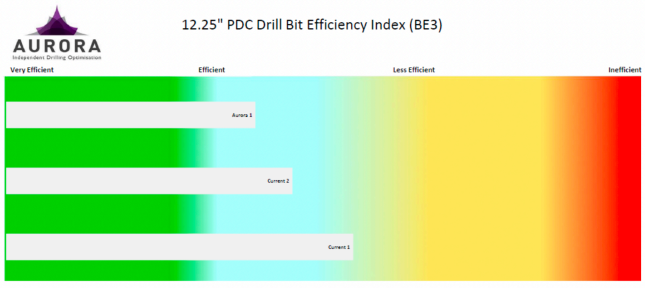
Drilling Optimisation – UK

BE3 Indexing Model Application - UK SNS Development Project

After successfully drilling 3x wells on an 8x well development campaign, Aurora introduced its drill bit efficiency indexing model to their client for use over the next 5x wells.

The BE3 efficiency indexing model was recommended to establish if a different fixed cutter drill bit could deliver AFE ROP improvements, without changing the drilling system and on a small offshore rig where operating parameters were already at their limits.

The BE3 is an efficiency indexing model that derives its results from a standardised process that compares the numeric values of the design features used in a fixed cutter drill bit design. The BE3 works in conjunction with Aurora's proven C3 durability indexing software ensuring total analysis of the products cutting structure requirements for the customer.



New drill bit designs were requested from the contracted vendors and the BE3 efficiency indexing model was run. The model suggested that a 6-10% ROP improvement would be possible under the above mentioned conditions but using less WOB through use of one of the designs offered by the vendors.

Based on the BE3 results the client approved the new fixed cutter drill bit design initiation for a trial run on the 4th well. The main risks of using a new fixed cutter drill bit design were identified and their ability to negatively affect rig time mitigated through the deployment of fit for purpose solutions during the non-operational phase and not during the very expensive operations phase.

The use of the Aurora BE3 / C3 efficiency and durability indexing models, at the pre-well stage, will increase the likelihood of achieving technical and economic targets without the significant cost over runs during the execution phase.

- **First use of BE3 efficiency indexing model on well number 4 of the 8 well development campaign.**
- **New BE3 approved design delivered a 5.1ft/hr average ROP increase per hole section drilled on the final 5 x development wells.**
- **The average ROP improvement was delivered over the final 5 x wells drilled on this development campaign.**
- **WOB required to deliver ROP increase was 43% less than that used on the first 3 x wells.**
- **This resulted in the savings of 16 rig hours over 5 x wells equating to $218,000**

Use of the BE3 efficiency indexing model proved that accurate and risk free predictions for operational performance gains can be made through revision of a fixed cutter drill bits design at the short notice.

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