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Application of highly-accurate magnetic survey for searching mineral deposits in shelf area.

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Nowadays, when hardware measurement error of magnetometers don't exceeds hundredths of nT, and precise satellite coordination equipment is available, magnetic survey is needed for wider area of tasks, for example, for detection and distinguishing weak magnetic anomalies (0.3 nT anomaly correlation between profiles).

Methods of recording geomagnetic field variations and coordination collected data on water areas were developed for solving this kind of tasks. For reaching high precision coordination of magnetic survey data is used. At first, coordination by real ordinary and real secant routes, including additional routes, passed in extreme periods of geomagnetic fields variations passage is used, and calculated corrections are saved for further corrections and/or applied to results of magnetic Earth field on routes. If gradiometric survey is conducted, then evaluation of thin variations structure on routes comes, which are used as zero approximation in iterative coordination method. After it, map of graphs and isolines is drawn, on which artificial secant routes (ASR) are "sliced" transversely to real ordinary routes. This routes can be created on graph map, or on isolines map. On this maps weak part of the most short-termed variations left unrecorded. Coordination on ASR with application of iterative method is conducted. Acquired variations recorded on the last stage of coordination, providing high precision of survey. Reliability of suggested methods based on denying of usage least square method for minimization discoordination. That's why residual discoordination works as coordination criteria.

Also developed: geological mapping method, including distinguishing geological structures, distinguishing anomalies (Donovan) – indicators of oil deposits, evaluation of sedimentary cover and nonstructural deposits conductivity by the results of precise (survey error 1-2 nT) aeromagnetic survey with abnormal variations of geomagnetic field usage.

According to the results of hydromagnetic (gradient magnetic) and low-altitude aeromagnetic survey, tasks for searching placer minerals deposits on repeated survey, conducted before and after influence of geodynamical processes on placers and/or after long period of time are additionally solved.

For distinguishing weak magnetic anomalies developed methods of distinguishing anomalies from the interference based on Brace formula.

For solving wide area of tasks in a water area developed a technology of vector, magnetic survey.

