ANTON 安東

Geological Engineering Service

东方智慧 全球分享

Oriental wisdom , Global sharing

Contents

Geological Engineering Service

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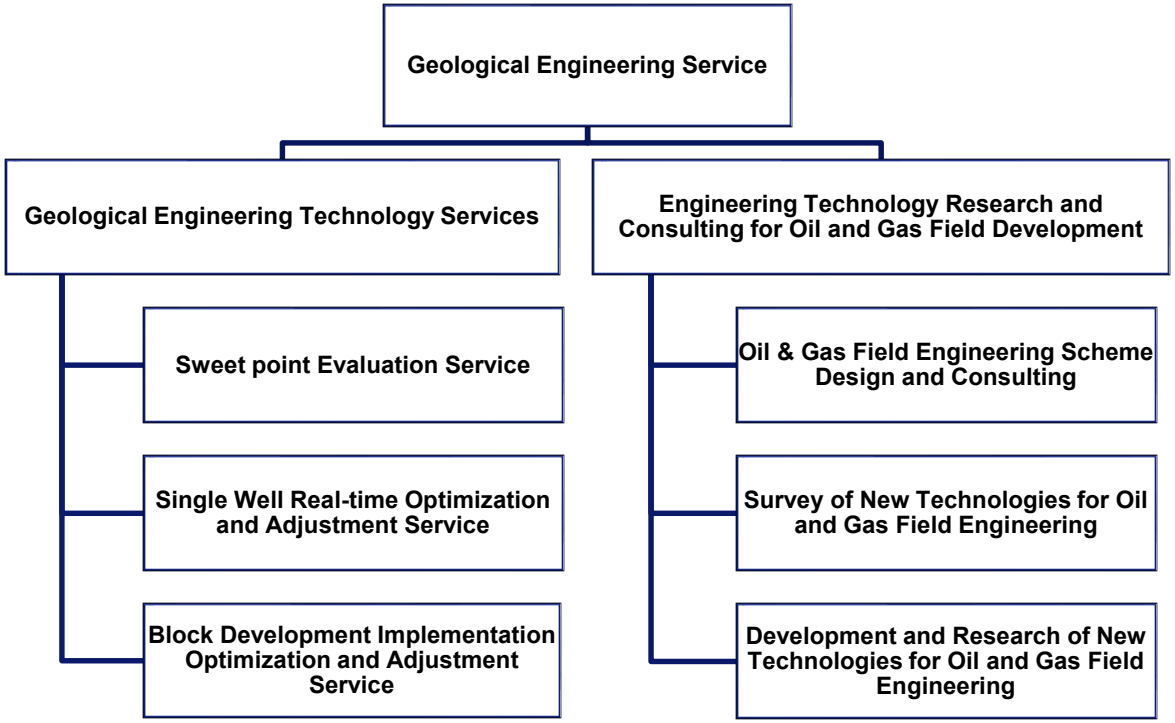
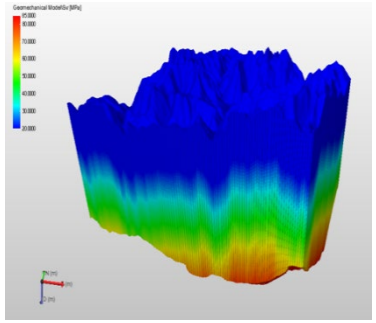
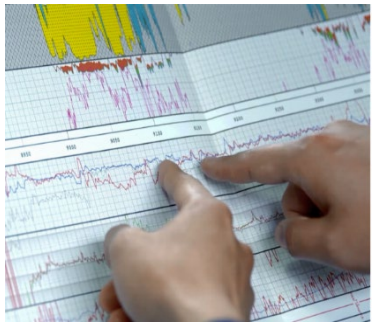
Geological engineering services, combining technical advantages of reservoir geology and engineering, provide geology and engineering research, consulting and supporting services for optimizing oilfield on-site operations, and achieving better development efficiency and economic benefits.







1. Geological Engineering Technology Services

- Sweet point Evaluation Service: to predict geological sweet point through geological and seismic comprehensive research and to predict engineering sweet point through engineering parameters and seismic comprehensive research. Combined with geological engineering optimization block well placement and guide production practices. Continuously revise research results based on production practice data.
- Single Well Real-time Optimization and Adjustment Service: the design of horizontal well trajectories, the establishment of 2D Geology Model and service of horizontal well geo-steering and tracking. The combination of geological engineering can meet the requirements of drilling rate and smooth borehole.

1. Geological Engineering Technology Services

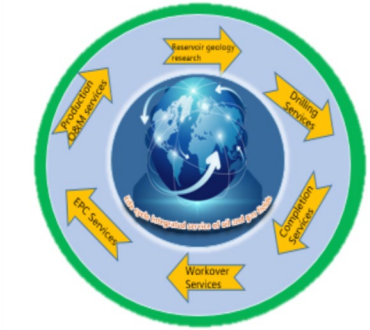
- Block Development Implementation Optimization and Adjustment Service:
  - According to the actual drilling and production conditions, the integrated study of geological engineering is carried out to adjust well pattern spacing and optimize development plan for small and medium-sized target blocks or well groups.
  - In the mid and late period of oil & gas field development, combined with the production dynamic data, numerical simulation is carried out to clarify residual oil distribution law, and then to prepare well pattern infilling plan and profile control by water plugging plan.

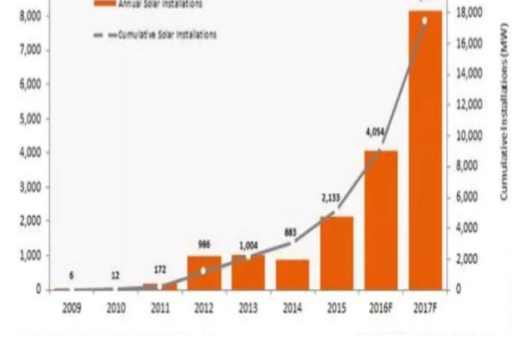
2. Engineering Technology Research and Consulting for Oil and Gas Field Development

- Oil & Gas Field Engineering Scheme Design and Consulting: for the block or single well, based on integrated research of geological engineering technical solution is proposed.
- Development and Research of New Technologies for Oil and Gas Field Engineering: to understand the market technical requirements or technical problems to be solved, investigate new technologies of oil and gas field engineering at home and abroad and carry out technical exchanges, propose technical solutions, select targets to carry out new technology testing and promotion and application.

2. Engineering Technology Research and Consulting for Oil and Gas Field Development

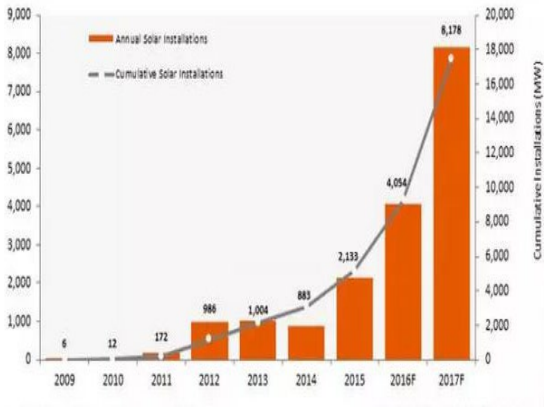
- Development and Research of New Technologies for Oil and Gas Field Engineering: to solve the technical needs of the new oil and gas field engineering technology that is urgently needed by the market through technical cooperation, technology introduction or independent research and development.





Service Performance :

- Geology and engineering integrated services on: shale gas reservoir in southeast China; tight oil & gas reservoir in Xinjiang, Erdos and Zhejiang; and coalbed methane in Guizhou, etc.
- Overseas services in Iraq, Kazakhstan, Pakistan, etc.



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Case Study

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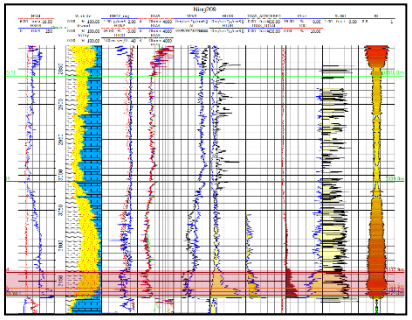
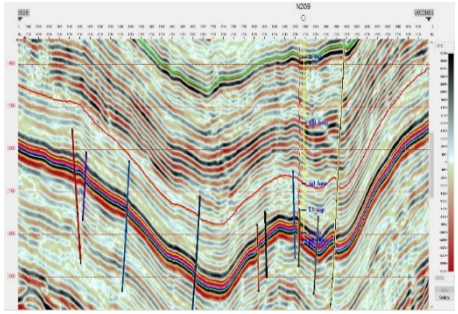
Technical Proposal of Geology and Engineering Integration for Shale Gas in China X Block(2017)

- 3D seismic interpretation
- Petrophysical Analysis
- Pre-stack Seismic Inversion
- 3D geology modeling
- multi-scale fracture inspection and modeling
- Geomechanics modeling
- Drilling process optimization
- Fracturing process schemes optimization
- Post-Fracturing evaluation

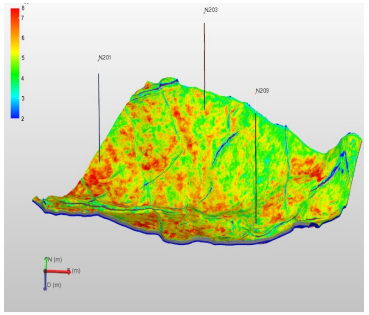
- **Premium shale layer: a + wufeng interval**
- **Fracture is mainly in NE, NW and near EW**
- **Triaxial principal stress relationship: Shmax>Sv～Shmin**
- **For drilling, change drilling parameters, adopt rotary steering with dual power, new-model bit, advanced drilling tools assembly and biosynthetic base drilling fluids**
- **For fracturing, shorten distance between intervals, decrease clusters within one interval, increase horizontal length, step up sand quantity, etc.**



Six-property relationship analysis for premium shale



seismic through-well crosssection



3D porosity model

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THANKS!

Helping others succeed…

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