

Well control equipment for high temperature and pressured water well

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Key words: Drilling, water well, well control, BOP

Abstract

The well control equipment for high temperature and pressured water well has not been paid attention to by relative person. Due to the temperature of pressured water well is high almost reach boiling point of water at the surface condition. This article describes the well control equipment is call blowout preventer (BOP) to apply in pressured balance drilling in Mae Chan hot spring field, Chiang Rai Province, Northern of Thailand. This project owner is Department of Alternative Energy Development and Efficiency (DEDE) which intent is to assess the potential of hot spring field for Geothermal power development. BOP is one of the most important components of high temperature and pressured water well drilling operation. It is specialized valves which are designed to seal, control and monitor pressure to prevent blowouts, the uncontrolled flow (formation kick) of hot water from a well. This BOP unit has been designed and developed by Geomechanical Services Co., Ltd. (GMS) and Promotion of Appropriate Technology Co.,Ltd. (PAT-Drill) who is specialized manufacture drilling machine, which we can cooperate to make this BOP unit utilizing for high temperature and pressured water well drilling operation. We were invent and develop the BOP by In-House technology that the product is smaller than the large scale of usually usage in oil and gas drilling industry. Due to the BOP product in the oil and gas market is too expensive if use to high temperature water well drilling. The BOP product is design based on practical usage and competitive price compare with those BOP product in oil and gas industry. The product was designed by a simple structure, it is very compact unit and appropriate application, the pneumatic system can provide very fast closing time using low operating pressure. All three rams can be shut-in in 2 acting cycle times with the accumulator system. The BOP is applied to the truck-mounted mobile drilling rig model PAT-801, with drilling capacity 1,000 m depth. Five wells had been drilled by installing and utilizing the compact BOP unit for entire operation without any downtime and safety incident. It also can improve the performance and efficiency of drilling operation.