

Underground Coal Determination by Integrated (Reflection & WVSP) Seismic in the Miocene Soma Basin (Western Turkey)

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The Neogene Basins of Turkey contain as much as 9 billion tons of lignite-rank coal (~engiller, 2001; Tuncah et al., 2002). The Miocene Soma Basin, a rift basin trending NE-SW (approximately 20 kilometers by 5 kilometers) in the Aegean Extensional Province (EAP) of Western Turkey, is estimated to contain, at the least one billion tons of lignite and about half of this reserve is present at depths greater than 600 m (Turkish Coal Enterprises, 2006). Miocene marl/limestone units and Pliocene clastics and volcanic tuffs overlie the Miocene coals of the Soma basin. There are several coal seams in the basin but the most economical and thus target seam is known as KM2 with an average thickness of about 20 meter across the basin. In the Soma Basin, Turkish Coal Enterprises (TKİ) has mined this KM2 seam by open cut coal mining and underground mining for several decades in the Northern and Central part of the basin, respectively. Recently, coal exploration activities have been extended to the Southern part of the basin by means of exploratory drillings.

In order to aid fast and economical coal exploration activities of the Turkish Coal Enterprises (TKİ), a collaborative work has been started for development of an integrated seismic method for coal exploration. The aim is to develop a practical seismic method for TKİ to apply in its exploration activities in other lignite coal basins of Turkey. The information gathered from tens of coal exploration borehole already drilled in the study area will be used to calibrate the horizons to be mapped b) surface seismic and WVSP methods (Tselentis and Paraskevopoulos, 2002). Surface seismic data will be collected on roughly East-West and North-South oriented lines. Furthermore, at the intersect of these lines borehole WVSP data will be collected. The seismic source for both surface and borehole WVSP seismic will be a

mini-vibrator and the data will be collected contemporaneously. The seismic study will be conducted between May and July 2010. Soon after, the seismic data processing work will be initiated.

References

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