COAL RANK VERSUS ILLITE CRUSTALLINITY AND ESTIMATED P-T CONDITIONS: SOME PROBLEMS CONCERNING THE PINDOS, TRIPOLITZA AND PHYLLITE-QUARTZITE SERIES IN CRETE

R.A. Feldhoff*, T. Theye, & D.K. Richter***

* Geologisches Institut, Ruhr-Universität Bochum, Universitäts-straße 150, D-4630 Bochum, Germany.

** Mineralogisches Institut, Ruhr-Universität Bochum, Universitätsstraße 150, D-3630 Bochum, Germany.

Different techniques such as illite crystallinity, coal rank and calculated pressure/temperature conditions have been applied to characterized siliciclastic rocks of the Pindos Series, Tripolitza Series and the *Phyllite-Quartzite Series of the nappe pile in Crete. In the* high-pressure/low-temperature metamorphic Phyllite-Quartzite Series, coalification of organic particles is retarded with regard to estimated pressure and temperature. This behaviour can give indications on the baric type of overprint, especially in rocks otherwise not suitable for the estimation of metamorphic grade.

This unusual correlation of coal rank versus other parameters have been observed in the Phyllite-Quartzite Series as well as in the Ravdoucha Beds. The Ravdoucha Beds are considered to be the anchimetamorphic substratum of the Tripolitza limestone. Consequently, the Ravdoucha Beds should have undergone a high-pressure overprint. This conclusion is supported by findings of high-pressure indicator minerals such as Si-rich phengites, carpholite (Ravdoucha Beds near Asi Gonia), and lawsonite (Tyros Beds, Peloponnese).

In the Pindos flysch and Tripolitza flysch, there are problems to ascertain the grade of diagenesis because of the presence of detrital material (phyllosilicates, organic particles). Hence, only coal ranks of "in situ" carbonized particles reflect a diagenetic to anchimetamorphic oveprint that affected the series as wholes. Detrital "resedimented" organic particles *as well as clay minerals can be related to an older thermal* event.

HYDROGEOCHEMICAL AND ISOTOPIC INVESTIGATIONS IN CESME (IZMIR REGION)

S. Filiz, G. Tarcan

D.E. University, Dept. of Geological Engineering, Bornova-Izmir-Turkey

The study area is located in the western parts of the Karaburum Peninsula. The rocks observed in the study area are divided intro three groups. These are Mesozoic karstric limestones, Neogene tuffs and Neogene lacustrine sediments. Mesozoic karstic limestones have been overlain by an unconformity of the Neogene tuffs and Neogene lacustrine sediments, which consist of conglomerate, sandstone, clay, marl and limestone intercalations.

Mesozoic karstric limestones are the aquifer of the hot springs. It is understood from the geochemical and isotopic data that the origin of the hot waters is see water. The sea water percoletes through the fractures and karstic voids and is heeted et depth and also through percoletion brought up to the surfece. These hot weters ere mixed with different proportions of cool see water and cool fresh water as they travel to the surface. The proportions of cool see weter in the hot (mixing) mixture weters could heve varied from 36% to 79%. The proportions of fresh weter in the hot and cold mixed weters could have renged at leest from 32% to 79%. The isotopic compositions of the hot waters are about similar to the modern sea water of Aegeen see. The circulation velocities of them are very fast.

Results obtained from different chemical geothermometers are unreliable because of the sea water origins of them and mixing phenomene. Application of Fournier's silica enthalpy warm spring mixing model gave the temperature of the hot water in the reservoir before mixing as the variation about 85° C and 150° C.

VOLCANIC STRUCTURE AND EVOLUTION OF KIMOLOS AND POLYEGOS (MILOS ISLAND GROUP)

M. Fytikas* & G. Vougioukalakis**

* Aristotle University of Thessaloniki, Geological Dept., 54006 Thesseloniki.
** Institute of Geology and Mineral Exploration, Messogion 70, 115 27 Athens.

Kimolos and Polyegos islands are elmost totally built up of volcanic rocks, the most of which are pyroclastics. The deposits of two big explosive events, Kastro end Pressa ignimbrites-which cover the whole area of Milos island group, served as guide levels in the correlation with Milos volcanic activity. The result was a model on the evolution of the volcanic activity of Milos, Kimolos and Polyegos region.

The volcanic activity in Kimolos and Polyegos area (in comparison with the volcanic activity of Milos) was manifested during Upper Pliocene and Lower Pleistocene, ranging in age between 3,5 and 0,9 Ma. Two cycles of volcanic activity are distinguished: The first cycle, between 3,5 and 2,0 Me, comprises the lower lavas of Kimolos, the Kastro ignimbrite and the andesitic-dacitic lavas of Kimolos. The second cycle, between 2,0 and 0,9 Ma, comprises the Prassa ignimbrite, the domes of Polyegos, the andesitic pyroclastics and the Geronikola lavas of Kimolos, the rhyolitic pyroclastics of Psathi