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Observations of faults and stress zones through variations of the VLF magnetic field.

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Search for anomaly behavior of natural magnetic field was made in the neighborhood of known stressed geological bodies and associated faults. Magnetic field is observed on the ground with VLF receiver “Tezey” which allows recording of magnetic pulse repetition rate. The device works in 2 – 50 kHz frequency range. Variations of three magnetic field components (in the geomagnetic north-south, east-west and vertical directions) were simultaneously recorded.

Observations were made in different areas in Ukraine (including several sites in the north edge of the Dniepr-Donetsk Basin and Crimea), in the hydrocarbon field Oimasha (Kazakhstan), and in Black and Caspian seas shelf zones. Depths of the most examined areas at present time are in rather quite geologically state.

The increase of magnetic field variability was observed in the close vicinity of expected faults almost for all studied cases. The values of such increasing occurred from 0.2 to 3 times higher than typical level. The locations of these anomaly features are usually coincided with one of fault sides and possibly can be explained with continued developing of crack population. Different levels of magnetic field variability are thought to be caused by different geological activity in corresponding sites.

Additionally we found several examples of higher magnetic field variability over the whole geological bodies which are perhaps reflected their stress state.