GEOTHERMAL EXPLORATION IN THE MYGDONIA BASIN

G.N. Traganos

I.G.M.E., 70 Mesogion St., 11527 Athens, Greece

The borderline of the Mygdonia basin is located 10 Km NE of the Thessaloniki area and its major part is covered by the lakes of Langada and Volvi.

The geothermal investigation has began in 1981 in order to locate the thermal waters and demarcate presicely the geothermal fields.

The leading factors for the reconnaissance and prospect survey were the recent geological age of the basin's formation, the complicated tectonic structure, the intensive seismic activity (e.g. the recent earthquakes of 1978) and finally the presence of the thermal springs of Langada - N. Apollonia.

Following the plan of the above geothermal project 150 water samples were collected from different springs and drillings, a geoelectrical survey has been conducted in order to study the tectonic structure and the stratigrephy of the sedimentary basin and 14 test drillings were also underteken with the purpose of identifying the probable areas of geothermal interest.

The geological, geothermal, geophysical and drilling research work led to the location of the following low enthalpy geothermal fields:

1. Langadas geothermal field, proven surface 6 Km^2, reservoir's depth 210 m, T = 33° - 40°C.
2. N. Apollonia geothermal field, proven surface 2 Km^2, reservoir's depth 50-110 m, T = 34° - 51°C.
3. Nymphopetra geothermal field, proven surface 2 Km^2, reservoir's depth 60-110 m, T = 39° - 45°C.

Chemical analysis performed on water samples has yielded that the thermal waters are of very good chemical quality (T.D.S. ~ 1 gr/l). Their PH values are 6,9-8,6 and the possible temperature values, using the Si-Geothermometer are of 80° - 100°C.

Finally, it has been revealed that the significant cause of the thermal anomaly, of the above geothermal fields, is the presence of deep tectonic faults, helping the upward movement of the hot thermal fluids.