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CASE STUDY

QUANTUM DOTS MARKER TAPE

Monitoring Water Cut to Enhance Oil Recovery

Objective

Traditional PLT(production logging technology) uses cable or coiled tubing for productivity measurement. Each measurement requires well shut in, which has field operation risks, especially for directional wells and horizontal wells; it affects normal field production management. Besides, the result is only the production profile at one time point. The later production system adjustment or the change of output and water content need to be measured again, the total cost is very high.

Customer value

Optimizing the production management to reduce water cut and maximize oil recovery

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Solution

Quantum dot productivity monitoring technology uses nano quantum dots to make micron quantum signature code. As the basic monitoring particle, the quantum signature code can be made to flake quantum dot monitoring belt through polymer materials, which is wrapped on the oil pipe or screen pipe and placed in the corresponding formation with the tool.

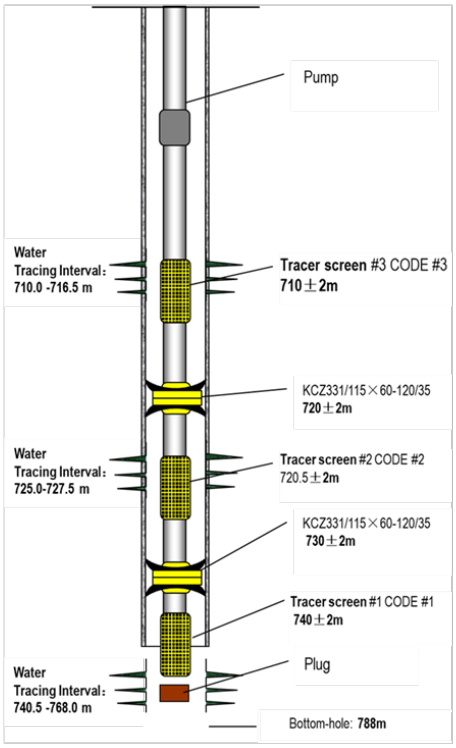
It is applied in Xinjiang Oilfield for the first time. The target well is a vertical well with three intervals. After the application, the output of one section was low in the initial stage and gradually increased in the later stage. After the stabilization, it was the section that contributed the most to the output. At the same time, the section with the highest water production is also the one with the greatest contribution to oil production. Because this technology is the measured liquid production profile under the condition of normal production, it can better reflect the actual underground production.

Location
Xinjiang, China

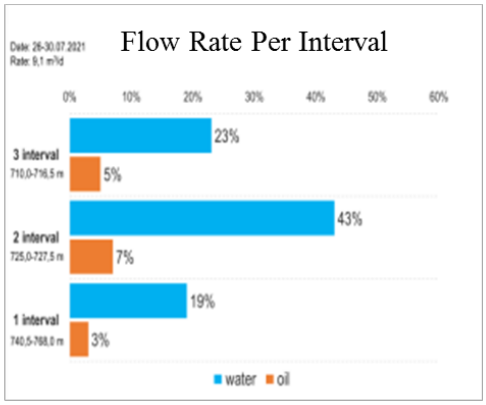
Field
Oil field

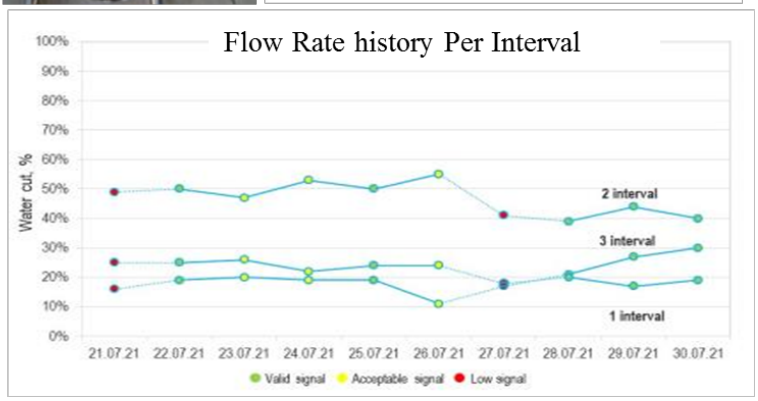
Monitoring water cut change

Schematic Diagram of Pipe String Structure of Experimental Well



Marker Tape Installation





Summary

The main advantage of this technology is that it realizes quantitative and long-term multi-stage well liquid production monitoring, does not need to shut in, and continuously obtains downhole production data for several years. The successful application in Xinjiang Oilfield for the first time shows that this technology has great application prospects in domestic vertical well, multi-stage, directional well and horizontal well.

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