GEOTHERMAL DEVELOPMENT IN INDONESIA

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I. INTRODUCTION

1. Indonesia is one of the richest countries in the world in geothermal energy sources. The volcanic belt in Indonesia is associated with a 7000 Km long plate boundary which strethed-from Sumatra in the West to Java, Bali and Leasser Sunda Islands in the East. The volcanic belt further bends to the North through Maluku up to Sangihe Island.

2. The number of volcanic centers in Indonesia is 177, and 88 of these bear evidences of fumarole and solfatara activities The geothermal potential of the country has been estimated to be about 10000 MWe.

3. Already in 1918, geothermal investigations strated in Kamojang by volcanological Survey of Indonesia, and five exploration wells were drilled there in 1926 - 1928.
However, it was not until 1983 th at the first large geothermal power plant (30 MW) was commissioned in Kamojang. Prior to the a 0.25 MW pilot station had been operated in Kamojang since 1979, and a 2 MW pilot plant in Dieng since 1981. Even though it is reconized that geothermal investigation were not carried out in Indonesia from 1928 to 1964 it appears that it has taken relatively long time for Indonesia to strat commerical utilization of the geothermal resources of the country.

4. Geothermal exploration was reactivated in Indonesia in 1964. In the following years many domestic and foreign organization were involved in this work. The Indonesian organization are VSI (Volcanological Survey of Indonesia), PLN, ITB (Bandung Institute of Technology) and PERTAMINA Foreign organizations like UNESCO, Tokyo University, USAID, New Zealand Governement and JICA had made contribution to the geothermal development in Indonesia during the last 20 years The largest external contribution is coming from the New Zealand Government which had provide aid for the 30 MW power plant and steam field development in Kamojang, West Java.

5. In 1981 PERTAMINA was granted the authority to undertake the exploration and exploitation of all geothermal energy source in Indonesia. The Presidential Decree No. 22 of 1 June 1981,which granted PERTAMINA this authority enables PERTAMINA, with the consent of the Minister of Mines and Energy, to enter into Joint Operation Contracts, with companies interested in developing geothermal resources in Indonesia.
At present there are two foreign companies working in Indonesia under the Joint Operation Contract System. The are UNOCAL Geothermal Indonesia Inc. and AMOSEAS Indonesia Inc.

APPLICATION OF VOLCANO-GEOLOGICAL PARAMETERS IN GEOTHERMAL EXPLORATION: THE PHILIPPINE EXPERIENCE

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Large scale utilization of geothermal energy has been carried out in several areas where anomalously large heat fluxes occur. These anomalous areas generally coincide with the boundaries of the earth's tectonic plates along which vulcanism and seismic activity are abundant. Not surprisingly, therefore, the most favorable areas for the exploitation of geothermal energy are characterized by volcanic and earthquake activity.

The Philippines enjoys such a locale. The use of volcano-geology, therefore, as a gool for geothermal exploration and development is emphasized in the paper.