**Abstract**

Study of Electrotomography performance in the exploration of gold ore deposits (by the example of Siberian deposits)

Web: <http://portal.tpu.ru/council/2802/worklist>.

**Relevance of the work**

Improving the efficiency of geophysical methods at the expense of identifying and investigating the possibilities of new advanced technologies in real geological conditions which has been, and remains, one of the most pressing problems of exploration geophysics. The present thesis is devoted to the study of geological and geophysical information content electrical tomography, defining its role in the whole complex of works in typical gold ore deposits in Siberia.

Electrical tomography in the past two decades has received a serious increase in theoretical study and use of instrumentation in industry. It has been widely used to study the different geological environments, primarily in the engineering-geological surveys as applied to various building, archaeological, hydro-technology tasks, etc, and only in rare cases in exploration work on certain types of minerals. Today, the opportunities of electrical tomography under mineralized areas remains poorly understood.

The aim of the thesis is to identify and study opportunities for electrical exploration in the form of electrical tomography induced polarization method on typical gold ore deposits in Siberia.

To achieve this goal it was necessary to solve the following issues:

1. Classification of gold deposits in Siberia depending on geological and geophysical conditions.
2. Carrying out the field experimental measurements by electrical tomography IP in typical ore fields in Siberian regions of Russia.
3. Physical and geological analysis of experimental fieldwork.
4. Evaluation of the possibility for use of electrical tomography IP in different types of gold ore fields within the region.

The scientific novelty. Identified and systematized the opportunities of electrical tomography IP and its role in the overall complex exploration for typical gold ore deposits in Siberia.

The provisions, which are taken to protect:

- Established experimentally that in all types of physical and geological ore deposits of gold with electrical tomography IP which can, determine the structure of the overburden cover different genesis and supergene zone changes in intrusive rocks;

- On gold ore deposits localized in clastic sedimentary complexes, according to electrical tomography IP, upper section confidently mapped lithologic rocks folded structures and faults layers;

- Ore areas and distribution in their individual fields of gold ore bodies of all types, are reflected in the results marked electrical tomography IP only at relatively good "safety", shallow depths (a few tens of meters) of their occurrence and contain significant amounts of electron-conductive minerals or insulators;

- On gold ore deposits more informative geological environment, defined when performing any procedure electrical tomography IP, is electrical resistivity.

**Conclusion.**

The results of the research can significantly extend the range of geological problems that can be solved with the help of electrical exploration in the study of various types of geological and geophysical ore fields and gold ore deposits.

With electrical tomography geological structure of the upper part of the section can successfully be studied, thus identifying these structural elements that cannot be defined according to conventional electrical methods. Most of the elements of the geological structure of sections are reflected in the materials electrical tomography IP’s main parameter electrical resistivity of rocks. The second parameter, induced polarization, plays a significant role only in the presence of significant concentrations of electron-conducting minerals, which in these fields for the most part, are sulfides of various metals or graphitized difference rocks.

Speaking about the capabilities and role in the overall complex electrical tomography exploration for gold ore deposits, we note that it is advisable to apply at the local ore areas identified by other methods, for a detailed study of the structure of the upper part of the structural sections and placing them in the mineralization.