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Geological interpretation of the magnetic anomalies from WDMAM 2007 and from observation in the Barents Sea region

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In connection with occurrence of a map of magnetic anomalies WDMAM 2007 diverse ground shootings made as a result of generalization, are of interest comparison of results of geological interpretation of region of the Barents sea on data WDMAM 2007 and on observed to values of a geomagnetic field.

As an example comparison of features of structure of magnetic anomalies WDMAM 2007 with the magnetic anomalies received with smaller step of sample on the data lengthways geotraverse Kola - the Franz Josef Land is executed. In 1995-98 on these sections the complex of geophysical works is executed. The seismic data have allowed to allocate the basic tectonic blocks and to establish marking borders in lithosphere the Barents seas.

Method SPAN is applied for interpretation, allowing convert spectral-spatial representation of a geomagnetic field in a deep geomagnetic section that enables to compare in one scale results of interpretation of magnetic anomalies to a seismic section.

Comparison has shown, that, despite of distinction in intensity and detail of the description of anomalies WDMAM 2007 in comparison with aeromagnetic shooting, in a map the basic features of morphology of an geomagnetic anomaly field are kept. Essential differences in geomagnetic sections contains in the top part of an earth's crust up to depth of 3-4 km. Since depth of 5 km magnetic heterogeneity in a sedimentary cover of blocks Finnmark Rise, Central Barents Zone of Rises, Nord Barents Basin are confidently shown in section WDMAM 2007. Complexes of high magnetic rocks at the consolidated basement are most distinctly allocated. Besides are brightly expressed near vertical the low-magnetic penetrable zones traced up to depth of 20-25 km. They are observed in Waranger Graben and in northeast part Nord Barents Basin that is very important for geological interpretation of zones oil-gas-bearing reservoirs.

Thus, sections WDMAM 2007 constructed along geo-traverse up to depth about 40 km, contain the main features of distribution magnetic heterogeneity and low-magnetic zones within the limits of the bottom and average bark of the Barents sea. Passage on geo-traverse has provided a binding of sources of magnetic anomalies to physical borders in an earth's crust, allocated on the seismic data. Comparison to a seismic section has shown, that borders of Moho (), Condrad () and the crystaline basement, and also the marking border connected with Riphean formations by thicknesses, are traced on all an extent of a structure.

Thanks to compiled grid of the magnetic anomalies of WDMAM, the analysis opens an opportunity to geological interpretations from the profile analysis all over the region of the Barents Sea. It creates a basis for geophysical modeling of internal structure of middle and bottom parts of the crust as vertical, and lateral laws of distribution of magnetic heterogeneity and layers of low-magnetic rocks.