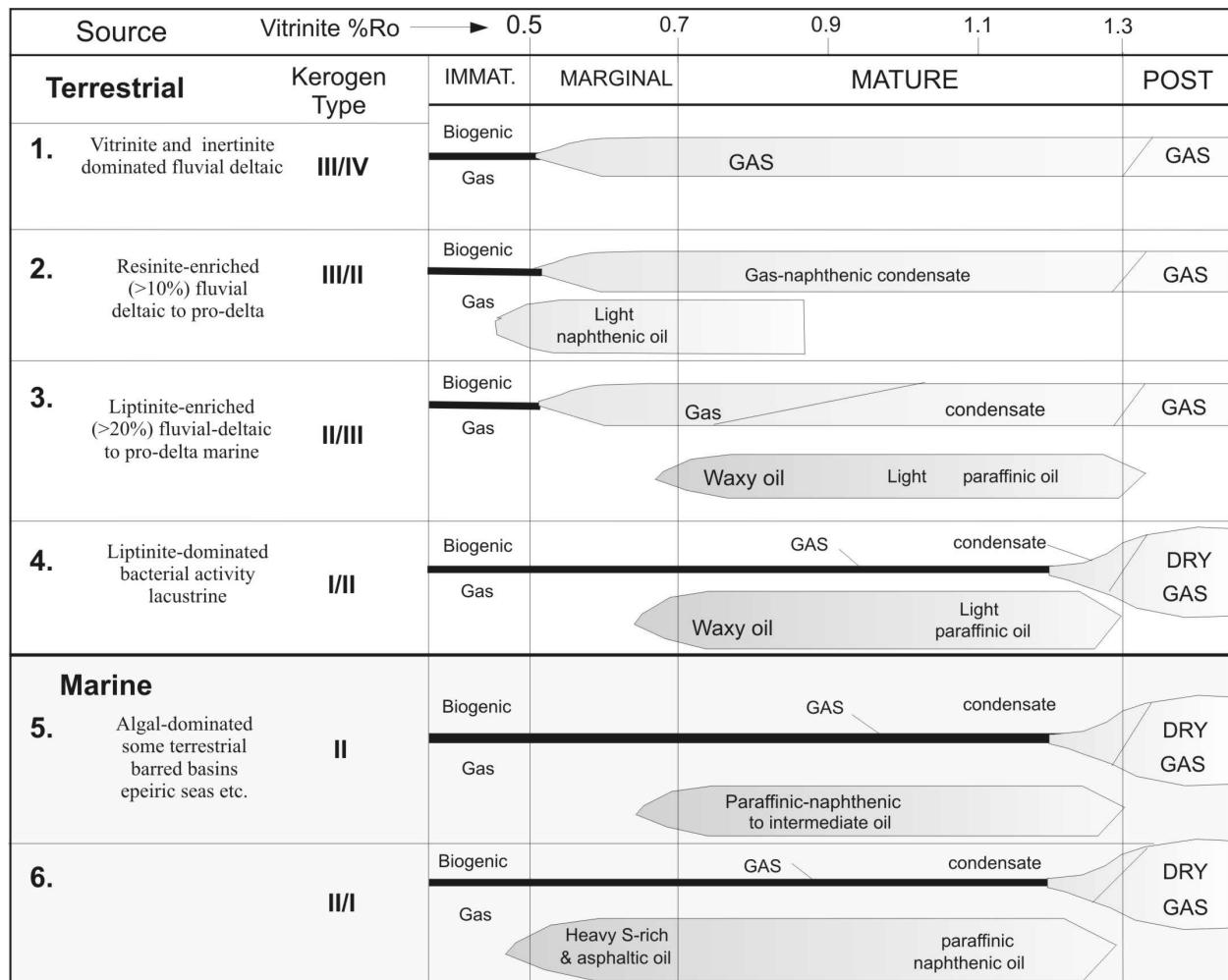
Pipette off excess water and prepare as 2.5 cm (1") diameter plastic stubs to fit polisher.

Freeze dry and fix material for polishing with epoxy resin.

Polish with diamond-based suspension to obtain low relief, scratch-free surface.

Examine under oil lens, incident light at approximately 1000x magnification.

Appendix II (Snowdon and Powell 1984)



Hydrocarbon generation model compiled from Snowdon and Powell (1984) illustrating the different thresholds of hydrocarbon generation and products as related to thermal maturity, kerogen type and paleodepositional environment.

### **Appendix III**

#### **Data listings and basic statistics**

## Data listings and basic statistics for: Rut H-11

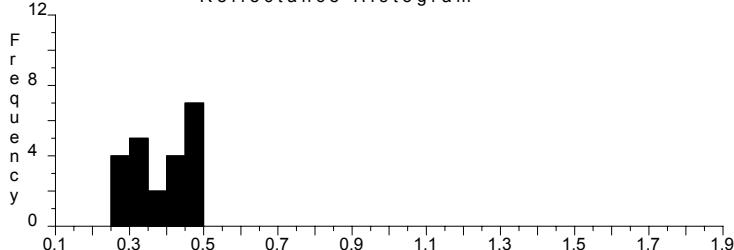
K0206A, 1920m

| Col >     | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row       | (0.43) | (0.31) | (0.47) | (0.47) | (0.44) | (0.47) | (0.42) | (0.48) | (0.26) | (0.37) |
| 1         | (0.44) | (0.45) | (0.31) | (0.30) | (0.29) | (0.33) | (0.39) | (0.34) | (0.29) | (0.28) |
| 2         | (0.46) | (0.49) |        |        |        |        |        |        |        |        |
| Total     | 0.39   | 0.08   | 22     | 0.26   | 0.49   | 8.49   |        |        |        |        |
| (Edit)    | 0.39   | 0.08   | 22     | 0.26   | 0.49   | 8.49   |        |        |        |        |
| Mean      |        |        | Pts    | Min    | Max    | Sum    |        |        |        |        |
| Stand Dev |        |        |        |        |        |        |        |        |        |        |

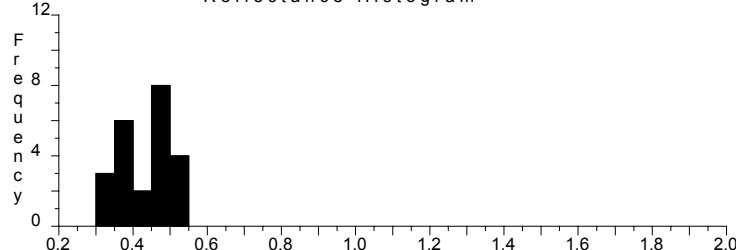
K0206B, 2120m

| Col >     | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row       | (0.35) | (0.46) | (0.46) | (0.32) | (0.36) | (0.49) | (0.41) | (0.45) | (0.50) | (0.35) |
| 1         | (0.51) | (0.38) | (0.43) | (0.50) | (0.34) | (0.37) | (0.34) | (0.34) | (0.48) | (0.48) |
| 2         | (0.35) | (0.51) | (0.46) |        |        |        |        |        |        |        |
| Total     | 0.43   | 0.07   | 23     | 0.32   | 0.51   | 9.79   |        |        |        |        |
| (Edit)    | 0.43   | 0.07   | 23     | 0.32   | 0.51   | 9.79   |        |        |        |        |
| Mean      |        |        | Pts    | Min    | Max    | Sum    |        |        |        |        |
| Stand Dev |        |        |        |        |        |        |        |        |        |        |

Reflectance Histogram



Reflectance Histogram



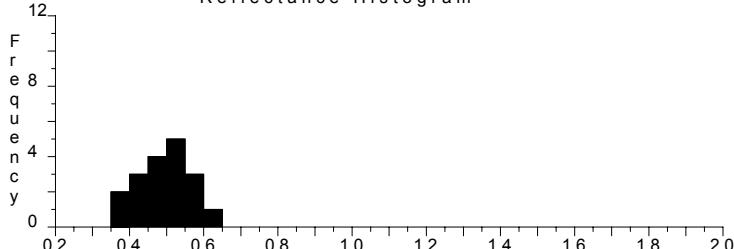
K0206C, 2280m

| Col >     | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row       | (0.41) | (0.56) | (0.48) | (0.46) | (0.43) | (0.38) | (0.64) | (0.51) | (0.41) | (0.54) |
| 1         | (0.50) | (0.38) | (0.50) | (0.46) | (0.58) | (0.54) | (0.46) | (0.56) |        |        |
| 2         |        |        |        |        |        |        |        |        |        |        |
| Total     | 0.49   | 0.07   | 18     | 0.38   | 0.64   | 8.80   |        |        |        |        |
| (Edit)    | 0.49   | 0.07   | 18     | 0.38   | 0.64   | 8.80   |        |        |        |        |
| Mean      |        |        | Pts    | Min    | Max    | Sum    |        |        |        |        |
| Stand Dev |        |        |        |        |        |        |        |        |        |        |

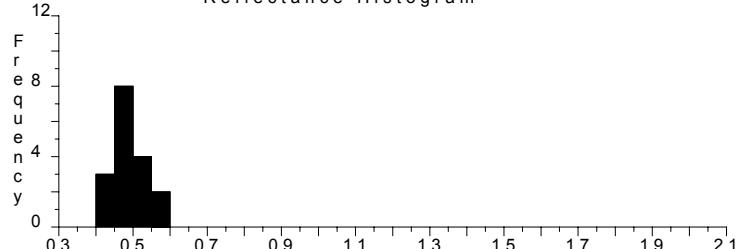
K0207A, 2400m

| Col >     | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row       | (0.50) | (0.43) | (0.55) | (0.45) | (0.47) | (0.46) | (0.50) | (0.46) | (0.45) | (0.43) |
| 1         | (0.47) | (0.51) | (0.45) | (0.45) | (0.57) | (0.50) | (0.41) |        |        |        |
| 2         |        |        |        |        |        |        |        |        |        |        |
| Total     | 0.47   | 0.04   | 17     | 0.41   | 0.57   | 8.06   |        |        |        |        |
| (Edit)    | 0.47   | 0.04   | 17     | 0.41   | 0.57   | 8.06   |        |        |        |        |
| Mean      |        |        | Pts    | Min    | Max    | Sum    |        |        |        |        |
| Stand Dev |        |        |        |        |        |        |        |        |        |        |

Reflectance Histogram



Reflectance Histogram



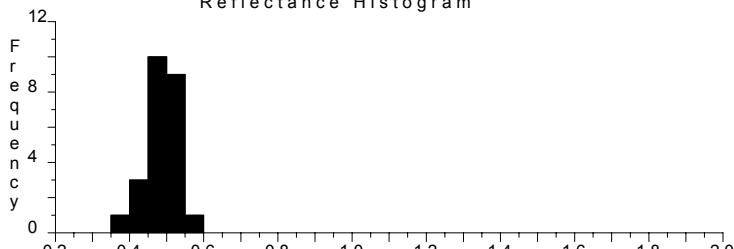
K0207B, 2520m

| Col >     | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row       | (0.53) | (0.51) | (0.41) | (0.48) | (0.39) | (0.47) | (0.51) | (0.45) | (0.53) | (0.53) |
| 1         | (0.47) | (0.51) | (0.54) | (0.42) | (0.46) | (0.50) | (0.48) | (0.45) | (0.47) | (0.53) |
| 2         | (0.49) | (0.42) | (0.58) | (0.48) |        |        |        |        |        |        |
| Total     | 0.48   | 0.05   | 24     | 0.39   | 0.58   | 11.58  |        |        |        |        |
| (Edit)    | 0.48   | 0.05   | 24     | 0.39   | 0.58   | 11.58  |        |        |        |        |
| Mean      |        |        | Pts    | Min    | Max    | Sum    |        |        |        |        |
| Stand Dev |        |        |        |        |        |        |        |        |        |        |

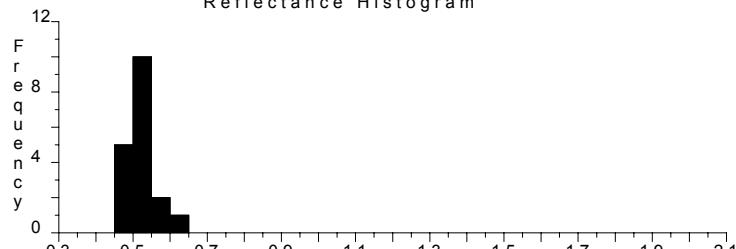
K0207C, 2680m

| Col >     | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row       | (0.62) | (0.57) | (0.48) | (0.49) | (0.50) | (0.46) | (0.51) | (0.53) | (0.52) | (0.51) |
| 1         | (0.59) | (0.51) | (0.50) | (0.47) | (0.52) | (0.53) | (0.51) |        |        |        |
| 2         |        |        |        |        |        |        |        |        |        |        |
| Total     | 0.52   | 0.04   | 18     | 0.46   | 0.62   | 9.31   |        |        |        |        |
| (Edit)    | 0.52   | 0.04   | 18     | 0.46   | 0.62   | 9.31   |        |        |        |        |
| Mean      |        |        | Pts    | Min    | Max    | Sum    |        |        |        |        |
| Stand Dev |        |        |        |        |        |        |        |        |        |        |

Reflectance Histogram



Reflectance Histogram



## Data listings and basic statistics for: Rut H-11

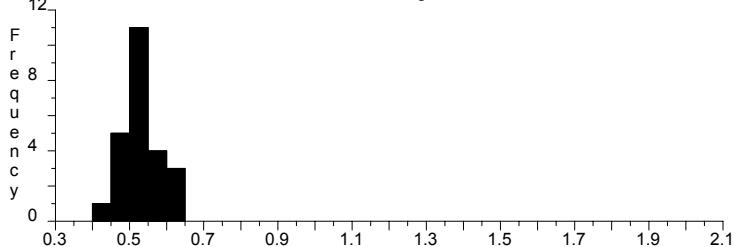
K0208A, 2760m

| Col >  | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row    | (0.60) | (0.47) | (0.58) | (0.54) | (0.54) | (0.52) | (0.53) | (0.58) | (0.50) | (0.47) |
| 1      | (0.49) | (0.59) | (0.47) | (0.58) | (0.52) | (0.50) | (0.61) | (0.50) | (0.46) | (0.62) |
| 2      | (0.54) | (0.52) | (0.53) | (0.44) |        |        |        |        |        |        |
| Total  | 0.53   | 0.05   | 24     | 0.44   | 0.62   | 12.68  |        |        |        |        |
| (Edit) | 0.53   | 0.05   | 24     | 0.44   | 0.62   | 12.68  |        |        |        |        |

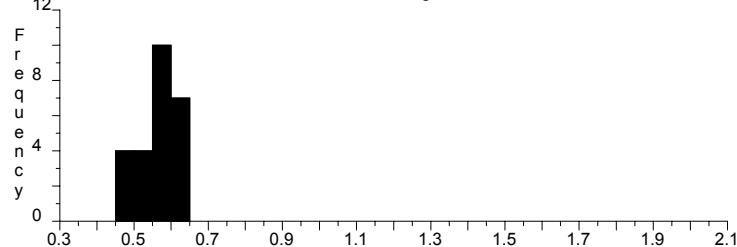
K0208B, 2880m

| Col >  | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row    | (0.56) | (0.60) | (0.55) | (0.56) | (0.59) | (0.47) | (0.63) | (0.62) | (0.57) | (0.64) |
| 1      | (0.62) | (0.52) | (0.54) | (0.46) | (0.60) | (0.52) | (0.55) | (0.63) | (0.48) | (0.60) |
| 2      | (0.59) | (0.58) | (0.57) | (0.59) | (0.54) | (0.59) | (0.55) | (0.54) | (0.47) | (0.60) |
| Total  | 0.56   | 0.05   | 25     | 0.46   | 0.64   | 14.02  |        |        |        |        |
| (Edit) | 0.56   | 0.05   | 25     | 0.46   | 0.64   | 14.02  |        |        |        |        |

Reflectance Histogram



Reflectance Histogram



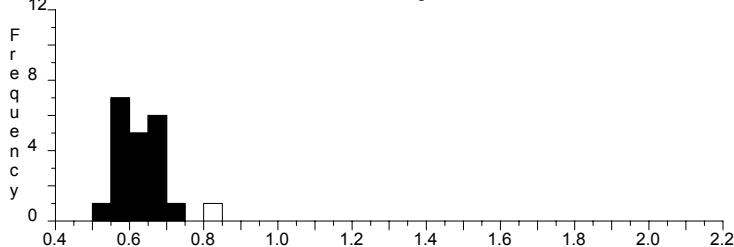
K0208C, 3040m

| Col >  | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row    | (0.67) | (0.68) | (0.59) | (0.59) | (0.59) | (0.64) | (0.67) | (0.59) | (0.62) | (0.82) |
| 1      | (0.53) | (0.55) | (0.67) | (0.67) | (0.58) | (0.63) | (0.62) | (0.59) | (0.60) | (0.70) |
| 2      | (0.69) |        |        |        |        |        |        |        |        |        |
| Total  | 0.63   | 0.06   | 21     | 0.53   | 0.82   | 13.29  |        |        |        |        |
| (Edit) | 0.62   | 0.05   | 20     | 0.53   | 0.70   | 12.47  |        |        |        |        |

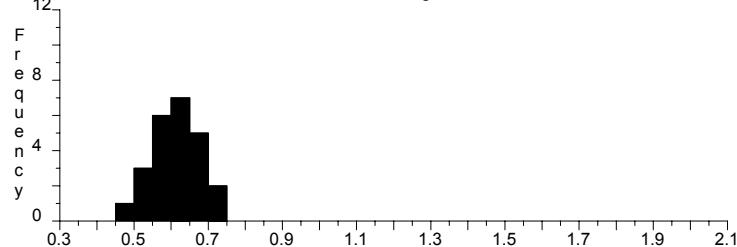
K0209A, 3200m

| Col >  | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row    | (0.70) | (0.65) | (0.67) | (0.58) | (0.52) | (0.65) | (0.68) | (0.64) | (0.70) | (0.48) |
| 1      | (0.63) | (0.57) | (0.51) | (0.56) | (0.61) | (0.64) | (0.60) | (0.64) | (0.70) | (0.69) |
| 2      | (0.58) | (0.57) | (0.59) | (0.54) | (0.61) | (0.64) | (0.60) | (0.64) | (0.71) | (0.69) |
| Total  | 0.61   | 0.06   | 24     | 0.48   | 0.70   | 14.58  |        |        |        |        |
| (Edit) | 0.61   | 0.06   | 24     | 0.48   | 0.70   | 14.58  |        |        |        |        |

Reflectance Histogram



Reflectance Histogram



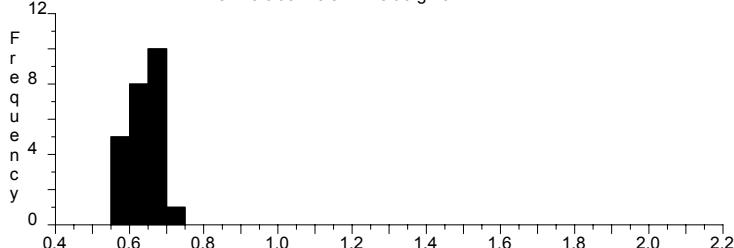
K0209B, 3320m

| Col >  | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row    | (0.65) | (0.58) | (0.66) | (0.63) | (0.67) | (0.59) | (0.66) | (0.68) | (0.66) | (0.64) |
| 1      | (0.69) | (0.64) | (0.67) | (0.66) | (0.64) | (0.63) | (0.62) | (0.61) | (0.61) | (0.64) |
| 2      | (0.63) | (0.64) | (0.72) | (0.63) |        |        |        |        |        |        |
| Total  | 0.64   | 0.04   | 24     | 0.58   | 0.72   | 15.38  |        |        |        |        |
| (Edit) | 0.64   | 0.04   | 24     | 0.58   | 0.72   | 15.38  |        |        |        |        |

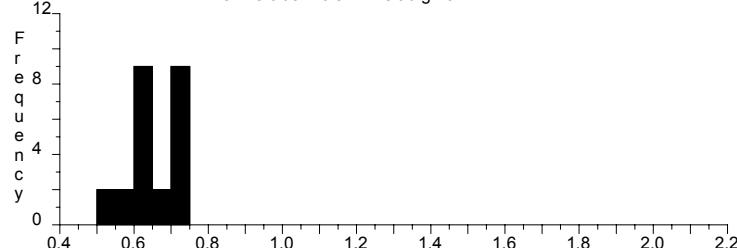
K0209C, 3480m

| Col >  | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row    | (0.71) | (0.63) | (0.56) | (0.60) | (0.64) | (0.53) | (0.62) | (0.58) | (0.71) | (0.67) |
| 1      | (0.72) | (0.57) | (0.64) | (0.73) | (0.70) | (0.70) | (0.62) | (0.72) | (0.68) | (0.64) |
| 2      | (0.60) | (0.52) | (0.64) | (0.64) | (0.71) |        |        |        |        |        |
| Total  | 0.65   | 0.06   | 24     | 0.52   | 0.73   | 15.60  |        |        |        |        |
| (Edit) | 0.65   | 0.06   | 24     | 0.52   | 0.73   | 15.60  |        |        |        |        |

Reflectance Histogram



Reflectance Histogram



## Data listings and basic statistics for: Rut H-11

K0210A, 3640m

| Col > | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9    | 0      |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|------|--------|
| Row   | 0.61   | 0.44   | 0.66   | 0.63   | 0.60   | 0.60   | 0.60   | 0.50   | 0.62 | 0.60   |
| 1     | 0.57   | 0.59   | 0.66   | 0.56   | 0.63   | 0.65   | 0.56   | 0.62   | 0.61 | 1.05   |
| 2     | (0.92) | (0.84) | (0.75) | (0.80) | (0.95) | (0.75) | (0.92) | (0.78) | 0.66 | (0.79) |
| 3     | (0.92) | (0.87) | (0.84) | (0.86) | (0.73) |        |        |        |      |        |

| Total  | Mean | Stand Dev | Pts | Min  | Max  | Sum   | Total  | Mean | Stand Dev | Pts | Min  | Max  | Sum   |
|--------|------|-----------|-----|------|------|-------|--------|------|-----------|-----|------|------|-------|
| (Edit) | 0.71 | 0.14      | 35  | 0.44 | 1.05 | 24.74 | (Edit) | 0.81 | 0.17      | 33  | 0.52 | 1.04 | 26.60 |

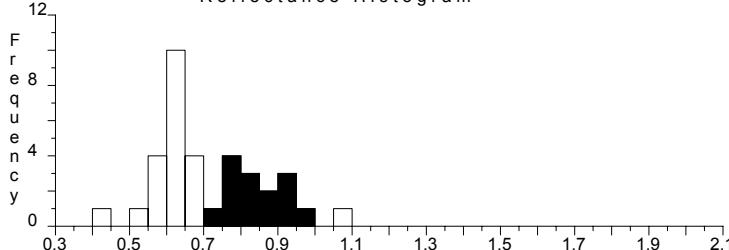
K0210B, 3760m

| Col > | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row   | 0.60   | 0.74   | (0.99) | (0.95) | 0.62   | (0.96) | 0.61   | 0.54   | 0.58   | (1.04) |
| 1     | (1.01) | (0.98) | (0.95) | (1.00) | (0.91) | 0.59   | 0.75   | 0.64   | (0.88) | (0.88) |
| 2     | (0.99) | 0.56   | 0.52   | 0.75   | (0.84) | 0.58   | (0.95) | (0.88) | (0.94) | (0.87) |
| 3     | (0.97) | (0.92) | 0.61   |        |        |        |        |        |        |        |

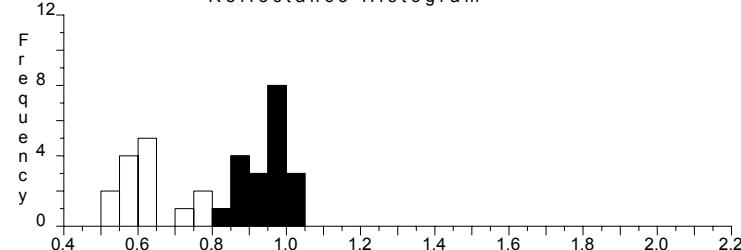
  

| Total  | Mean | Stand Dev | Pts | Min  | Max  | Sum   | Total  | Mean | Stand Dev | Pts | Min  | Max  | Sum   |
|--------|------|-----------|-----|------|------|-------|--------|------|-----------|-----|------|------|-------|
| (Edit) | 0.94 | 0.05      | 19  | 0.84 | 1.04 | 17.91 | (Edit) | 0.81 | 0.17      | 33  | 0.52 | 1.04 | 26.60 |

Reflectance Histogram



Reflectance Histogram



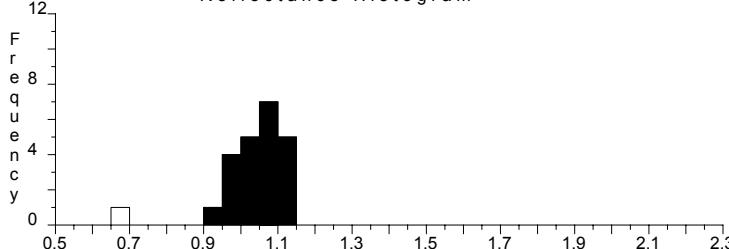
K0210C, 3920m

| Col > | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 0      |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Row   | (1.06) | (1.01) | (1.01) | (1.13) | (1.07) | (0.98) | (1.04) | (0.98) | (1.12) | (1.06) |
| 1     | (1.14) | (0.95) | (1.08) | (0.97) | (1.10) | (1.07) | (1.04) | (0.93) | (1.12) | (1.06) |
| 2     | (1.08) | (1.09) | (1.04) |        |        |        |        |        |        |        |

| Total  | Mean | Stand Dev | Pts | Min  | Max  | Sum   | Total  | Mean | Stand Dev | Pts | Min  | Max  | Sum   |
|--------|------|-----------|-----|------|------|-------|--------|------|-----------|-----|------|------|-------|
| (Edit) | 1.03 | 0.10      | 23  | 0.67 | 1.14 | 23.74 | (Edit) | 0.93 | 0.26      | 21  | 0.57 | 1.37 | 19.56 |

Reflectance Histogram



K0211A, 4093m

| Col > | 1      | 2    | 3      | 4      | 5    | 6      | 7      | 8      | 9      | 0      |
|-------|--------|------|--------|--------|------|--------|--------|--------|--------|--------|
| Row   | 0.66   | 0.63 | (0.95) | 0.67   | 0.81 | (1.07) | 0.76   | (1.08) | (1.01) | (1.10) |
| 1     | 0.59   | 1.36 | (1.04) | (1.08) | 1.22 | (1.37) | (1.12) | (1.08) | (1.01) | (1.10) |
| 2     | (1.13) |      |        |        |      |        |        |        |        |        |

| Total  | Mean | Stand Dev | Pts | Min  | Max  | Sum  | Total  | Mean | Stand Dev | Pts | Min  | Max  | Sum   |
|--------|------|-----------|-----|------|------|------|--------|------|-----------|-----|------|------|-------|
| (Edit) | 1.06 | 0.06      | 9   | 0.95 | 1.13 | 9.58 | (Edit) | 0.93 | 0.26      | 21  | 0.57 | 1.37 | 19.56 |

Reflectance Histogram

