

INRS-PETROLE

REPORT OF ACTIVITIES 1974/1975

INRS  
Eau, Terre et Environnement  
SDIS

## 1. INTRODUCTION

The center INRS-Pétrole was created in January 1972 to answer a need in Quebec for laboratory expertise in the field of petroleum exploration. It is one of the eight centers belonging to the Institut National de la Recherche Scientifique; part of the University of Québec.

The number of employees has increased from 16, at the end of the first year, to the present total of 25, while the revenue has grown from \$250,000.00 to \$400,000.00.

At the end of May 1975, we had invested more than \$800,000.00 in scientific equipment including our most recent acquisition of a scanning electron microscope.

A total of 120 projects have been carried out so far in addition to the research projects, which have lead to the publication of 15 technical papers and more than 40 internal reports.

The research projects sponsored by University and Government grants are concerned with:

- 1) STRATIGRAPHY;
- 2) SEDIMENTOLOGY;
- 3) ORGANIC AND MINERAL DIAGENESIS;
- 4) PHYSICAL METHODS OF ANALYSIS IN GEOLOGY.

These research projects, not only help to maintain a high level of competence within the group, but enable us to offer advanced techniques and expertise as consultants to private industry.

## 2. GEOGRAPHIC LOCATION

The INRS-Pétrole laboratories are located in the Quebec Scientific Complex in Saint-Foy near Quebec City and occupy a surface of 6000 square feet. They include: 1) a central laboratory divided in three sections for petrography, mineralogy and palynology; 2) a physical methods laboratory where the X-Ray diffraction and electron microscopy equipment is located; 3) a chemical laboratory with the organic carbon and carbon ratio instruments. A drawing office, sample preparation laboratory and a small core library complete the organisation.

## 3. PROFESSIONEL PERSONNEL EMPLOYED (May 1975)

DESJARDINS, Michel, Director

B. Sc. A. (Laval)

M. Sc. (Cincinnati)

D. Ing. (Grenoble)

ACHAB, Aïcha, (Palynology)

Lic. ès Sc. (Algiers)

D. Sc. (Algiers)

BERTRAND, Rudolf, (Microfacies studies)

B. Sc. (Montréal)

M. Sc. (Montréal)

BOULE, Claire, (Microfacies studies)

B. Sc. (Montréal)

CHAGNON, André (Clay mineralogy)

B. Sc. (Montréal)

M. Sc. (Montréal)

HEROUX, Yvon, (Microfacies studies)

B. Sc. (Montréal)

M. Sc. (Montréal)

KUBLER, Bernard, (Clay mineralogy)

Lic. ès Sc. (Neuchâtel)

D. Sc. (Neuchâtel)

LAPALME, Robert, (Microfacies studies)

B. Sc. (Montréal)

PITTON, Jean-Luc, (Reflectometry)

M. Sc. (Lyon)

D. Sc. (Lyon)

RENAUD, Jean, (Microfacies studies)

B. Sc. (Montréal)

ROUSSEAU, Richard (X-Ray mineralogy)

B. Sc. (Laval)

M. Sc. (Laval)

UTTING, John, (Palynology)

B. Sc. (Nottingham)

M. Sc. (Memorial)

M. Sc. (Sheffield)

Ph. D. (Sheffield)

#### 4. TECHNIQUES OFFERED

During the last year, the following techniques were used and offered to industry:

- 1) Microfacies studies:
  - a) Petrographic analysis of thin sections;
  - b) Granulometric studies of sandstones;
  - c) Lithostratigraphic correlations;
  - d) Correlation of coal seams using Tonsteins.
  
- 2) Palynology:
  - a) Biostratigraphic correlation using pollen, spores, acritarchs, chitinozoans and scolecondonts;
  - b) Determining the nature of organic matter in a rock and its degree of carbonisation.
  
- 3) Reflectometry:
  - a) Coal and dispersed organic matter petrography;
  - b) Determination of rank of coal and coking ability (determined by reflectance of vitrinite);
  - c) Reflectance analysis applied to hydrocarbon exploration.
  
- 4) Clay mineralogy:
  - a) Lithostratigraphic correlation;
  - b) Diagenetic evolution and environment;
  - c) Palaeogeographic environment.
  
- 5) X-Ray mineralogy and electron microscopy:

Analysis of major minerals by X-Ray diffraction (anhydrite, quartz, calcite, dolomite, feldspars and other minerals), geochemistry by micro-analysis using the electron microscope.

## 5. RESEARCH CONTRACTS

During the last fiscal year, the geologists of INRS-Pétrole have worked on a total of 34 different projects for private industry and government departments. The results of these were reported in 60 different technical reports most of which remain confidential.

The following customers used our services:

- SOQUIP;
- Eastcan;
- Canada City Services;
- Golden Eagle;
- SOQUEM;
- UMEX;
- Ivory Coast Government;
- Bedford Research Institute;
- Ministry of Natural Resources, Quebec.

Several research grants were also obtained from the Energy Mines and Resources of Canada and the Canadian Research Council.

During the course of these studies, the following areas of interest were investigated:

### A) Microfacies studies:

Y. Héroux, R. Bertrand, J. Renaud, C. Boulé.

Lithostratigraphic investigation of Anticosti Island and correlation with the St. Lawrence Lowlands. The application of a unique method of microfacies description using computer techniques.

### B) Clay mineralogy (diagenesis)

B. Kibbler, A. Chagnon, R. Lapalme.

- Mineralogical investigation of Gaspé, St. Lawrence Lowlands, Gulf of St. Lawrence and the continental shelf of Nova Scotia.

- Quantitative comparison of the diagenetic scale established using illite crystallinity and reflectance measurements.

C) Palynology (bio-stratigraphy)

J. Utting, A. Achab.

- Carboniferous: Palynological assemblages of the Pictou, Cumberland, Riversdale, Canso, Windsor and Horton Groups, and organic matter maturity studies.
- Devonian: Detailed palynostratigraphic and organic matter study of the Devonian of Gaspé Peninsula.
- Ordovician/Silurian: Palynostratigraphic investigation of the Ordovician/Silurian systems of St. Lawrence Lowlands and Anticosti Island.

D) Reflectance and petrography of organic matter


J. L. Pittion.

In the different Palaeozoic basins of Eastern Canada the reflectance analyses enable one to provide information concerning the nature of the organic matter, to evaluate the favourable diagenetic zones for their hydrocarbon potential and to understand better the palaeogeothermal history.

6. CONCLUSIONS

With its four fundamental research programs and its numerous research contracts, INRS-Pétrole has acquired a wide reputation in laboratory expertise for hydrocarbon exploration.

During the next fiscal year, we can predict that the research contract level will slightly increase while the research program activities will continue through research grants.

  
Michel Desjardins, Director,  
INRS-Pétrole.