PRODUCTION RATE ANALYSIS, SETTING DEPTH AND ELECTRIC SUBMERSIBLE PUMP (ESP) INSTALLATION DESIGN TO GET OPTIMUM OIL GAIN (CASE STUDY WELL X KONDUR PETROLEUM SA. PT. ENERGI MEGA PERSADA)

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Abstract

Along with increased requirements of petroleum, petroleum exploration is expected to be optimal. For it that requires a technology to be able to discover, explore and process of petroleum. One of the technology required is how to bring crude oil from deep below the earth's surface to the upper surface of the ground, so it can be processed and used. Pumps used in Artificial Lift method include jack pump, submersible pumps, cavity pump and jet pump. Selection of pump usage was adapted with conditions and ability of well for produce of fluid (crude oil). For well condition that have a large production capacity and located deep in the ground, usually used in the installation of submersible pumps or electric submersible pump (ESP). In the case of wells X Kondur Petroleum SA PT. Energi Mega Persada installation (setting depth) ESP always be installed near the perforations so that the oil obtained was not optimal. Therefore have been done an analysis of ESP setting depth that optimum so that oil obtained will also be maximized and operational costs will also more economical.
Initial data that has been determined that well data, reservoir data, production data and fluid data. This data is used to analyze production rate of fluid that produced by wells and to analyze well condition was occurred. Well condition these are used to set setting depth and designing installation of electric submersible pump (ESP). Component installation electric submersible pump (ESP) which will be designed is selection of pumps, protector, motors, cables power, switchboard and transformers.

From analysis and calculations have been done obtained a well conditions with working fluid level (WFL) equal 1.986,6 ft from perforations, pump setting depth (PSD) equal 3.800 ft from ground surface and liquid volumetric rate equal 2.543 barrels per day (BPD). Installation of electric submersible pump that is designed using a GN2500 type pump of 540 series with the number of stages 96 stages, pump power equal 107,14 HP and has a 62% of pump efficiency.

Key words: electric submersible pump (ESP), artificial lift, setting depth, inflow performance relationship (IPR), the total dynamic head.