SPE Applied Technology Workshop
"Maximising Well Productivity"
12-15 October 2003 • Bandar Seri Begawan, Brunei Darussalam

The Applied Technology Workshop on "Maximising Well Productivity" was held in Bandar Seri Begawan, Brunei Darussalam from 12 to 15 October 2003, and was attended by 62 participants, representing 23 different organizations from 10 countries.

The final Technical Committee for the Workshop consisted of 12 members. Hussin Ali, Petroleum Unit (Brunei) and Kamaludin Bungsu, Brunei Shell Petroleum as Co-Chairpersons, and Committee members included: Colin Ingram, Baker Oil Tools; Mahesh Mahajan, BJ Services; Kamarul Ariffin Buang, ExxonMobil; Steve Mullin, Gyrodata; Aidil Shahbudin, Petronas; Pablo Gomez, PT Caltex Pacific Indonesia; Yap Kong-Fah, Brunei Shell Petroleum; Abul Jamaluddin, Schlumberger; Larry Behrmann, Schlumberger; Doug Durst, Weatherford.

The opening address to the Applied Technology Workshop was given by Kamaludin Bungsu, Brunei Shell Petroleum. The welcoming address was given by Dato Paduka Hj.Mohd.Alimin Bin Hj.Abdul Wahab, CEO PetroleumBRUNEI who also officiated the opening of the workshop whlist the keynote address was given by Hj.Zainal Abidin Bin Hj.Mohd-Ali, Deputy Managing Director, Brunei Shell Petroleum. In his speech, Dato Alimin re-iterated the practice in Brunei Darussalam which was drawn much along the line of the workshop's theme in optimizing well productivity which forms the basis of a practical national policy at a most economic level of technical feasibility. In his keynote speech, Hj.Zainal mentioned that although the theme of the workshop sounds simple, it is nevertheless a subject that has been the topic of active study, research, innovation and is advancing rapidly in coping with the ever-increasing demand for delivering higher value from our investments and maximizing returns from our existing assets. Kamaludin Bungsu then concluded the opening session with outlining participants' expectations for the Workshop, summarized as follows:

- Discuss new technology and best practice applications in maximizing well productivity and minimizing formation damage
- Learn, share and network in managing wells, both in new and mature field environments, notably with challenges in increased associated water and gas production
- Gain insights on well productivity improvement activities

The technical agenda consisted of the following sessions: Understanding Impact of Reservoir Properties; Sand face Completion; Poster Session; Well Completion Design; New Well Technology; Breakout Session (Two case studies, four syndicate teams), team presentations and discussion: Artificial Lift, Surface Facilities & Special Operations; Production System Integration;

Highlights of some of the technical discussions include:

- The importance of geometric and geological positioning techniques to correctly position wells.
- The superior benefits in installing Fibre Optic Distributed Temperature Sensing (DTS) system in offering along wellbore meter by meter well performance with simplicity and reliability supported by over 300 permanent installations worldwide. Several case studies were shared.
- The importance of proper and cost effective breaker systems to mitigate formation damage in horizontal wells.
- Benefits of clean non-damaging perforations through dynamic underbalance perforating.
- Proven integrated program to sustain oil production using waterflood management techniques
- Superior performance of oriented perforating for sand prevention.
- Application of alternate path technology using shunt tubes to provide alternate slurry pathways in gravel packing to eliminate bridging.
- Perception of multilateral well completions being expensive and risky. However with proper design and planning, this is not necessary the case, with success examples of TAML Level 3 to Level 5 system development and implementation in a single location.
- Clear benefits of open hole horizontal drilling and gravel packing with oil based fluids
- The development of innovative well designs involving Snake wells and Conductor-Connector to enable development of compartmentalised reservoirs.
- Reservoir benefits of intelligent completions
- The experience with electrical submersible pump/auto gaslift and jet pump/gaslift design including production engineering challenges.
- The proven benefits of multi-phase metering in order to optimize production.
- How proper well/field surveillance has demonstrated increase in production by closing in wells.
- The potential application electric gaslift valves to rapidly maximize production whlist reducing life cycle cost through reduced well intervention from wireline activities.
- The additional value a company will gain through dedicated Production System Optimisation process in identifying and quantifying opportunities to de-bottleneck existing wells and facilities.

In summary it was evident that the industry is putting increasing focus on better surveillance and data gathering to enable proper analysis, optimizing what we already have through cleverer ways of doing things and increasingly the development and application of new state of the art technologies. Whilst some back to basics approach of maximizing well system potential were discussed, a

number of exciting new technologies were also shared such as Dynamic underbalance perforating technique, shunt tubes in gravel packing, equalizers in long horizontal wells, combined and intelligent artificial lift systems and snake and conductor-connector wells.

Prepared by:

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