DeclineShift Flow Optimization Solution with Integrated Chemical Management Boosted Production, Yielding 700% Annual ROI
Location: Asia

A major operator in Asia was experiencing high-profile pipeline failures, rapidly increasing secondary treatment costs, souring conditions, and off-spec crude cargoes, which were all negatively affecting the economic viability of the aging field. These problems were occurring in a complex, 30-year-old field containing several hundred onshore and offshore wells, more than 100 platforms, and more than 2,000 pipelines. The operator’s wells produced approximately 200,000 BOPD (32,000 m³/d) oil and 198,000 BOE (1.06 bcf/d) gas.

The challenge was to address the whole area of production chemical management by focusing on three major objectives: provide a lower total cost of operation (TCO), maximize use of local content, and address production problems in a safe and environmentally sensitive manner.

Because of the complexity of the operation, the customer wanted a service partner who could manage all production chemical issues at all of its company’s assets, as well as be a single point of responsibility. Baker Hughes was selected to design the field chemical management program and provide production chemicals and associated services. The choice was based on the recognized chemical service performance and application knowledge of Baker Hughes, an open approach to problem solving, and global technology and supply chain resources.

Baker Hughes implemented a DeclineShift™ flow optimization solution under the encompassing chemical management

Results
- Increased oil production throughput of existing pipeline infrastructure by 5,000 BOPD (795 m³/d)
- Reduced off-spec crude cargoes and associated demurrage costs
- Total production chemical management contract resulted in 700% ROI for customer
- Reduced emulsion treatment cost by more than 50%
- Eliminated major pipeline failures and helped extend pipeline life

Challenges
- Address production chemical management problems of 30-year-old field infrastructure in a safe and environmentally sensitive manner with local content
- Ensure on-spec crude cargoes
- Reduce souring conditions, high-profile pipeline failures, downtime for repairs, and HSE risk
- Lower total cost of operation; reduce secondary chemical treatment costs

Baker Hughes solution
- Deployed an integrated DeclineShift flow optimization solution through a comprehensive production chemical management contract
- Resolved pipeline integrity issues safely with a combination biocide and pipeline inspection program

Production throughput was boosted 5,000 B/D (795 m³/d) for an operator in Asia operator; TCO was reduced to USD 90 million per year, ultimately achieving a 700% annual return on investment.
Contract (CMC) that included:
- Onsite local chemical blending
- Developing a robust, local, supply chain
- Best-in-class provision confirming that optimal products were used in all applications
- Supply, commissioning, and maintenance of chemical injection systems
- Total performance monitoring and reporting

There were also several optional components in the contract that included chemical injection skid supply, pump maintenance, corrosion monitoring, and database management.

The contract was efficiently and effectively executed through close collaboration with the operator, integrating the Baker Hughes team into the operator’s production chemistry department. This enabled the teams to work side by side and meet a series of mutually developed key performance indicators.

The Baker Hughes team comprised 40 chemical applications engineers and technicians, of which 90% were in-country residents. This helped to improve communications and service delivery. The close relationships between the two teams also helped to facilitate a shared, proactive approach, resulting in less downtime due to unanticipated issues.

The CRONOXTM integrity management program was especially significant, adding USD 56 million per year in reduced maintenance and inspection spend and deferred CAPEX for the operator. It also helped to reduce corrosion rates while extending pipeline viability. FLOTM drag reducer agents were employed to facilitate greater production volumes through existing pipelines, enabling earlier, higher production levels. To help control emulsion threats and reduce treatment costs, TRETOLITE™ demulsifier programs were implemented to confirm that crude specifications were met and to help to eliminate deferred production and tanker demurrage.

The Baker Hughes DeclineShift solution focused on a comprehensive chemical management approach that was aligned with the operator’s team to effectively minimize TCO from the wellbore to delivery.

Successful implementation of the CMC resulted in a significant yearly reduction in TCO, reaching over USD 90 million per year by Year 6, and a 5,000 B/D (795 m³/d) production throughput boost, translating to a 700% annual return on investment.

This case history is presented for illustration purposes only, as results may vary between applications.