

CASE STUDY

A TRACER TECHNOLOGY APPLIED FOR INFLOW PROFILING WHILE MONITORING INDIVIDUAL ICD PERFORMANCE

OBJECTIVE

Monitoring the individual performance of ICD to discover the affection of the production profile with this completion method and optimize the production parameters.



Field

China South Sea



Well Type

Packer+Screen+AICD
Horizontal well



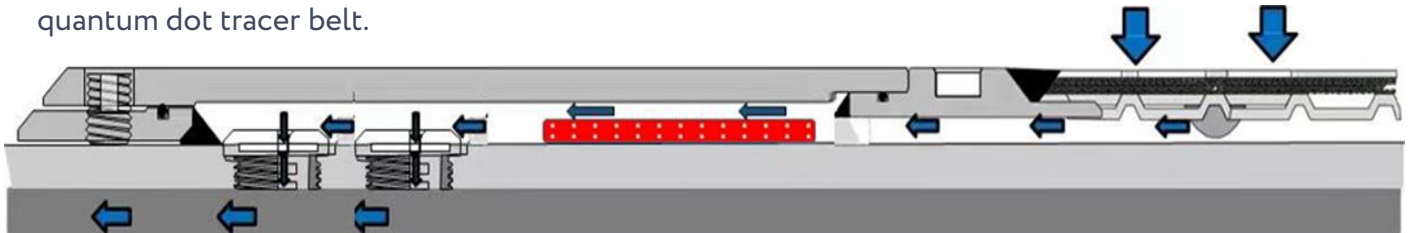
Special Condition

The geological uncertainty is high, the reservoir structure is complex, and the water cut increases rapidly in the end of the production period

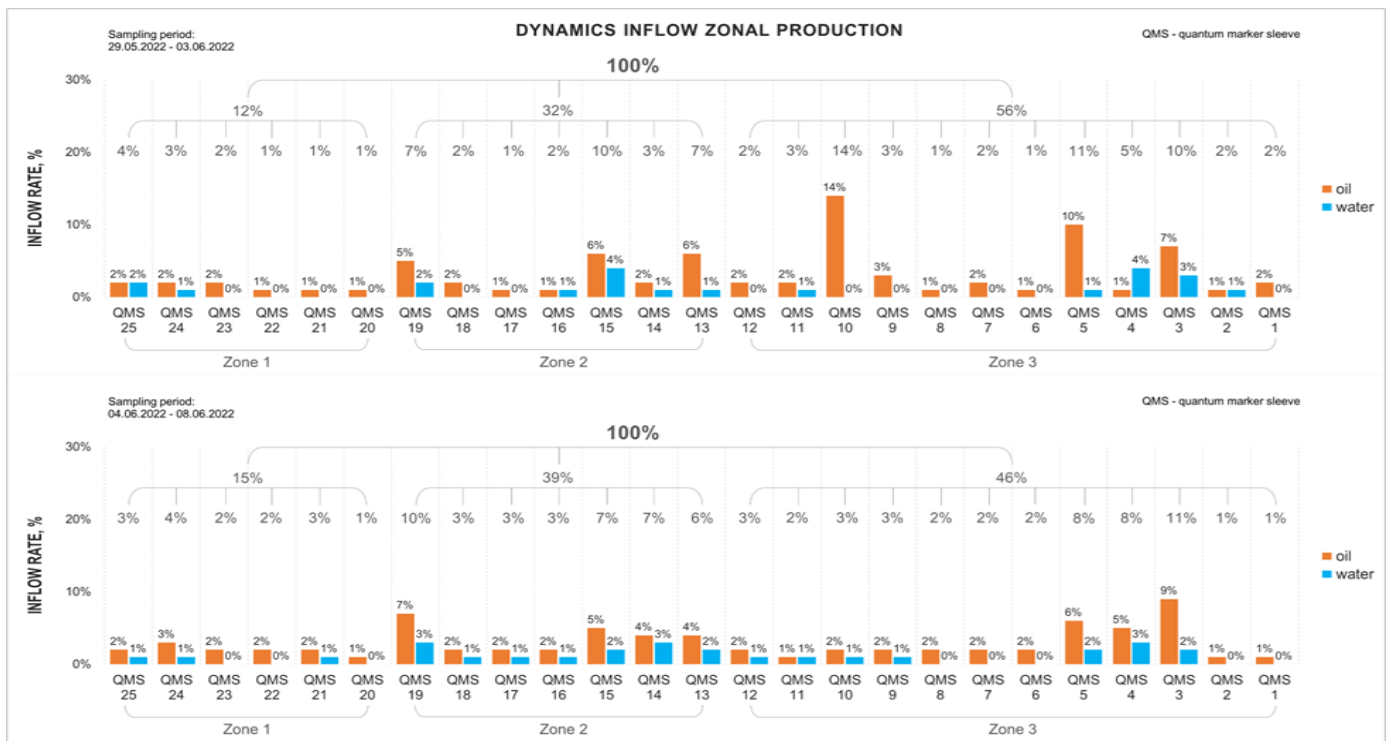


SOLUTIONS

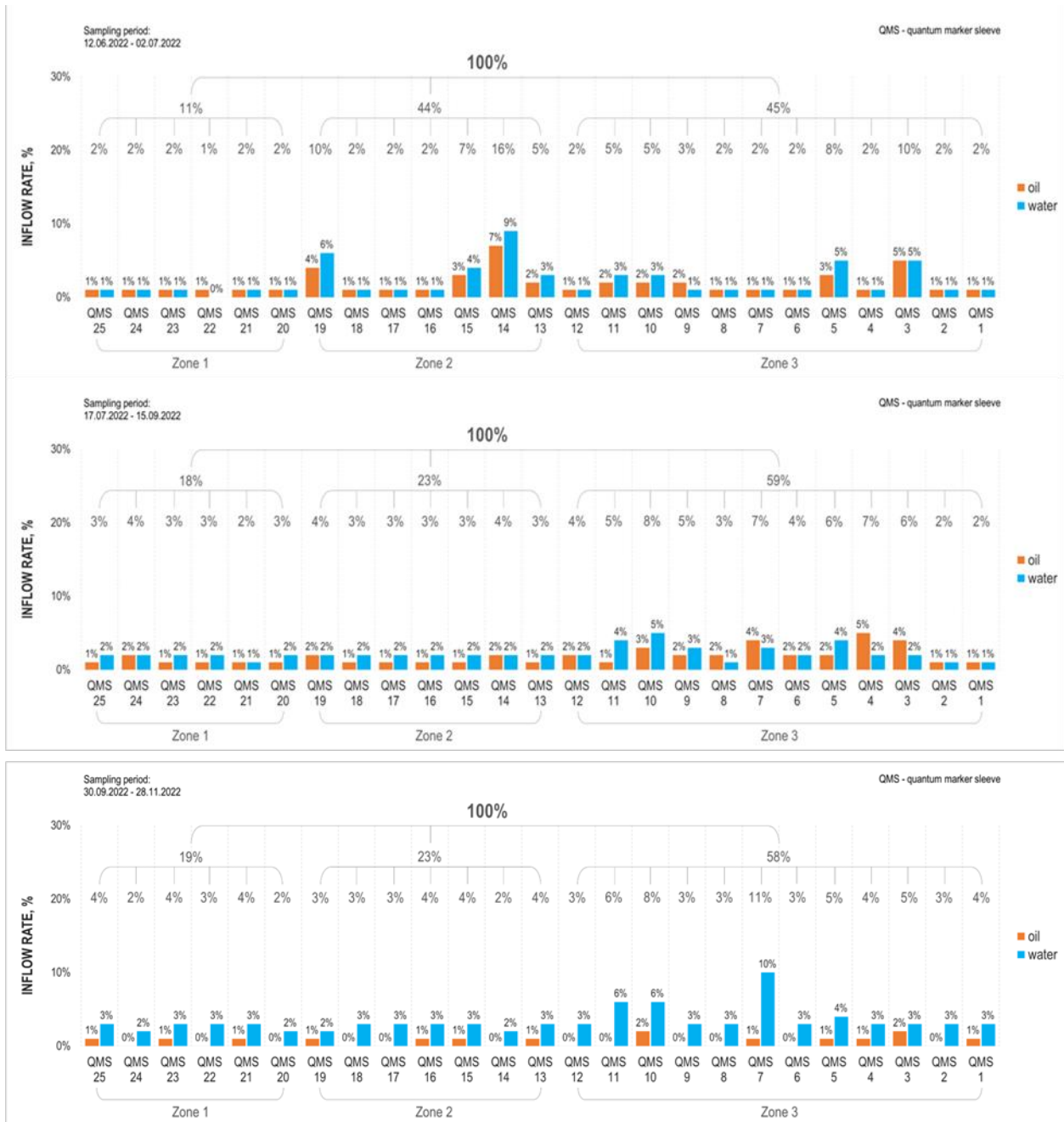
- According to the geological logging data of the target well, a total of 25 ICD screens with integrated quantum dot tracer belts were integrated into an experimental well in the South China Sea. Please refer to the schematic diagram of quantum dot tracer belt and ICD integration. Red represents the quantum dot tracer belt.



- The experimental well start to production on 25th.May.2022. According to the sampling schedule, 4 water and oil samples were taken with 1 liter bottle daily from 29th.May.2022. The water and oil fluctuates greatly from the first month of production with a sharp upward trend. In the first month, additional sampling is conducted. When the trend of liquid production slows down, the sampling frequency is adjusted accordingly. Until 28th.Nov.2022, a total of 100 samples were taken from this well, and the liquid production profile of the well was analyzed and evaluated in five period.



Above picture shows the 25 ICD performance during the monitoring period:29.5.2022-3.6.2022; 4.6.2022-8.6.2022



During the six-month monitoring period from May 9, 2022 to November 28, 2022, the output signals of each QMS are stable, and the working condition of each ICD was quantitatively monitored for a long time.

Conclusion

- Elastic composite material containing marker reporters which are easily integrated with each ICD without any risks to affect the function.
- Each ICD 's performance to control the water and oil are monitored and reported continuously.