

core complex", followed, while the compressive regime is displaced even southerly, in the area of the Mediterranean ridge.

ON THE VOLCANISM IN THE AEGEAN AREA

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The volcanoes of the Aegean area are studied from the geological and petrochemical point of view. Emphasis is placed in the case of the Santorini volcanoes. Attention has been called to the study of the evolution process of the magma differentiation in their magma chambers. Cases of these magma chambers isolation from the asthenosphere (mantle) are also examined. On the basis of the obtained data it is suggested that the kind of the rocks of the last eruption of an Aegean volcano makes it easy to conclude, if this volcano is able to undergo or not new eruptions. Thus, in the case of alkali rhyolites the question is of a discharged magma chamber, i.e. of an extinct volcano, whereas the presence of dacites with tendency to rhyolite indicates a serious weakness of the magma chamber, i.e. a magma hardly able to erupt at the surface.

ENGINEERING GEOLOGY OF SELECTED DISUSED ANDESITE QUARRIES, IN IZMIR-TURKEY

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The city of Izmir has been founded over Miocene aged volcanic rocks, Neogene sedimentary rocks and Quaternary sediments. Volcanic rocks are mainly consisted of tuffs, agglomerates and andesite lavas. Good quality andesites have been widely used as building stones in construction of buildings and other engineering structures in Izmir, in the past. Andesites were obtained from the quarries opened up in the periphery of the city. As the city has expanded over the years, these andesite quarries remained in the middle of the dwelling areas and then the quarrying operations were stopped without taking any precautions against slope failures. Recently, there has been an increased interest shown to make use of the disused andesite quarries after carrying out engineering geological investigations and rock slope reinforcement, because of the shortage of free space in the city centre.

In this paper, initially a brief review of the geology of Izmir and its surroundings will be explained. The engineering geological properties of andesites will be discussed and the details of the engineering geological studies carried out in these disused andesite quarries will be given. The engineering geological studies involved detailed disconti-

nully mapping of the quarry slopes, stereonet analysis of the discontinuity data, identification of the slope failure modes and areas, suggestions and control of the slope reinforcement for the long term safe use of these quarries. Of these quarries, the first one at Göztepe area is being used as open air theatre and car park, after it has been reinforced, the second one at Bayrakli is planned to be used for sporting and recreation activities and motorway is planned passing through the third quarry at Osmangazi area of the Izmir City.

STRUCTURAL CRITERIA IN LOCATING CHROMITE ORES: EVIDENCE FROM THE RIZO DISTRICT, VOURINOS OPHIOLITE, GREECE

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The Rizo chrome ore district of North Vourinos contains fine-grained low-grade chromite ores of schlieren, disseminated, massive, and nodular types. The ore zone itself is poorly exposed and highly sheared; potential continuations of the surficial ore deposits cannot be predicted from standard host rock mapping.

A structural evaluation of the area suggests subsurface continuations of Rizo ore bodies to the west of the exposed ores based on the following observations: Fold axes of schlieren ore parallel mineral lineation of host rocks trending around 270° and impart an appearance that down-dip ore continuations would lie west of the surface occurrence. The ores themselves coincide with the position of Z-fold hinges formed during dextral shear around the ore zone. This dextral shear resulted in deformation of host dunites to east-west trending tabular bodies.

The presence of ductile structures of low temperature ($950-750^{\circ}\text{C}$) plastic deformation are inferred from rotations of high-temperature fabrics into lower-temperature ductile shear zones: The intense brittle shearing and faulting in these zones obscures observations of these ductile structures themselves.

All structures present formed within a single strain orientation, apparently during a continuous evolution of deformation from plastic through brittle conditions. All stages of deformation have strongly imprinted the chromite ore. A drilling program based on these structural criteria has subsequently confirmed the predicted subsurface continuations west of the exposed ore zone.