them. At depths greater than 2500 m the interstratified minerals are completely absent and the discrete illite and chlorite prevail because of their more stable structure. This mineralogical paragenesis is due to intermediate grade diagenesis. The vermiculite occurrence is due to the alteration of micas and chlorite. The absence of discrete smectite and kaolinite is due to unfavorable physicochemical conditions for their formation or to rapid deposition of the weathering materials.

STUDY OF CHEMICAL, PHYSICAL AND MECHANICAL PROPERTIES OF THE LIMESTONES IN THE ISLAND OF CHIOS AND OF THE IGNEOUS ROCKS IN THE ISLANDS OF PSARA AND ANTIPSARA

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The chemical, physical and as well as the engineering properties of the limestone beds of the island Chios were investigated and the acidic igneous formations of the islands Psara and Antipsara. From this study it was concluded that the above formations could successfully be utilized as construction material for any type of structures as well as for any case of "marble". Samples were collected from the following areas; Langaras, Kardamila, Agios Georgios, Sycousis, Elata, Korakari, Thymiana and Amades, Psara and Antipsara.

The stone of Thymiana and the acidic igneous formations, besides the above mentioned applications, may also be used, due to their physical properties at various structures as a substitute of bricks.

ON THE RELATIONSHIP BETWEEN ACTIVE TECTONICS AND FLUID CIRCULATION IN THE GEOTHERMAL SYSTEM OF NISYROS CALDERA

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In the geothermal filed of Nisyros Caldera, fluid circulation is controlled by active tectonism. The present landscape has been formed through a series of processes that built and destroyed the volcanic edifice and during which a principal influence was exerted by the major, superimposed, recurrent systems of faults, that appeared in different ages. Conventionally it is believed that the circulation of geothermal fluids is

associated with fault systems with average strike N20°-40°W and N30°-50° E. There exist, however, evidence abouth the existence of a young system of normal faults (EP - Greek acronym for active fault) striking N60°-70°E. The postulated system does not exhibit apparent surface manifestations, but a plethora of indirect evidence, including hydrothermal phenomena and phreatic explosion features, attest to its presence. A high resolution AMT survey was carried out in two phases (1989 and 1991), to explore the geothermal potential of the flat part of the caldera (Lakki area). The results indicate that the geoelectric structure underneath Lakki can be distringuished in a southern-central and a northern part with different characteristics. In the first (geothermally active) part, the weakly two-dimensional conductivity structure appears to be closely associated with the strike of the EP system, while telluric current flow takes place along the direction N60°-70° -W. In the second (geothermally inactive) area, the geoelectric structure appears to be homogeneous and normal to the EP system. Assuming that current flow is facilitated along the conductive conduits of fluid circulation, we conclude that the latter strike along the direction N60°-70° -W and may be identified with the young EP system. Such an interpretation requires the existence of an extensional stress field, of direction N-S to NW-SE.

PHYSICAL PROPERTIES AND MECHANICAL CHARACTERISTICS OF PHILIPPI PEAT

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The area of the former Philippi swamps lies in the south-east parf of Drama plain and occupies an area of approximately 700 km^2. Metamorphic rocks. Tertiary and Pleistocene sediments and Holocene deposits structure the wider area. Organic formations (peat, lignitoid peat and lignite) belonging to both Pleistocene and Holocene are included in these sediments and present significant geomechanical problems. The results of a number of geotechnical investigations carried out in the southern part of the swamps were analysed and evaluated in order to draw certain conclusions both about the geomechanical behaviour of peat and the most feasible foundation method.

The geotechnical investigation, showed that the unity of peat consists of intercalating layers of silty clay, clayey silts with sand, organic clays and peat. In the deeper horizons, cohesive clayey sands with gravels prevail. Results of the laboratory tests showed that extremely wide variations exists in both the physical properties and the mechanical characteristics of the unity of peat. Liquid limit varies between 30.0% and 202.5%, plastic limit between 11.0% and 122.2%, moisture content between 19.0% and 499.1%, while the organic content between 2.4% and 83.1%. Similar variations are observed in the values of the mechanical characteristics, with unconfined compressive strength