

Robotic Logging Technology: The Future of Oil Well Logging

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Abstract : "Oil Well Logging" or the practice of making a detailed record (a well log) of the geologic formations penetrated by a borehole is an important practice in the Oil and Gas industry. Although a lot of research has been undertaken in this field, some basic limitations still exist. One of the main arenas or venues where plethora of problems arises is in logistically challenged areas. Accessibility and availability of efficient manpower, resources and technology is very time consuming, restricted and often costly in these areas. So, in this regard, the main challenge is to decrease the Non Productive Time (NPT) involved in the conventional logging process. The thought for the solution to this problem has given rise to a revolutionary concept called the "Robotic Logging Technology". Robotic logging technology promises the advent of successful logging in all kinds of wells and trajectories. It consists of a wireless logging tool controlled from the surface. This eliminates the need for the logging truck to be summoned which in turn saves precious rig time. The robotic logging tool here, is designed such that it can move inside the well by different proposed mechanisms and models listed in the full paper as TYPE A, TYPE B and TYPE C. These types are classified on the basis of their operational technology, movement and conditions/wells in which the tool is to be used. Thus, depending on subsurface conditions, energy sources available and convenience the TYPE of Robotic model will be selected. Advantages over Conventional Logging Techniques: Reduction in Non-Productive time, lesser energy requirements, very fast action as compared to all other forms of logging, can perform well in all kinds of well trajectories (vertical/horizontal/inclined).

Keywords : robotic logging technology, innovation, geology, geophysics

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