APPENDIX 5B

SIGMA GEOPHYSICS REPORT: ELECTRICAL RESISTIVITY FEBRUARY 2006

GROS CACOUNA LNG TERMINAL

RESISTIVITY SURVEY 2006

Presented to

Journeau Bédard inc.
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Dorval, QC H9P 2R6

March 2006 **C05890**

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1 INTRODUCTION

In January 2006, **SIGMA GEOPHYSICS INC**. has been mandated by **JOURNEAUX, BÉDARD and Associates INC.** for the execution of a resistivity survey on the future site of a LNG tank of **GROS CACOUNA ENERGY**, at Gros Cacouna, Québec, in order to measure and calculate the ground resistivity.

2 METHODOLOGY

As recommended by the standards **IEEE STD 81-1983** (*IEEE Guide For Measuring Earth Resistivity*) and **IEEE STD-80-2000** (*IEEE Guide for safety in AC Substation Grounding*), as well as the Hydro-Québec standard **SN 12.4** (*Mesures de résistivité*), soundings with multiple spacing have been carried out, to obtain the resistivity values of every layer that forms the overburden, fractured rock and the bedrock.

The electrodes array used was a *Schlumberger array with multiple partitions*, including **Wenner** configuration. The advantage of this array is the possibility to measure the lateral variations in resistivity, permitting the computation of a more accurate value of the true resistivity.

The spacing between the 2 current injection electrodes starts at 1 metre, with a logarithmic increment of 4 steps per decade (1 m, 1.8 m, 3.2 m, 5.6 m, 10 m, etc…) with a maximum of 180 metres on this site. The current was injected on the form of continuous current with a polarity inversion, using an 8 sec cycle (pos. 2 sec, null 2 sec, neg. 2 sec and null 2 sec). From the measurements, a modelization of the data has been carried out to obtain the true resistivity value of each layer forming the soil. The results of the modelization for sounding SE-1 and SE-2 are presented on the "Interpretation and modelisation" graph. The

modelization has been executed with the assumption that the layers are parallel. The localisation map on the next page shows the position of the two resistivity sounding.

3 RESULTS AND CONCLUSION

When looking at the "Resistivity Measurement" graphs, the curves indicate a relatively constant soil with little lateral variations. The modelization shows the presence of 2 layers of different resistivities. The first layer is made of thin frozen overburden and the second corresponds to the bedrock.

If we ignore the first, very thin layer of soil, the average value of **2020 ohm-m** can be used to represent the bedrock resistivity at this location.

During the winter, the top of the ground could be frozen up to 1 m deep, with a large increase in resistivity over this depth.

The interpretation and the report have been executed by Mr Claude Provost, P. Eng.

Claude Provost, P. Eng.
Geophysicist

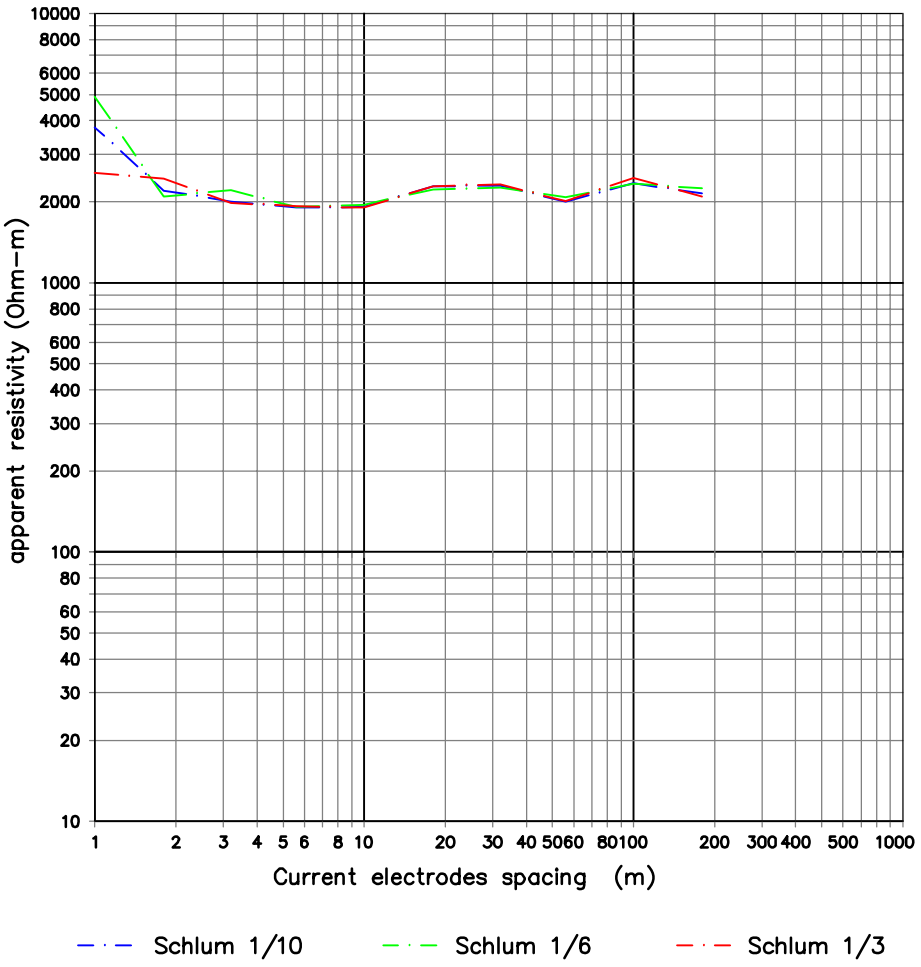
Survey Date: Feb 10th 2006
Temp: -15 C, sunny
Sounding direction:N-S

Equipment used:
IRIS SYSCAL

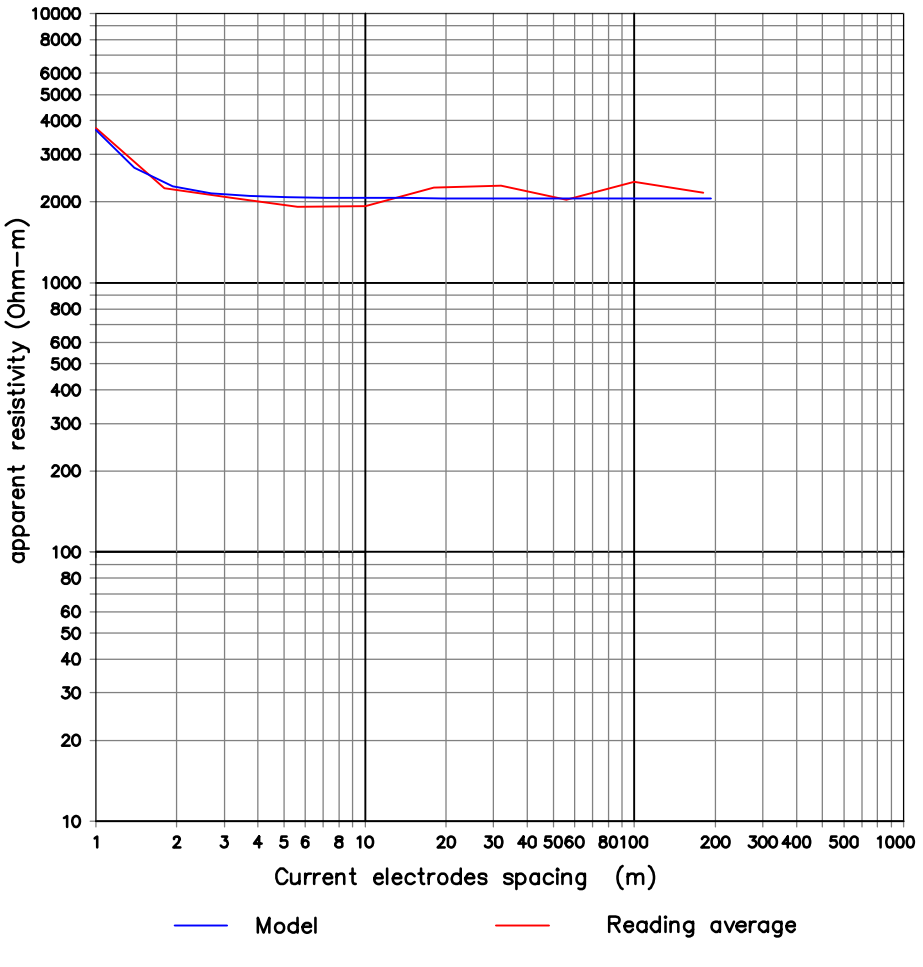
GROS CACOUNA SITE

SOUNDING SE-1

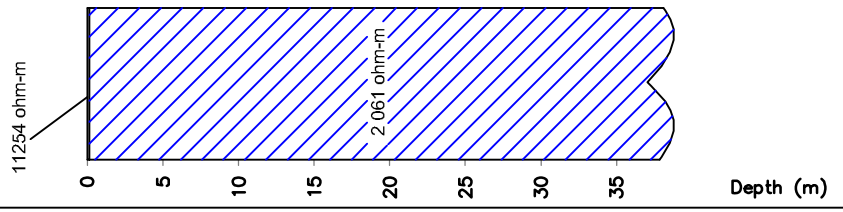
RESISTIVITY MEASUREMENT



INTERPRETATION AND MODELIZATION



MODEL



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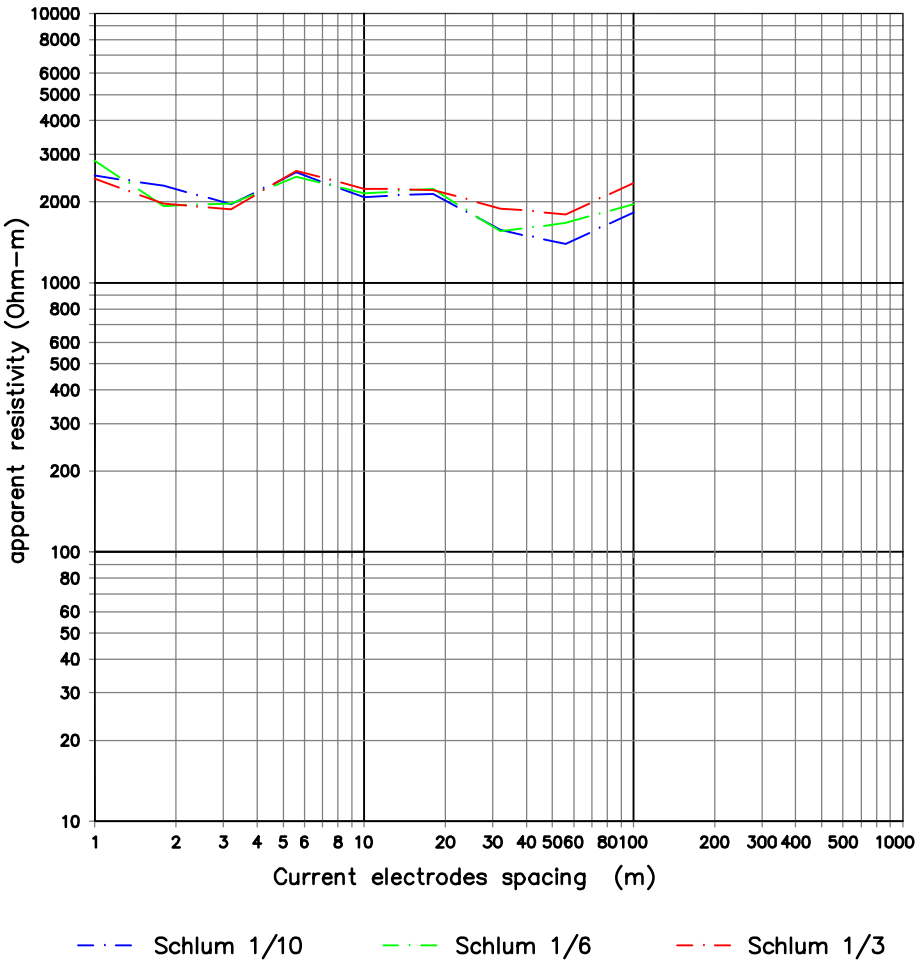
Survey Date: Feb 10th 2006
Temp: -15 C, sunny
Sounding direction:E-W

Equipment used:
IRIS SYSCAL

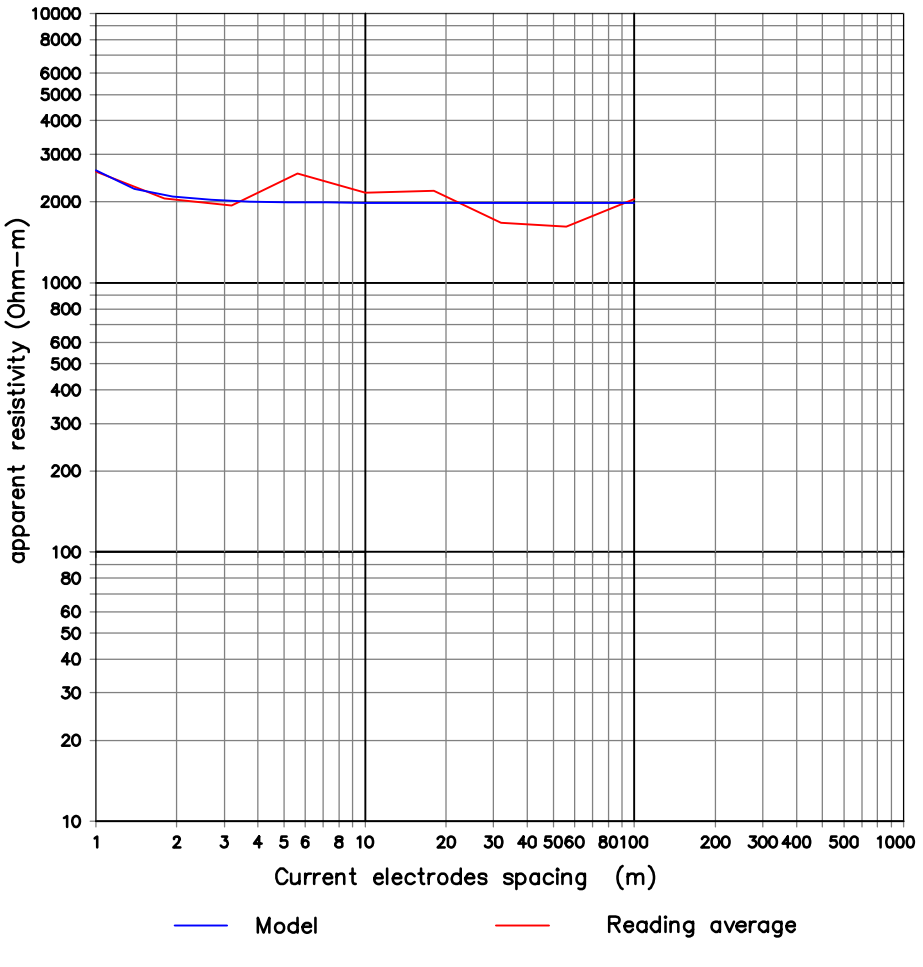
GROS CACOUNA SITE

SOUNDING SE-2

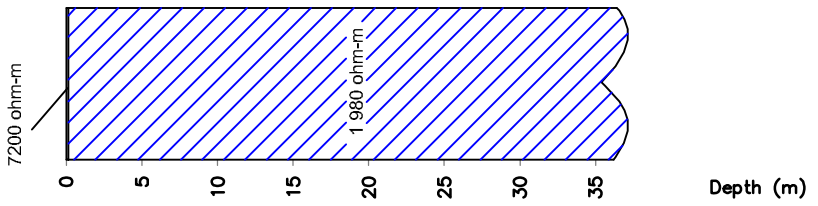
RESISTIVITY MEASUREMENT



INTERPRETATION AND MODELIZATION



MODEL



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