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## Study of hydrothermal alteration and hot water geochemistry in Mount Kendalisodo geothermal prospect area, Semarang, Central Java, Indonesia

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Mount Kendalisodo has a prospect of geothermal. This prospect is assumed by surface geothermal manifestation around this area such as hot springs and altered rocks. Hot spring is analyzed by geochemistry analysis to get some information of chemical fluids characteristic, fluids type, processes that occur with these fluids along it's migration from reservoir to surface, and to predict temperature of reservoir. Rocks that are located around Mount Kendalisodo has been analyzed by petrography method to determine minerals exchange. The next tests are carried out to determine the physical properties of rock such as porosity test, permeability test, and density test. There are five hot springs with temperature ranging from 36°C to 40°C and pH value from 5.9-7.8. The hot springs there have a dominant HCO3 composition and it indicates that these fluids are carbonate water with long distance and many process occur during these fluids migration. The hydrothermal alteration influence and site's minerals composition with three alteration intensity (secondary minerals composition <25%), medium alteration intensity (secondary minerals composition between 25% and 75%) and high alteration intensity (secondary minerals composition >75%) that changes primary mineral composition to clay mineral in argilic alteration zone. This alteration based of geothermometer analysis, reservoir temperature is 175,190C. So, this system belongs to intermediate entalphy resource.

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## Geological and structural mapping of eastern sector of the Cribas anticline: The influence for the hydrocarbons genesis

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Several geological formations were mapped in eastern Cribas namely the Lower Permian Atahoc Formation, Upper Permian Cribas Formation, Triassic Aituto Formation, Post- Pliocene Ainaro Gravel and the Recent Alluvial Deposits. All these formations are mostly employed by sedimentary rocks such as clastic and carbonates rocks except the Ainaro Gravel which filled by gravel grains such as coarse conglomerates of the Lolotoi Complex pebbles in an argillaceous matrix. The Atahoc and Cribas formations are separated by a basalt sill associated with red marls and marlylimestones. Regarding the structures, there are two deformation phases in the eastern Cribas are D1 and D2. The D1 induced the generalized folding of the region including the major Cribas anticline and it is an open fold with an E-W sub-horizontal axis and limbs dipping 25º N-S. The most important D2 structures are major N-S sinistral strike-slip faults and coeval minor folds. In Hacraun River, it is possible to emphasize that while the D1 folds have sub-vertical axial planes, the D2 ones are mainly sub-horizontal. Concerning the main D2 N-S faults, it should be emphasized the one developing along the Sumasse River (western of Cribas region) and the ones developing at the Hacraun River (N Hacraun fault and S Hacraun fault). As it is usual in the structural environments where the strike-slip predominates, there is a diversity of D2 accommodation structures, it must be emphasized a south vergence E-W thrust affecting the core of the Cribas anticline and the NE-SW Tuqueti one which induced the thrusting of the Aituto formation by the Cribas formation. These structures induced oil seeps in the eastern side of the Tuqueti River. Geochemical analyses of shales rocks samples of the Cribas Formation show 0.71% of Total Organic Carbon (TOC) which means that this rock will probably be a source rock for hydrocarbons. The studied shales of the Atahoc and Aituto Formations show the TOC values are below 0.71%.

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