



Contribution ID: 670

Type: **Poster (+) Presentation**

## Study on the Production Characteristics of Shale Oil using Machine Learning: Case Study of Jimsar Field

*Friday, 4 June 2021 09:40 (1 hour)*

The production rate for horizontal wells of shale oil is low. In order to achieve the economic and effective development, hydraulic fracturing technology is often adopted. After hydraulic fracturing, wells have a high production rate in the initial stage. After a period of production, the production rate will drop rapidly, and then will maintain at a lower level for a long period of time. The study of decline characteristics of horizontal wells is significant. We collected the development data of 94 horizontal wells in Jimsar field. Some classical decline curves methods like “power law loss ratio” rate decline model, stretched exponential equation and Duong decline curve are all used to fitting the production history. The fracture-control decline rate is proposed to describe the initial stage decline degree. The machine learning method is used to explore the relationship between some important parameters (oil reservoir encountering rate, ratio of class-I formation, ratio of class-II formation, ratio of class-III formation, ratio of class-IV formation, reserve abundance, fracturing treatment parameters) and fracture-control decline rate. Support Vector Machine and BP neural network are used to predict 1 year cumulative oil. The result shows that the class-I formation (high permeability and porosity) and class-IV (low permeability and porosity) formation have the largest effect on the cumulative oil.

### Time Block Preference

Time Block A (09:00-12:00 CET)

### References

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**Primary author:** GUO, Wanhong

**Co-author:** XU, Jianchun (China University of Petroleum (East China))

**Presenter:** GUO, Wanhang

**Session Classification:** Poster +

**Track Classification:** (MS15) Machine Learning and Big Data in Porous Media