

ABSTRACT

Nowadays, producing BNG-X3, a well in Benuang Field, is relatively easy due to its natural drive which is bottom water aquifer combined with high associated gas content. Hence, most of the wells are flowing naturally from reservoir to surface facilities. However, issues most likely to occur overtime, especially when the pressure depletes due to production hence could not supply enough energy for the fluid to flow naturally. In this study, analysis was conducted to address this future problem by implementing a suitable artificial lift for this kind of circumstances. To get a more sustainable and continuous result, post installation evaluation was carried out to define key parameters that can lead to success and optimization in future application of Hydraulic Pumping Unit (HPU) in Benuang Field.

The analysis consists of reserve calculations, economic feasibility, and step by step design for artificial lift HPU. The HPU installation and production performance monitoring for well BNG-X3 were conducted thoroughly to assess whether the implementation was optimized based on the well's potential. Reserve calculations were performed using the Decline Curve Analysis (DCA) method and Pipesim software, while the HPU design was developed using Microsoft Excel. Field data was utilized for monitoring and evaluating the results.

Based on the analysis, well BNG-X3 still holds significant potential. From an economic perspective, it has a positive Net Present Value (NPV) of \$ 320,900 and a Payback Period (POT) of less than one year. Production observations indicate that well BNG-X3, with a Gas-Liquid Ratio (GLR) of up to 1000 SCF/STB and a high gas production rate, can be reactivated. The use of a 2.5" pump, along with SPM 5 and SL 168-inch parameters, has been fairly successful in restoring lost production. However, the achieved production rate has not yet reached the well's optimal potential due to the pump efficiency still being below the target (67%).

Keywords: Decline Pressure, Hydraulic Pumping Unit, Artificial Lift, Production, Liquid Hold Up