

## The Analysis of Drill Bit Optimization by the Application of New Electric Impulse Technology in Shallow Water Absheron Peninsula

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**Abstract :** Despite based on the fact that drill bit which is the smallest part of bottom hole assembly costs only in between 10% and 15% of the total expenses made, they are the first equipment that is in contact with the formation itself. Hence, it is consequential to choose the appropriate type and dimension of drilling bit, which will prevent majority of problems by not demanding many tripping procedure. However, within the advance in technology, it is now seamless to be beneficial in the terms of many concepts such as subsequent time of operation, energy, expenditure, power and so forth. With the intention of applying the method to Azerbaijan, the field of Shallow Water Absheron Peninsula has been suggested, where the mainland has been located 15 km away from the wildcat wells, named as "NKX01". It has the water depth of 22 m as indicated. In 2015 and 2016, the seismic survey analysis of 2D and 3D have been conducted in contract area as well as onshore shallow water depth locations. With the aim of indicating clear elucidation, soil stability, possible submersible dangerous scenarios, geohazards and bathymetry surveys have been carried out as well. Within the seismic analysis results, the exact location of exploration wells have been determined and along with this, the correct measurement decisions have been made to divide the land into three productive zones. In the term of the method, Electric Impulse Technology (EIT) is based on discharge energies of electricity within the corrosivity in rock. Take it simply, the highest value of voltages could be created in the less range of nano time, where it is sent to the rock through electrodes' baring as demonstrated below. These electrodes- higher voltage powered and grounded are placed on the formation which could be obscured in liquid. With the design, it is more seamless to drill horizontal well based on the advantage of loose contact of formation. There is also no chance of worn ability as there are no combustion, mechanical power exist. In the case of energy, the usage of conventional drilling accounts for 1000  $\text{m}^3/\text{h}$ , where this value accounts for between 100 and 200  $\text{m}^3/\text{h}$  in EIT. Last but not the least, from the test analysis, it has been yielded that it achieves the value of ROP more than 2  $\text{m}/\text{h}$  throughout 15 days. Taking everything into consideration, it is such a fact that with the comparison of data analysis, this method is highly applicable to the fields of Azerbaijan.

**Keywords :** drilling, drill bit cost, efficiency, cost

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