

# Drilling and completion report sample

[Engineering](#)



**ASSIGN  
BUSTER**

One whole section of the borehole was designed to an incline of 1 to 8 degree per 100 feet. The steerable motor used for selecting a sliding mode was used safely rotated in the section to achieve the desired angle. The maximum rate of building a large hole size was kept lower than the maximum building rate for a smaller hole. Since the length of the horizontal well was significantly extended, the right path was determined at the start of the project to avoid a change of course or need to redesign. The good profile was modified to achieve a relative level of flexibility with an aim preventing any lithological change or preventing unexpected behavior of the whole bottom assembly. A tangent section between kickoffs was also placed. The upper curve was built with a slow build rate and a high build rate at the lower curve section where the impact is relatively small. The building assembly was replaced with an angle hold assembly as the curve approached the tangent. The configuration of the bottom hole assembly should minimize torque, drag and weight, rotation of the drill string kept the cutting cut to the minimum. A final clean-up process was conducted, it included mechanical staving and high viscosity sweeps to allow casing and the production equipment to run (Samuel O. Osisanya, 2016).

The image below represents a long radius steerable system.

The time breakdown table presents the systematic process of drilling. The depth is increased at specific scheduled dates, the maximum depth that was achieved 7916 feet. In drilling the horizontal section, the standard circulating system is equated to the achieved depth. A plot was established to define a linear state as well as detect deviation from the linear signals, which may occur as the cutting builds up. In cases where the drilling process was

impacted by the inability to extend the length of the hole, the following measures were employed, rotating the casing to the bottom. Other measures included increasing the lubricity of the hole, using lighter casing in the lower part of the string, using heavier cases at the top of the string, increasing the drilling fluid's density and using a denser centralizer spacing. These measures ensured that the depth of the hole could be increased when various setbacks were encountered. The coiled tubing conveyed logging tools were used to acquire accurate depth control as this is an important parameter in horizontal drilling. Hole depths were measured as from the surface along the hole path that follows the initial geological survey of the reservoir. Even before the total depth was achieved, some oil could be extracted though not enough to cater for the drilling expense.

To achieve excellent hole cleaning, mud properties should be properly evaluated, the yielding point of the mud is an important parameter in hole cleaning. The stability of the borehole was enhanced by increasing the mud weight with high regard to the sticking problem. The highest mud weight achieved was 83, while the lowest was 65, the mud weight shifted along with the changes in depth.

The highest viscosity level achieved was 43 while the lowest was 38.

Viscosity is mainly considered in the drilling process because this parameter affects sand failure. Horizontal length and the perforated heights in a vertical well were crucial figures in determining the mean flow velocity in the well.

The forces were directly proportional to the velocities of the fluid flow. In our geological survey for identifying a suitable reservoir, the formations that consisted of heavy oil, with high viscosities and density were considered

<https://assignbuster.com/drilling-and-completion-report-sample/>

uneconomical. High-velocity oils were among the conditions that facilitated the development of a horizontal well.

Information regarding mud type was an important tool for our geologists. The type of mud also played a role in controlling the drilling course with a rotary steerable system. The mud type changed along with the depth of the well. Brine type was first encountered, followed by the polymer, KCL, NDF and then brine again. During the early stages of drilling the type of mud was not recorded, this surface is composed of a mixture of various mud types. Another parameter that was considered is the Ph, according to the provided report, the Ph level maintained at 9.5 through the good path. An indication that the well was acidic

The inclination was kept at 86 to 89 degrees for a significant distance, which indicates that the drill is a horizontal well, whose angle should be 90 degrees for a great distance. A medium radius should range between 45 to 60 degrees. Azimuth correction at a high inclination angle was perilous and hence the direction was controlled before a high inclination angle was reached. The geometry of well was controlled. The Azimuth depended on the stress of the reservoir.

#### Productive time and non-productive time

A time breakdown was also included to manage the duration spent on the various project activities. Monitoring the time dedicated to activity was crucial to avoid time wasting and ensure that the aligned task was completed within the scheduled time. The time breakdown data was obtained based on the daily drilling activities for the 25 days. The equations <https://assignbuster.com/drilling-and-completion-report-sample/>

for productive time and Nonproductive time were used to evaluate the time analysis data.

The productive time equation used was

The equation for nonproductive time use was;

It is important to understand that the non-productive time was the time that was not directly associated with the objectives of the drilling project. This was included in the time management approach to keep track on the non-productive time spent, for reasons like machine breakdown, waiting for equipment, power failure, line setting and so forth. It was also important as it revealed the possible reasons for low productivity, and the record can enable the management to improve the process or activities that slow productivity. In this context, the time spent on waiting for material, types of equipment and problems like Hole conditioning, loss circulation, hole reaming, stuck pipe and fishing was considered unproductive and hence made minimal contribution or none to the progress of the project. One and half hours were spent on the problems as mentioned above while twenty and a half wasted on waiting for delayed delivery of equipment. Therefore, a total of 22 hours was spent, out of the total 571 hours. The record, therefore, confirms that a total of 549 hours was used in productive activities. Workers spent most of their time performing the central operations of the project, which is drilling. Precisely, 183 and half hours were dedicated to drilling. Mobilization and mobilization consumed 82 of the project time, making up BHA spent 72, tripping spent 123, rig up and rig down spent 26, well logging spent 17. 5, safety 31. 5 and directional control spent 11 hours of the total project time.

This evaluation reveals that a 96.14% of the project time was dedicated to productive activities while 3.85% of the project time was spent on NON-productive activities.

Suitable type of cost for the well

I suggest contingency as the preferred type of cost estimate. This cost could be appropriate for the horizontal well oil project as it addresses the unforeseen risks. This kind of cost plans for future activities helps the team leader to evaluate the team member and to allocate the available resources to the right use. This approach, therefore, includes the uncertain risks in the budget estimates. Hence it can prevent risks that are likely to prevent task fulfillment. The management can also hire the right personnel to evaluate the situation and establish realistic risks to avoid the challenge of stretching resources to impractical hazards. Moreover, this type of cost enables better risks management techniques to cater for changes in drilling rates, the need to extend the project and any errors or omissions as the team gets prepared both financial and human resource. If the company is financially stable, this type budget is more likely to suit it, as it will not have to strain its resources on obligatory expenses in readiness for the unforeseen future. The project has a time breakdown structure and hence the need to extend the project duration might not be necessary, hence dismissing the need for a time dependent budget. Most of the time has also be put into productive use, which implies that the challenge of time wasting is prevented.

The horizontal wells include multiple holes, which makes the process expensive than vertical or conventional wells. Horizontal wells require

various types of cost estimates, this because the future is unpredictable and unforeseen events may cause a rise in the expected expenditure. The management must account for overrun cost and the amount involved. The cost estimates include Base cost, which is estimated cost with no risk involved, the next is budget cost, which involves the base cost and the contingency costs, maximum cost that is the upper limit of the cost estimates and supplementary cost, which includes additional cost estimates. Cost estimates are categorized into five types. The first is fixed cost, this. Costs do not change along with duration or depth, for instance, the survey of the rig location as well as mobilization of the rig to the well site. The second is time dependent, this cost is prone to changes depending on the good duration, for instance, if the drilling project last for a longer duration the expenditure on salaries and consultations will increase, the drilling rates might change, and the cost of transport might change as well. The third is depth dependent costs. These are values that change following the decision to increase the depth of the well. Examples of these costs include drilling fluid cost, drilling bits, accessories and casing cost. The fourth type of cost estimate is overhead cost, these costs are not incurred in the well, they can be shared among several options, and each value is allocated to each well this type of cost tends to depend on time. An example of this type cost is logistic bases, stationary, secretaries, and supply depots so forth. The last type is contingency cost this cost is set to cater for any projected risk or problem. The contingency cost can be obtained by multiplying the probability of risk occurrence and the cost of the problem (Samuel O. Osisanya, 2016).

## Conclusion

Horizontal wells are known for their high production rates and high recovery of reserves. Unlike vertical wells, the horizontal wells expose more formation to production, which causes the pressure to fall from the formation into the bore. The most common technique for drilling horizontal wells is the use of multiple wells and locate them throughout the reservoir. This approach reduces resistance

The drilling project was successful in the scheduled 25 days. The team plays utilized most of the allocated time productively, and they were able to drill a horizontal well that could achieve maximum and long-term oil productivity. Records also imply that \$2, 040, 350 was spent on that drilling exercise. Moreover, the Inclination angle was 86 to 89 degrees for a considerable distance, which indicates that the drill is a horizontal well. The daily drilling report also suggests that much of the time was spent on drilling. I suggest a contingency cost estimation approach for this project, with the main aim of including all the unpredictable risks in the budgeting process.

## References

Samuel O. Osisanya, (2016) Notes on horizontal well drilling and Completions

Samuel O. Osisanya, (2016) Fundamentals of Drilling and Completion

Nygaard, G. & Nævdal, G. (2006). Nonlinear model predictive control scheme for stabilizing annulus pressure during oil well drilling. *Journal Of Process Control*, 16(7), 719-732. [http://dx. doi. org/10. 1016/j. jprocont. 2006. 01. 002](http://dx.doi.org/10.1016/j.jprocont.2006.01.002)



Zhou, J. & Krstic, M. (2016). Adaptive predictor control for stabilizing pressure in a managed pressure drilling system under time-delay. *Journal Of Process Control*, 40, 106-118. [http://dx. doi. org/10. 1016/j. jprocont. 2016. 01. 004](http://dx.doi.org/10.1016/j.jprocont.2016.01.004)