

## **Perspectives of hydrothermal field discovery at are of Sierra-Leone fracture zone**

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The available data testify that (Mazarovich, Sokolov, 1998) the hydrothermal fields occurs at rift segments with less seismicity and are allocated within the limits of «discontinuities». In 2000 the 22-nd cruise of R/V "Akademik Nikolaj Strakhov" in the region of practically not studied Sierra-Leone fracture zine (6°N) was conducted. One of the expedition tasks was checking of the above mentioned assumption. The survey was carried out with multibeam echosounder SIMRAD 12S.

Mapped area presents relief features that differs from segments of MAR both to north, and to the south. Widespread occurrences of ultramafic and gabbro rocks, discovered at rift valley walls, is observed. The bottom of modern rift is comprised by fresh pillow basalts.

In area of sharp flexure of rift valley, where there is no seismicity, the outcrops with hydrothermal alteration of rocks were found out. The hydrothermal formations are basically presented by carbonate veins in ultramafic rocks, frequently with geodes, and druses of fine crystalls. Particular interest is introduced by the breccias composed of serpentinite debris fixed by carbonate cement, on which the druses of lengthened crystalls (dimensioned of crystalline phases up to 5 mm) of aragonite. At station S2234 the influence of hydrothermal systems was expressed in displacement of clinopyroxene by amphibols predominantly of actinolite seria and in wide progressing of sulphides, penetrated on fractures in altered inclusions of pyroxenes and forming independent phases between fine lengthened crystalls of plagioclase. Under microscope at least three types of different sulphides could be defined. The analysis of melted inclusions has shown, that the igneous complexes of station S2234 were shaped from low K contents primitive melts of NMORB type, most likely not containing water. As a result of the studies of fluid inclusions in alteration minerals from basalts of station S2234 was found out, that in the given area is active the hydrothermal systems with temperatures 205 - 226°C, in solutions with NaCl domination with an admixture of Na<sub>2</sub>SO<sub>4</sub> and KCl and total salt content 3,8 - 5 mass%. The minute contents of salts (with dominance of sodium joints) testifies that a source of the given hydrothermal solutions was ocean water. The presence of Na<sub>2</sub>SO<sub>4</sub> in structure a hydrotherm testifies for their active involvement at formation of sulphide mineralization.

Obtained data allow to consider the area of Sierra-Leone fracture zone as perspective on discovery for hydrothermal field.

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**Evaluation of an opportunity to receive a new scientific information from computer processing of maps (on an example of San-Paulu Fracture zone active part)**

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Within the last four decades at World Ocean the unique set of data in a non-digital (computer) performance was assembled. The information burst of last years requires recalculation of these data in a digital performance to involve them into geological-geophysical analysis. The staff of Laboratory of geomorphology and ocean floor tectonics of Geological institute RAS use the computer aided processing since 1995. In 2000 the study was conducted with the purpose to evaluate an opportunity of receiving of principally new scientific information as a result of computer data processing on the well studied territory - active part of San-Paulu fracture zone.

Complex interpretation of the data allowed to establish a various structure of rift zones, active parts of faults, to reveal a zone of sedimentary cover development, which has undergone some phases of deformations, to find out not known earlier volcanic structures. At last, the system of strike slip of a northwest direction is opened. In whole all study has shown, that after digitizing of the information from the paper carrier in a digital format in a combination with resources of Internet and deep ocean sampling data absolutely new data file is shaped, which could be subjected to principally new processing, and, subsequently, can result in to the unexpected deductions.

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**Relief and deformations of ocean crust at passive parts of transform faults in Cape-Verde basin.**

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To the south of Cape Verde islands is established azimuthal unconformity between passive parts of transform faults. In the 22-nd cruise (summer of 2000) of R/V «Akademik Nikolaj Strakhov» (chief of cruise - Peyve A.A.) in area with limits (10°30' - 12°12' N; 27°20' - 28°40' W) was carried out a polygon survey with multibeam bathymetry (echosounder SIMRAD EM12S) and single channel seismic profiling (SCSP).

The SCSP data testifies to wide progressing of multiphase tectonic movements in the studied area of the Atlantic ocean. The ridges have a complicated relief, which essentially differs as along the ridge strikes, and on different morphostructures. Additional information on polygon structure and color maps as well are available on Web site of Laboratory of geomorphology and ocean floor tectonics (<http://atlantic.tv-sign.ru>).

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