Kazan (Ankara) is a new geothermal Area in Turkey

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ABSTRACT

Kazan geothermal area is a new geothermal area and it is located very close to Esenboga airport, important region in terms of tourisim and economical Geothermal area has been discovered through geological, tectonical, hydrogeological and geophysical studies performed by Iller Bank geologists and a first geothermal well, depth of 400 m, was drilled. Due to encountered variety reasons in first drilling, following research conducted by the company's Jeoson and location of 6 wells were determined. The problems encountered in first well were solved and hot water, 38,5^{0}C temperature and 0,35 l/s yield, was obtained from IKJ-2 well depth 252 meter. Detph of wells ranges between 220 and 496 meter, temperatures varies from 29 to 55 0C and yields of them ranges between 7 and 60 l/s. According to medical evaluation hotwater obtained from wells has bicarbonate, carboniocside, florur, silisium properties and drinkable, balneological water. These waters cure a lots of disease and It can be used as protecting from some disease and improve human health. In the area a modern Thermal Hotel and Congress Center has been established to tourist and curists as a therapy and human health.

1. INTRODUCTION

Regarding Turkey's renewable energy policy, number of geothermal energy applications have been increased recently. One of them is balneological uses which affect on thermal tourism. Kazan geothermal araea is a new geothermal area because of being very close to (Esenboga) Ankara airport It offers a huge thermal tourism potential.

There is mainly sedimentary and volcanic units. Sedimentary units consist of layered tuff and andesite levels. Related Kazan municipality demand, geological, geophysical and soil radon measurement studies were performed to find geothermal fluid in that area. Result of these studies, 6 geothermal well locations were defined and their depths varies between 220 and 496 meters. Reservoir rocks are fractured andesite and conglomerate levels in sedimentary units.

2. EXPLORATION WORKS

Due to lack of any signs of geothermal fluids, first radon soil gas measurements were performed in that area. Related general tectonic activities, radon measurement points were selected to be North west lined, also vertical electrical measurement points. 27 radon measurement and 20 vertical electrical resistivity measurements. Soil Radon values varies 5 and 28 Kbq in that area. Result of Electrical resistivity measurement show that a normal fault, NE direction (Figure 1).

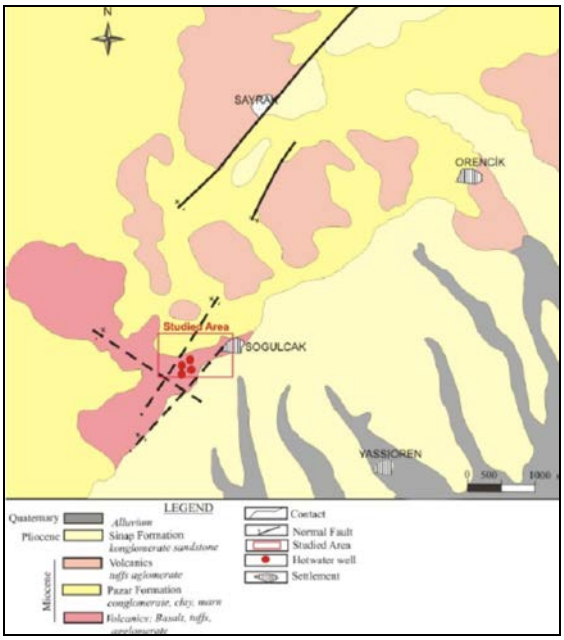

Figure 1: Geological map of Kazan Geothermal area

3.DRILLING WORKS

As a result of these explorations, IKJ-1, first geothermal well, was drilled at 220 meter because of some drilling problems. Additional electrical resistivitiy studies were conducted in the field and five geothermal well locations were identified to be drilled. In each of them cold water inlet caused a decrease to

29 ^{0}C temperature at approximately at 136 - 230 meter depth, so these depth were closed through drilling and the temperature increased up to 55 ^{0}C. some drilling problems, althouhg it was planned for 400 meter in the begining. Geothermal fluid yield is 0,35 l/s and temperature is 38,5 ^{0}C. Additional studies Also well tests were performed in each wells. These test datas Show that there isnt any hydrolic interaction between IKJ3- and IKJ-5.

3. BALNEOLOGICAL AND DIRECT USE

Thermo mineral water is classified bicarbonated, carbon dioxide, fluoride, silicon as special balneologic potable water. It is reported in the medical evaluation report that it is good for diarthrosis and rheumatismal diseases in the form of aquatic exercises and gastroenterological diseases by drinking and it is good for bone development based on its fluoride content as well. It is also indicated that it would be used for protecting and improving the health, diseases effectively therapeutically.

Figure 2: Hotel-Congress Center (left) and Public Thermal Center (right)

REFERENCES

Akkaya, R. (2011), Sogulcak - Kazan (Ankara) 1. Period Exploration Activity Report.

Akpınar, K. (2012), Sogucak - Kazan (Ankara) Geothermal Resource Exploration License's Geological, Hydrogeological, Tectonic, Geophysic Surveys and assignation of drilling locations report.

Cetin, A., Ozturk F., Navruz, O., vd. (2011), İller Bank Co.Inc., Kazan (Ankara) Geothermal Survey Report

Erisen, B.,Unlu, M.R., 1980, Geology, Geothermal Geology and Geothermal Potentials Ankara, Cubuk Kızılcahamam, Kazan Area, Report of MTA No 9949, Ankara.

Istanbul University Medical Faculty Department of Medical Ecology and Hydroclimatology, Assay Results of Balneology Laboratories

Soylemez. H., (2013), Sogucak - Kazan (Ankara) 3. Period Exploration Activity Report