

CURRENT GEOTHERMAL DEVELOPMENT SITUATION IN THAILAND

Kriangsak Pirarai^{*}, Bundarik Borisut, Prakorb Ukong, Oranuj Lorpensri, Aranya Fuangsawadi

Department of Groundwater Resources, 26/83 Ladyao, Chatuchak, Bangkok 10900, Thailand

^{*}Corresponding author: e-mail: kpirarai@gmail.com

ABSTRACT

Geothermal development and utilization in Thailand focused on tourism destination and spa for many decades. Recently, geothermal utilizations in Thailand are for tourist destination, binary cycle power plant and geothermal or ground surface heat pump. In general, geothermal energy can be utilized as generating electricity and direct uses depend on reservoir temperature.

Many geothermal hot springs in Thailand are located along western part, from North to South, and almost associated with granitic rocks. The exploration of geothermal energy in Thailand was commenced in 1978 by collaborating between Department of Mineral Resources (DMR), Chiang Mai University (CMU), Department of Energy Development and Promotion (DEDP) and Electricity Generation Authority of Thailand (EGAT) as a Working Group in geothermal research. The crucially detailed studies during 1980-1990 were comprised of geological survey, geophysical investigation, geochemical analysis and borehole drilling. Finally, the first small-scale of geothermal electricity power plant was constructed and produced electricity with a capacity of 0.3 MW by binary cycle system until nowadays. Subsequently, the policy of further intensive exploration has been terminated from consideration due to lack of financial support, expertise and technology.

In 2011, a new partnership or new Working Group has been formed comprising of Petroleum Authority of Thailand (PTT), Department of Alternative Energy Development and Efficiency (DEDE) and Department of Groundwater Resources (DGR) under Memorandum of Understanding (MOU) in order to cooperate in exploration and development of geothermal resources for electricity generation by setting a target plant with a capacity of 5 -10 MW and an initial budget for only preliminary exploration is more than US\$ 10 million.

The proposed methodology of current geothermal exploration is divided into desk study; phase I; phase II; and phase III, respectively. The desk study will cut down the 112 to 16 geothermal sites. The second step (Phase I) is ground follow check and other socioeconomic field works. Only 5 appropriated sites will be selected. After that, geology, geochemistry, and geophysical field works will be followed. The Magnetotelluric (MT) survey will be the main part of geophysical survey, the rest are Gravity, and Resistivity surveys. The phase II is test hole drilling, 300 meter depth, in each area, following by 1,000 meter exploration drilling. Phase III is geothermal power plant design and installation. Due to the cost of boreholes drilling are very expensive, therefore, this step is a crucial step and will terminate the next phase if the result from this step does not match the conceptual models.