

# **EAST SIBERIAN PLATFORM GEOCHEMICAL STUDY**

**REGIONAL PETROLEUM GEOCHEMISTRY  
OF CRUDE OILS AND SELECTED SOURCE ROCKS  
FROM THE EAST SIBERIAN PLATFORM**

**GEOMARK**  
**RESEARCH, INC.**

**A PROPOSAL**

## **EXECUTIVE SUMMARY**

To assist in the forthcoming exploration of Russia, and specifically East Siberia, GEOMARK RESEARCH, INC. has performed a regional oil study of the entire East Siberian Platform. The study involves the detailed analyses of a suite of 116 crude oils and 80 source rock samples.

The source rock samples were each be subjected to conventional source rock analyses. Each of the oils and source rock extracts wer characterized by a detailed analytical program which includes quantitative biomarker analysis of terpanes and steranes and determination of stable carbon isotope composition of both saturate and aromatic hydrocarbon fractions.

No interpretive report is supplied with this study. The cost of the study is US \$25,000. Participants are not required to contribute samples.

## **INTRODUCTION**

The East Siberian Platform is a vast region that has been only moderately explored. The lack of exploration attention stems mostly from the remote isolation of the region. In spite of this, over fifty (50) fields have been discovered to date and exploration continues.

Many experts feel that the region warrants further investigation. To assist in this effort, GEOMARK RESEARCH, INC. is initiating a regional crude oil study of the East Siberian Platform. The study will involve the analysis of 100 oil samples and 50 selected source quality rock samples.

Previous investigations have shown that multiple Early Paleozoic and Precambrian units have sourced the oils in various parts of the East Siberian Platform. If multiple source units have been active in the region then the chance for exploration success increases. However, it is critical that the location (stratigraphic and geographic), and character (gas vs. oil), of each source unit be known, as well as the time of active hydrocarbon generation. This study is designed to provide this type of information. Oil samples from fields selected for analysis are listed in Appendix A and shown in Figure 1.

Dr. John Zumberge of GEOMARK and Academician Alexei Kontorovich of the Institute of Geology and Geophysics, Siberian Branch of the Academy of Science will serve as Principal Investigators for this study. The results generated for this study will be integrated with previous studies generated by Academician Kontorovich and his associates at the Siberian Institute.

### METHODOLOGY AND EXPLORATION APPLICATIONS

In areas such as the East Siberian Platform where substantial production has been established, a regional oil study is an excellent way of identifying, evaluating and comparing the various petroleum systems that have contributed to reserves. For this study a regional oil evaluation are combined with conventional source rock analyses to assess the remaining potential of various regions and for predicting the distribution of new hydrocarbon accumulations, especially non-structured traps.

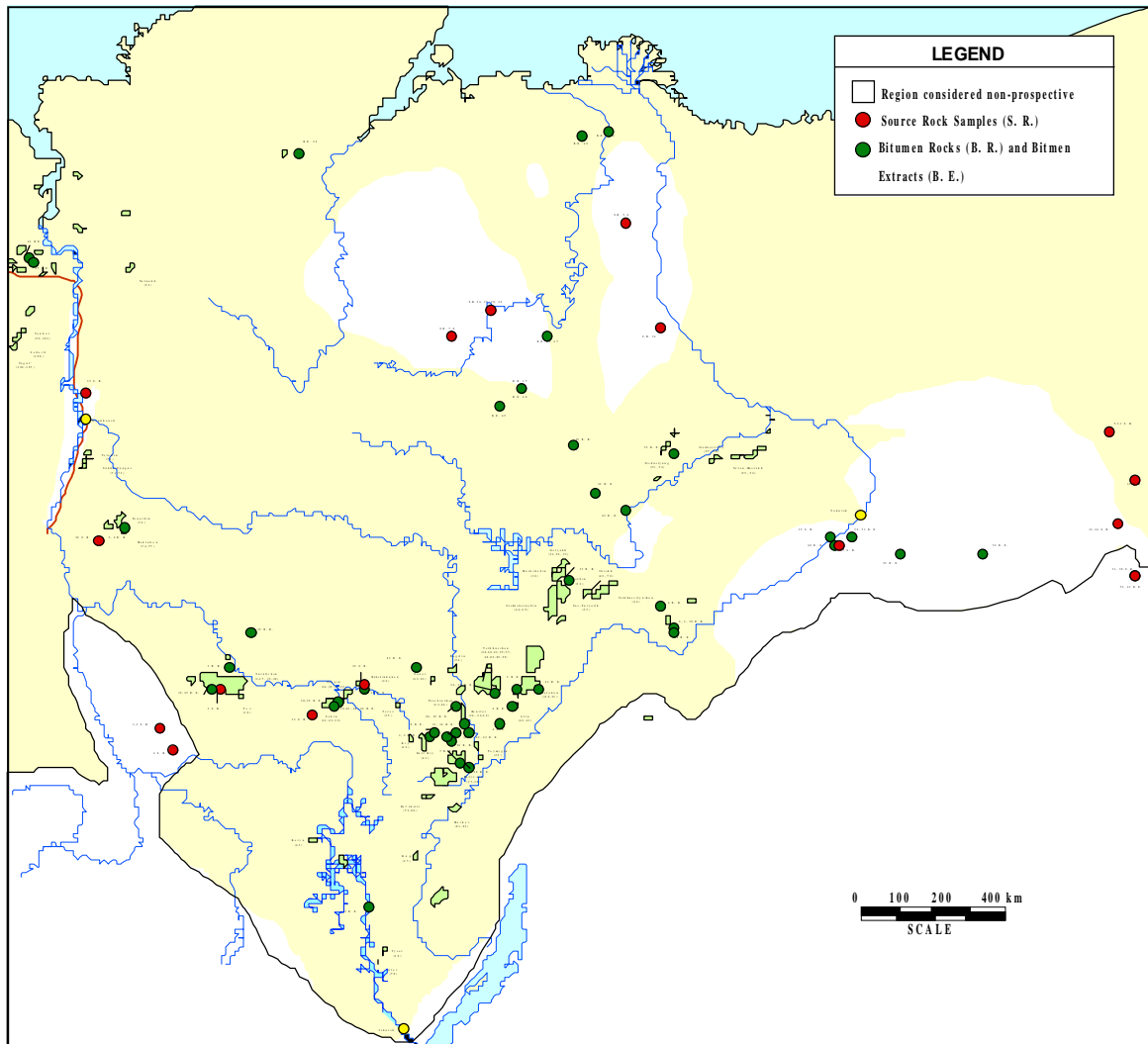


Figure 1. Location map showing samples analyzed for this study.

## **ANALYTICAL PROGRAM**

### **SOURCE ROCK SAMPLES**

The source rock samples will each be analyzed by the following techniques:

- Lithological Description
- Total Organic Carbon (TOC)
- Rock-Eval Pyrolysis
- Kerogen Maceral Analysis (TAI)
- Vitrinite Reflectance (% Ro)
- Bitumen Analysis (This includes all the analytical procedures listed below for oils, with the exception of API gravity, Ni/V and %S)

### **OIL SAMPLES**

The following techniques will be employed on each of the oil samples:

- API Gravity
- % Sulfur
- Nickel/Vanadium concentrations
- C15+ vs. <C15+
- Deasphalting (% Asph)
- Liquid Chromatography (%Sat %Aro %NSO)
- Capillary GC of Whole Crude and/or C15+ Saturated Hydrocarbon Fraction
- Stable Carbon Isotopes for both Sat and Aro Hydrocarbon Fractions
- GC/MS of Saturates for Terpane/Sterane Distributions (quantitative)
- GC/MS of aromatic hydrocarbons

All results will be available in digital form. This includes tabulated data as well as chromatograms and fragmentograms if desired.

**PRESENTATION OF RESULTS**

No interpretive report is supplied with this study,

**PARTICIPATION**

The study is complete and available for immediate delivery. The cost to participants is US \$25,000.

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## **REFERENCES**

- KONTOROVICH, A.E. (1984) Geochemical Methods for the Quantitative Evaluation of the Petroleum Potential of Sedimentary Basins. *AAPG Mem.*, **35**, 79-109.
- MOLDOWAN J.M., SEIFERT W.K., AND GALLEGOS E.J. (1985) Relationship between petroleum composition and depositional environment of source rocks. *AAPG Bull.*, **69**, 1255-1268.
- ZUMBERGE J.E. (1987) Prediction of source rock characteristics based on terpane biomarkers in crude oils: A multivariate statistical approach. *Geochim. Cosmochim. Acta*, **51**, 1625-1637.