

**O15-1****MINERAL & FRESH WATER INVESTIGATION WITH  
MULTIPLE GEOPHYSICAL METHODS****C. SUNGUR<sup>1</sup>, A. ERCAN<sup>1,2</sup>, A. SAHIN<sup>1</sup> and M. MUTAFCILAR<sup>1</sup>**<sup>1</sup>YERALTI ARAMACILIK Lmt. Spor cad. Acısu sok. No. 9/2 Besiktas-Istanbul Turkey<sup>2</sup>Prof. Dr. ITU Maden Fakultesi, Jeofizik Muh. Bol., Maslak-Istanbul Turkey

First geophysical investigation for mineral water, in Caybası village, Bursa, Turkey was made in 1985 with A. Ercan management (A. Ercan, 1985). During this geophysical investigation, Electrical Sounding (29#) & Profiling (855# with  $r=7.5, 22.5, 62.5$  meter and  $b= 5$  meter), Natural Polarization (982#) and Electrical Mise a la masse (936#) methods were used along nine NW-SE profiles on the foot of Uludag Mountain. On the South side of Uludag Mountain where Nilufer Creek flow, spring water existances were observed along the creek . Electrical measurements were applied to explore allocation of those mineral and fresh waters and to designate subsurface structure.

Next geophysical investigation on the same area was made by A. Ercan management again, in 1997 (A. Ercan,1997). This work intend to explore fresh water and finally the drill point allocation. Electromagnetic- VLF, Electromagnetic Silingram ( $f=110, 120, 440, 880, 1760, 3520, 7040, 14080, 28160, 56320\text{Hz}$ ) and Natural Polarization.

Last investigation on the study area was made in 1990 to explore subsurface structure with multiple geophysical methods: radiometric spectrometer, microgravity & vertical gradient, magnetics & gradiometry. This geophysical study were run on the same two NW-SE profiles of 1997's study. Radiometric measurements was carried out in two models with 100 seconds duration time. First mode, Total Count Search (TC-S) which lower threshold is approximately 80KeV includes all energy level to 3MeV. Second mode Potasium ( $K^{40}$ ) which is a differential window looking at energy level from 1.38 MeV to 1.54 MeV, with the centre of the window at 1.76 MeV. Aiming to find regional anomaly, we made last measurement on the barrage lake. Gravity measurements were run in two level ( $z_1 = z_2 + 13$  cm) with  $\pm 1$  microGal sensitivity, which helped us to obtain vertical gradient of gravity ( $\mu\text{Gal/m}$ ). corrections applied to those data's are shown below: Daily Variation, Latitude, Free Air and Terrain Corrections. Magnetic measurements were attempted in one NW-SE profile. Additionally to Total Earth Magnetic Field, we measured gradient by the same technic of gravity measurements. Daily variations was calculated and reduced from the magnetic data's.

Along East side of the study area soil thickness increase, mineral and fresh water confuse to each other. This properties observed along profile A (A200-A240) with decreasing radiometric and magnetic datas which indicate passage from mineral to fresh water; same effect observed on the west side of the profiles (A60) on Electrical Resistivity (Direct Current) datas. All those geophysical signs cause suspicion about the existance of N-S orientated faults.

