

Ground Breaking Technology in Artificial Lift; 1st Installation of Full Digital Intelligent Artificial Lift (DIAL) System at DL field, Brownfield Offshore Malaysia

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Abstract

Objectives/Scope: Moving to digitalization era in the current low oil price environment, paradigm shift is really crucial in managing brownfield development and production. The challenge is to select the best technology to harvest the optimum production from the field but at the same time reduce potential capital and operating expenditure.

Methods, Procedures, Process: The paper highlights the technology evaluation of Digital Intelligent Artificial Lift (DIAL) system. This includes its working principles, candidates screening, risk mitigation plan as well as technology success criteria developed specifically for the technology.

DIAL system is an in-well gas lift system that can overcome the well design and operational limitations of existing side pocket mandrels and valves. DIAL enables a better gas lift well design as well as able to interconnect downhole and surface monitoring & control in real-time. It provides opportunity for automation, better subsurface and surface integration as well as minimizing well intervention requirement.

Based on the promising technology evaluation, one pilot well was identified by the team at DL field. The well was part of DL drilling campaign executed in Q2 2018. Details of the well design & scope, as well as gas lift design for the well will be shared. Commercial comparison was demonstrated between conventional side pocket mandrel system and the DIAL system.

Results, Observations, Conclusions: The case study at DL field will be discussed in details, starts from their wells' design, technology deployment strategy, installation, production test result as well as lessons learnt during installation and operationalization of the system.

Moving forward from the pilot application, root cause failure analysis was done, lessons learnt were identified, design improvements were proposed and continuous monitoring of the system will be done, according to the success criteria outlined. Potential replication candidates have also been identified by the team with at least 10 promising potential candidates to be installed within the next 2 years.

Novel/Additive Information: The technology deployment was the result of collaborative works between PETRONAS, Silverwell Energy and Neural Oilfield Service.