

Hydrothermal Alteration at the Geothermal Field in Bogor Area, West Java, Indonesia

Rinaldy P. PRATAMA¹, Euis T. YUNINGSIH¹ and Yudi I. KUSUMAH²

¹ Faculty of Geology, Padjadjaran University,

Raya Bandung-Sumedang Km.21, Jatinangor 45363, Indonesia

² Geothermal Practitioner, Indonesia

E-mail: rinaldyputrapratama@yahoo.com

Introduction

Hydrothermal alteration occurred at the geothermal field in Bogor area shows interesting phenomena of their hydrothermal system. This geothermal field located about 60km southern of Jakarta on the island of Java, Indonesia. Its located along the axis of the Sunda-Banda Volcanic Arc, which extends from Sumatera to Flores (Hamilton, 1979; Hutchinson, 1989)

The geothermal system in this field is liquid-dominated, associated with shallow intermediate- to -silicic intrusion and fracture-controlled reservoir.

The objective of this research is to understand the hydrothermal alteration occurred in geothermal field in Bogor area and to develop stratigraphy and hydrothermal model using petrography and X-Ray Diffraction analyzed data and direct temperature measurement.

Geological Overview of the Geothermal system

The arc-trench system of Sunda – Banda Volcanic Arc marks the convergent boundary between the Indo-Australian in the south beneath the Eurasian plate in north. The approximately orientation of plate convergence for Java is North–South (McCaffrey, 1991), making subduction nearly plumb to the arc front in central Java, but increasingly oblique towards Sumatera. The subduction rate for Java has been estimated to be 6–7 cm/year (Tregoning et al., 1994). Regional stress indicators (earthquake focal mechanisms, borehole

breakouts, mapped or inferred surface faults and folds) reveal that in western Java the maximum horizontal stress is directed approximately north, parallel to plate convergence (Shemeta, 1994).

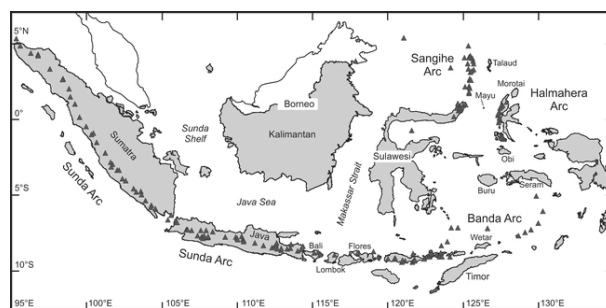


Figure 1. Sunda-Banda Volcanic Arc, extends from Sumatera to Flores (Shaw et al, 2014).

Geothermal field in Bogor area is located in a mountainous area ranging from about 950-1500 msl. The highest elevation are the inactive andesitic volcanoes of Salak Mountain, Gagak, Perbakti and Endut that lie along the main trend of the Sunda-Banda Volcanic Arc. These peaks bordered the development site on the east, northwest, southeast and south sides.

Fossil and active hydrothermal systems are associated with several of the volcanic centers in the geothermal field area. The most prominent thermal manifestations are fumaroles and hot springs directly related to the field geothermal system and fumaroles on the upper western flank of this field.

Thermal features associated with this geothermal