

Bankers

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The CSS pilot test at the PM oil field has been deemed successful, with producing over 10,000 ton of crude oil so far, with a peak production per well exceeding 50 tons/day.

The Patos Marinza (PM) Oilfield, an established oil field in Albania with nearly a century of development, has undergone various transformations in its development methods. These include conventional cold production, PCP (progressive cavity pump) sand-carrying production, polymer flooding, and horizontal well sand-carrying cold production technologies, each yielding notable results. At its peak, annual output exceeded 1.1 million tons. However, as the field's recovery degree increased, formation energy decreased significantly. The development of favorable cold recovery reservoirs has reached its final stage, while polymer injection development has also entered its later phase. These factors have led to pronounced challenges. Consequently, the entire oil field has entered a continuous period of decline in cold production, with annual output once dropping to 520,000 tons. The sustainable development of the Bankers PM Oilfield now faces significant challenges.

After Geo-Gade Petroleum Corporation took over Bankers, it recognized the necessity of changing the development approach to achieve the sustainable development of the PM oilfield. The majority of the remaining recoverable reserves in the PM oilfield consist of extra-heavy and super-heavy oil, primarily located in the G layer. The current proven geological reserves amount to 71 million cubic meters. The crude oil in this reservoir has an API gravity ranging from 4 to 5.5 and a viscosity of 10,000 to 120,000 cp, categorizing it as an extra-heavy oil reservoir. Historically, due to the ineffectiveness of cold production for economic development, the recovery factor has remained low at just 1.7%. Additionally, the reservoir exhibits the dual rheological characteristics of typical extra-heavy foam oil and heavy oil. As the temperature increases, the viscosity of the crude oil decreases significantly. Therefore, thermal recovery is the only viable method for economically and effectively developing the extra-heavy oil in the G layer. However, the development of ultra-heavy oil reservoirs has long been a global technical challenge. The dual characteristics of extreme heaviness and foaming in the PM oil field present an even more severe challenge for thermal recovery operations. In fact, the PM Oilfield began implementing In-Situ Combustion (ISC) in some areas as early as 1973, marking the earliest record of thermal development in this oilfield. Subsequently, various operators, including petroleum companies from Canada and other Western countries, tested both Cyclic Steam Stimulation (CSS) on both vertical and horizontal wells. However, these efforts were failed due to technical reasons.

After Geo-Gade Petroleum Corporation took over Bankers in 2016, The Chinese team has prioritized thermal recovery development as a key focus, continually conducting research and experimentation. Between 2017 and 2019, multiple rounds of CSS testing were conducted on 5 wells (2 new wells and 3 existing wells), achieving a peak daily oil production of 28 tons. Additionally, thermal recovery in the other two existing wells also yielded a favorable oil-to-steam ratio of 0.25. Although the CSS tests on the existing wells were limited in scale, they provided strong evidence of the feasibility of thermal recovery in the PM Oilfield and established a solid foundation for the technology and management of thermal development in 2023-2024.

At the end of 2023, building on the previous thermal recovery trials, a new project team primarily composed of Chinese technicians led a pilot steam injection project focused on new well development. Leveraging the advanced supporting technologies of China's petroleum industry in heavy oil steam stimulation and integrating the experiences and lessons learned from previous thermal recovery tests at Bankers. Drawing from the experiences and lessons learned from previous Bankers thermal recovery trials, the team began with geological research to re-evaluate the existing reservoirs, reclassify geological formations, and finely optimize well patterns and locations. The engineering department further refined the drilling and injection techniques to address the specific conditions of the PM oil field, tackling challenges in reservoir protection, trajectory control, high- temperature resistant cementing, and subsequent injection and production parameter design and optimization.

This effort culminated in the development of a unique comprehensive technical system suited to the ultra-heavy oil thermal recovery needs of Geo-Gade Petroleum Corporation.

From December 2023 to July 2024, in just 7 months, the project team, utilizing only a quarter of the domestic personnel, successfully addressed technical challenges such as the super emulsification of cycloalkanes and the integrated injection-production technology for ultra-heavy oil. Their achievements are comparable to the performance of domestic peers over 2-3 years. The drilling time for a single well was 14.5 days, the production cycle for a single well exceeded 5 months, and the oil-to-steam ratio for a single well was above 0.52, representing a 43% improvement over the 0.35 ratio typical for similar domestic reservoirs.

The pilot test area initially planned for 13 wells, of which 9 have been put into production. As of the publication date, Bankers has achieved an impressive milestone of over 10,000 tons in cumulative oil production from thermal recovery. It is projected that the annual crude oil production from thermal recovery will exceed 27,000 tons in 2024. This demonstrates the substantial potential of thermal recovery for ultra-heavy oil in the PM oilfield, marks a decisive breakthrough, and injects new momentum into the sustainable development of the PM oilfield.

During this period, the Bankers, Geo-Gade Petroleum Corporation Headquarters, and various specialized departments of the Research Institute collaborated closely and worked together effectively. Drawing on the traditional values of Chinese oil workers—pragmatism, dedication, and perseverance—they also actively guided, trained, and motivated local employees to participate in the project development. The entire pilot block was developed in a standardized manner, operated smoothly, and produced in an orderly fashion. It has become a shining new showcase for the PM Oilfield and is poised to contribute to a new and brilliant chapter in the oilfield’s future.





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