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Employment of the Electromagnetic Techniques to Investigate the Near Surface Structures along Ferran to ST. KATRINA Road, South SINAI, EGYPT

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Sinai Peninsula is a province that represents several geological and geotectonic scenes with different levels of complications. The road between Ferran oases to St. Katrina is one of the most complicated regimes in the central Sinai. It passes through an elongated wade "valley" between two mountain chains on both sides extending to central Sinai. It forms a specific tectonic belt that put it as prolific and prospective oil field, during the opening of the Red Sea rift (early tertiary period, Oligocene - Miocene), the volcanic activity produced a number of basaltic bodies mostly of dolerites dikes, sills and plugs and flows in the Western and Central Sinai. In the present work, the road has been divided into sectors; each sector represents a specific inquiry that requires intensive geological and geophysical investigation to reveal the setting. The study included the surface geological descriptive investigation, and rock samples laboratory analysis for samples collected over the fault and dike systems. The used geophysical methodology included Time Domain Electromagnetic "TDEM", Very Low Frequency "VLF", and Ground Penetrating Radar "GPR", in addition to some previous geological and hydrological information. The data has been particularly processed; the collective phase of interpreting the data is under work. The primary results conclude different reveals starting from the simple wide valley at the south mouth of the road at the Red Sea, passing through the narrow traverses at Ferran Oases and complicated dikes and faults systems and the armed sand island, to the St. Katrina province. Within this work, the results of the investigation for each sector and its impact to reveal the local or provincial task, will be out focused, furthermore, a comparative outline for the problem revealing nonlinear regimes within central Sinai will be given.