

Integrated Productivity Solutions and Services for Oil & Gas Fields

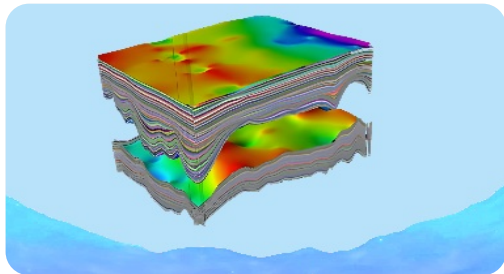
KERUI PETROLEUM TECHNOLOGY



- **Full Process:** Commercial development evaluation of oil and gas resources based on integrated studies of seismic, geological, reservoir and engineering technologies.
- Complete supporting plans for reservoir engineering, drilling, production and surface engineering, and organize on-site implementation to enable **rapid production startup**.

Reservoir Evaluation

Reservoir Geological Study and Assessment
Reserves Evaluation
Reservoir Numerical Simulation
Formulation of Development Technical Policies



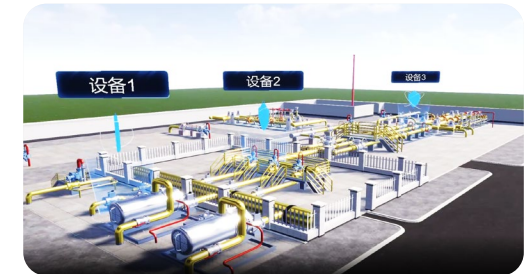
Development Plan Preparation

Reservoir Engineering Plan
Drilling Engineering Plan
Oil Production Engineering Plan
Surface Facilities Engineering Plan



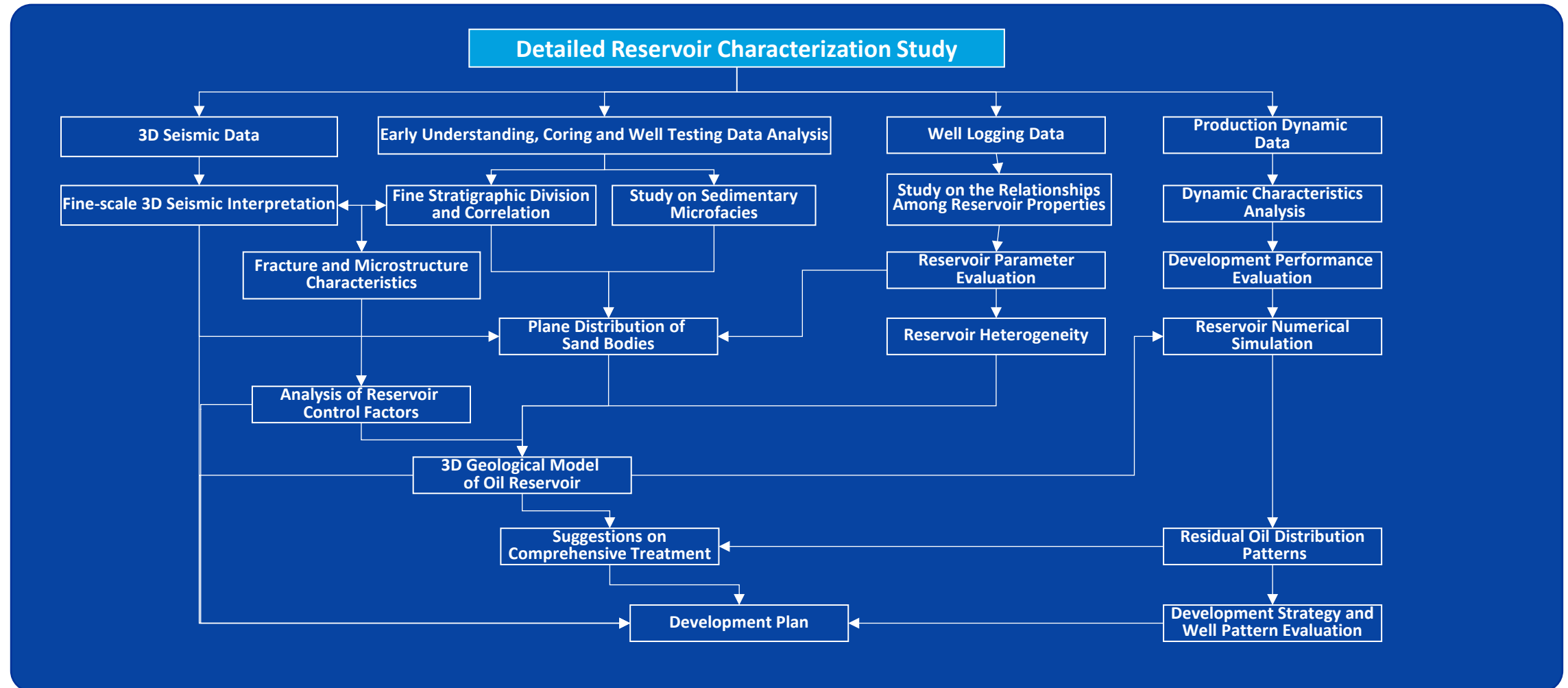
Plan Application and On-site Implementation

Drilling Engineering
Injection and Production Support
Surface Support



Research Capability

Through years of research, Kerui Unconventional Oil & Gas Research Institute has developed a standardized workflow for detailed reservoir characterization, plan preparation and operational procedures.

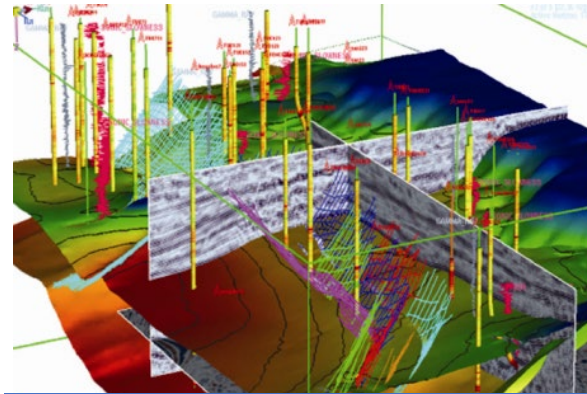


Research Capability

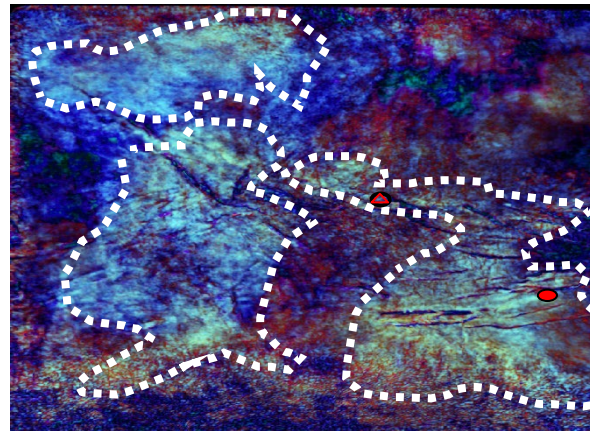
Conduct comprehensive geological studies and evaluations of various types of oil and gas reservoirs.

➤ Comprehensive Study and Evaluation of Oil and Gas Reservoir Geology

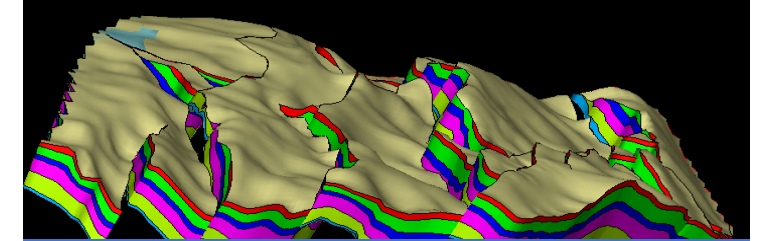
- 1 Regional Sedimentary Characteristics and Integrated Stratigraphic Correlation
- 2 High-resolution Structural Interpretation and Description Integrating Well and Seismic Data
- 3 Integrated Reservoir Characterization and Evaluation Based on Well-Seismic Data Fusion
- 4 3D Geological Modeling
- 5 Integrated Reservoir Characterization and Reserves Evaluation Combining Static and Dynamic Data



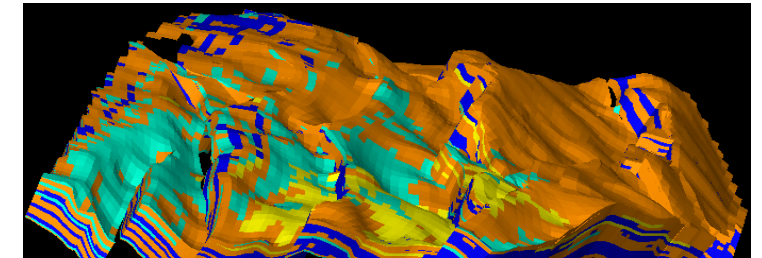
High-Resolution Structural Interpretation
Integrating Well and Seismic Data



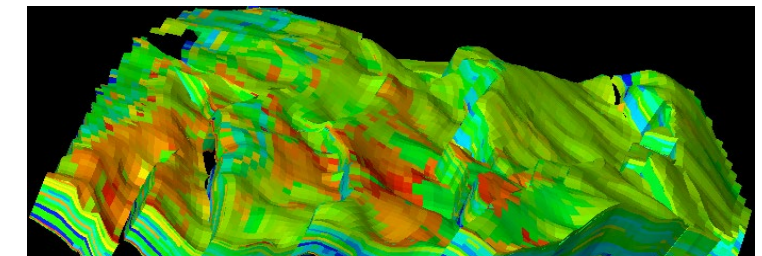
Extraction and Visualization of Seismic Attributes



Resampling of Seismic Volumes During Time-to-Depth
Conversion for Complex Fault Modeling



Data Analysis for Facies Modeling



Petrophysical Modeling

Research Capability

Formulate Development Strategies for Different Types of Oil and Gas Reservoirs Based on Well Testing Results

➤ Reservoir Engineering Study

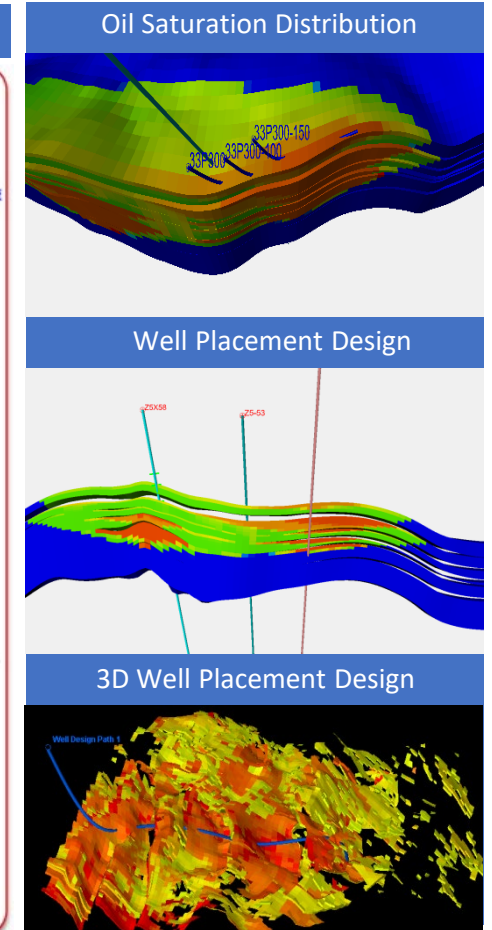
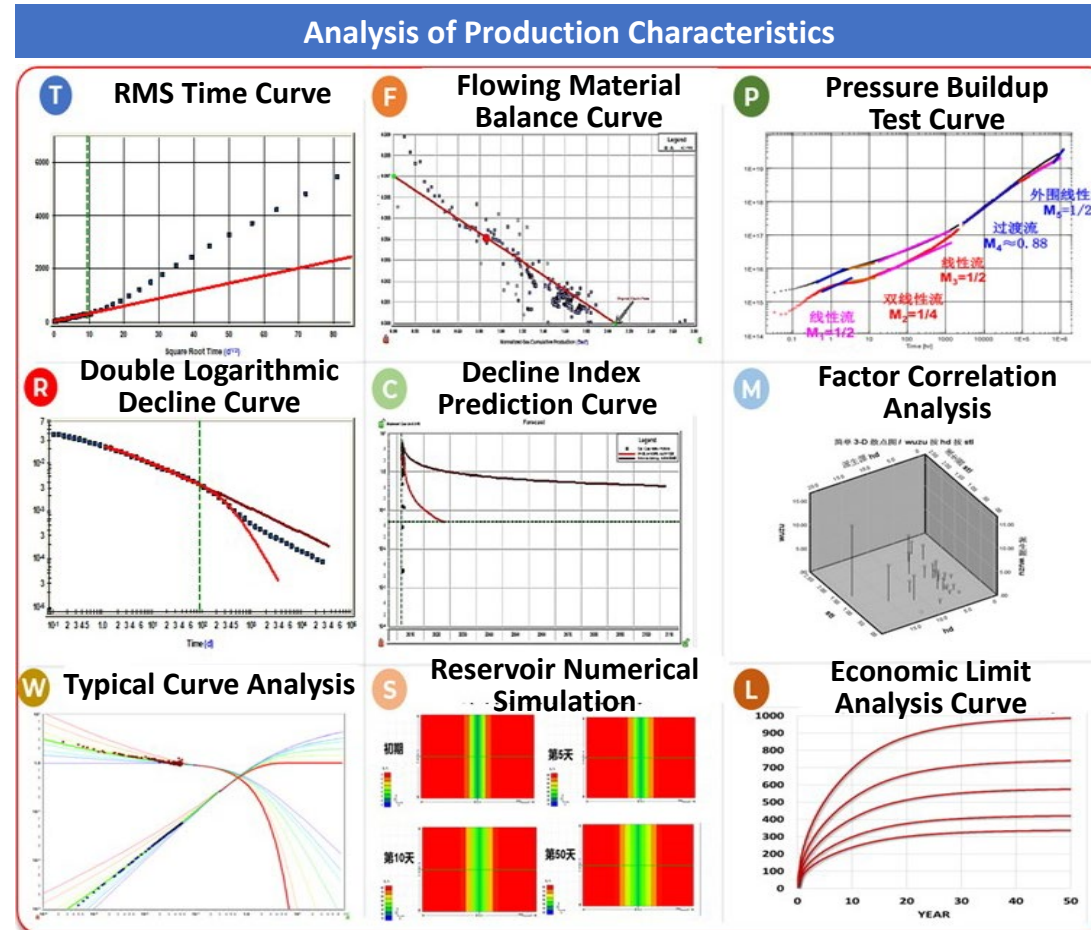
1. Study on Development Policies for Oil and Gas Reservoirs

- Evaluation of Characteristics and Performance of Well Testing
- Determination of Development Strategy
- Analysis of Development Strata, Well Pattern, and Well Spacing

2. Reservoir Numerical Simulation and Pattern Analysis

3. Optimization of Reservoir Development Plan

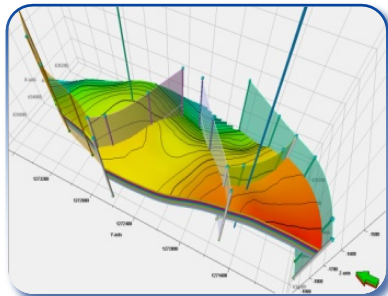
4. Requirements for Plan Implementation



Development Plan Preparation

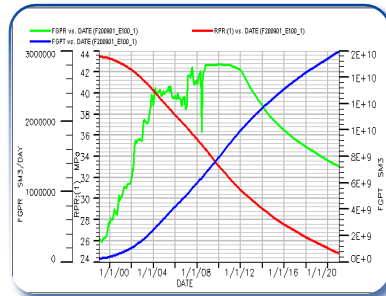
Geological Research Plan

- Stratigraphic Correlation
- Structural Analysis
- Reservoir Evaluation
- Reserves Calculation & Evaluation
- 3D Geological Modeling



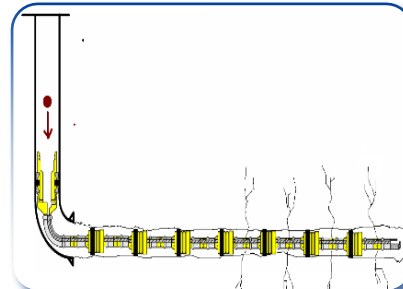
Reservoir Development Plan

- Evaluation of Oil Testing and Production Testing Characteristics and Performance
- Evaluation of Reservoir Potential
- Research on Development Technical Countermeasures
- Development Plan Design



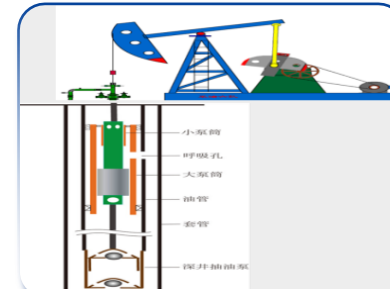
Drilling Engineering Plan

- Reservoir Protection Requirements
- Drilling Engineering Design
- Production Well Completion Engineering Design
- Investment Estimation for Drilling and Well Completion Engineering
- Engineering Risk Assessment and Response



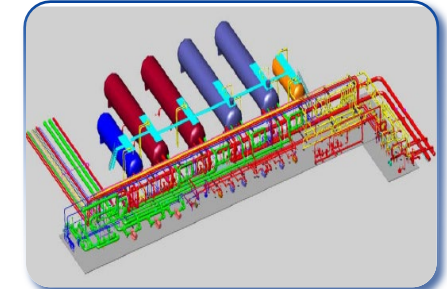
Oil Production Engineering Plan

- Oil (Gas) Production Scheme
- Production Supporting Process
- Dynamic Monitoring and Reservoir Protection
- Investment Estimation for Oil Production Engineering
- Engineering Risk Assessment and Response



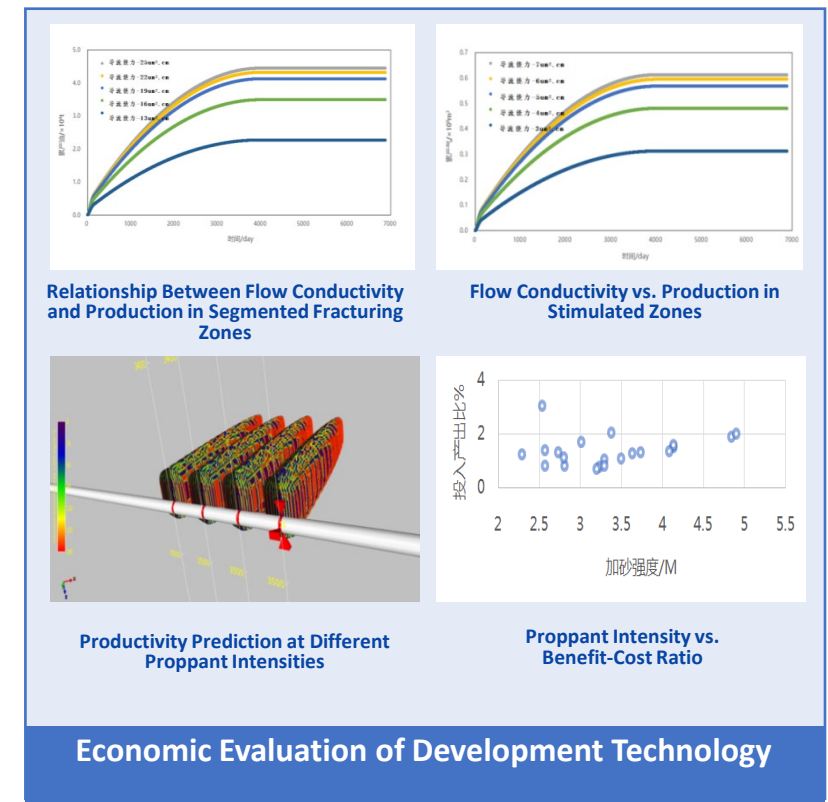
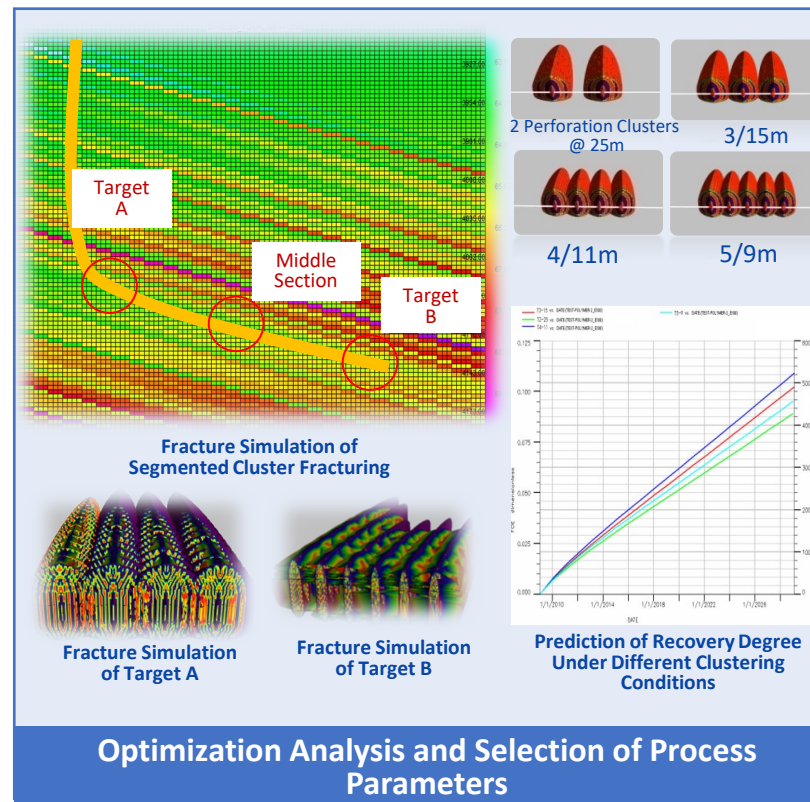
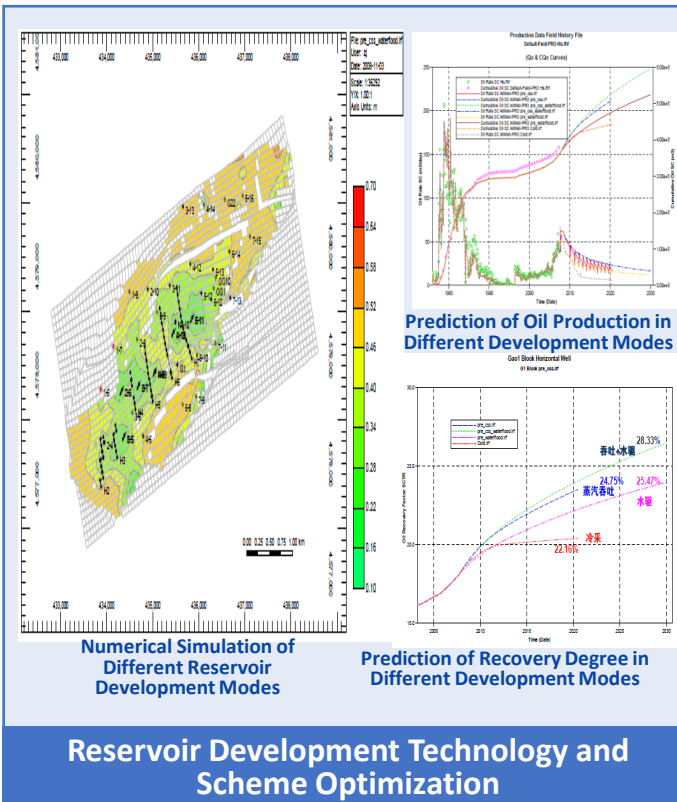
Surface Engineering Plan

- Oil and Gas Gathering and Transmission Project
- Produced Water Treatment Facility
- Investment Estimation for Groundworks of Other Supporting Projects
- Risk Assessment and Response



Plan Optimization and Economic Evaluation

Scientific demonstration, optimization and economic evaluation of multiple reservoir development schemes and supporting technologies are conducted to select the best plan for recommendation and implementation.



Software and Hardware Environment

➤ Software

- Cyclog stratigraphic correlation software
- Jason, Strata and other seismic inversion software
- Geoframe and Landmark comprehensive seismic interpretation software
- Petrel geological modeling and numerical simulation software
- Eclipse and CMG reservoir numerical simulation software



OpenPi2.5



OFM



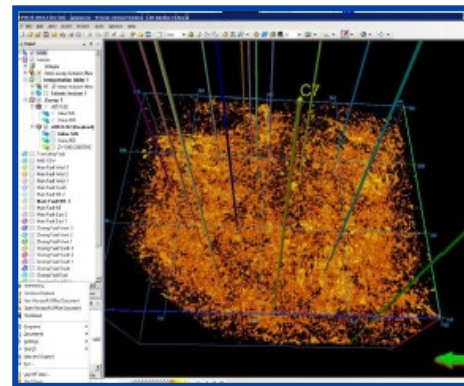
Petrel



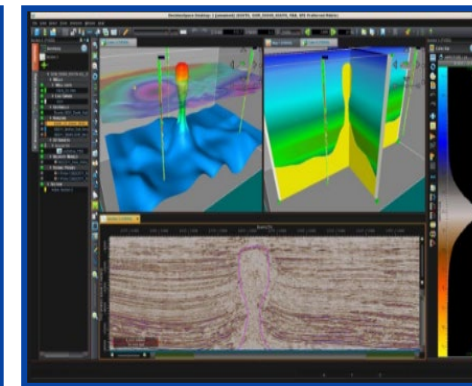
GPTModel



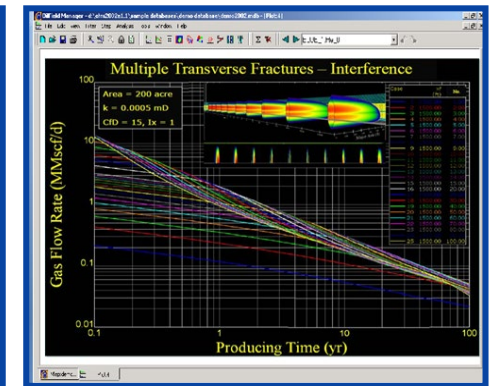
CMG



Reservoir Geological Modeling



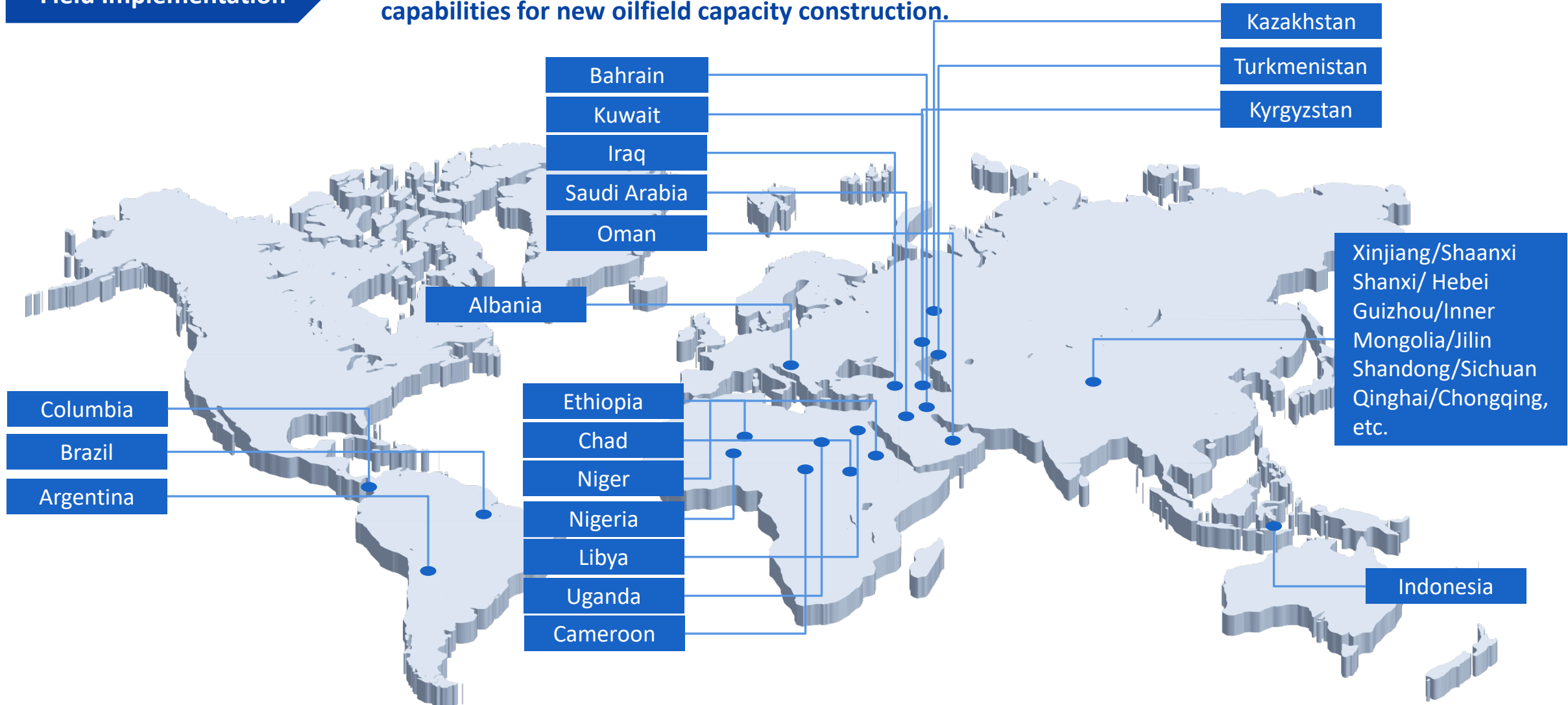
Drilling Plan Design



Engineering Plan Design

Scheme Application and Field Implementation

Kerui Petroleum Technology has over 200 operation teams and 390 sets of specialized equipment across over 10 countries and regions worldwide, with full-chain engineering capabilities for new oilfield capacity construction.



Scheme Application and Field Implementation



Project Management Team

100+ Experienced Project Managers
20+ Years of Global and Domestic Experience
20+ Years of Specialized Industry Experience

Technology R&D Team

Rehired Distinguished Senior Experts
Highly Educated Young Technical Professionals
Chinese and Foreign Technical R&D Support Team

Construction Teams Worldwide

200+ Service Teams
700+ Local Overseas Employees

Scheme Application and Field Implementation



12 Drilling Rigs
1000-2000HP



10 MWD/LWD



29 Workover Rigs
350-1000HP



110 Nitrogen Equipment
500m³/h-2400m³/h



12 Coiled Tubing Units
1.25-2.0"



90 Fracturing Pump
Trucks
2000HP-3000HP

Scheme Application and Field Implementation



Surface Facility Support Systems

- Road and Well Site Construction
- Construction of Gathering and Transportation Systems
- Supporting Environmental Protection Facilities



Implementation of Drilling Engineering

- Well Location Optimization
- Drilling Operations
- Drilling Fluid Management



Wellbore Operations and Maintenance

- Perforation
- Sand Control



Construction of Oil Production System

- Installation of Lifting Equipment
- Construction of Water Injection System
- Digital Intelligent Management of Facilities

For further information, please refer to the introduction material “Integrated Oilfield Services”.

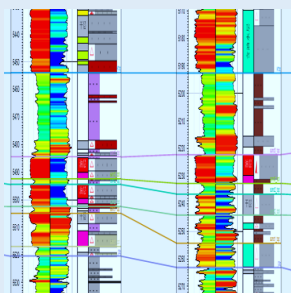
Scheme Application and Field Implementation

Example: An oil field in China is located in a continental sedimentary basin, with proven geological reserves of about 21.9 million tons and a reservoir depth of 3,700–4,000 meters. It is a low-permeability sandstone reservoir.

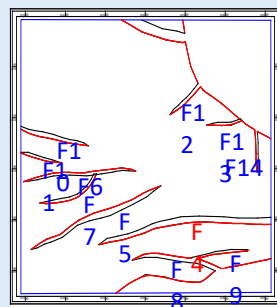
Through comprehensive research, the preparation of a production capacity development plan and field implementation, a production capacity of 100,000 tons per year was established, with a service life of 20 years and an estimated recovery rate of 20%.

Comprehensive Geological Study

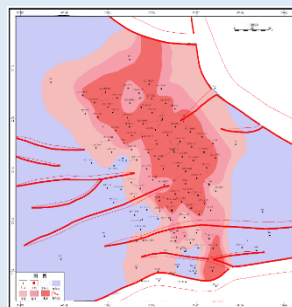
Stratigraphic Correlation of Key Wells



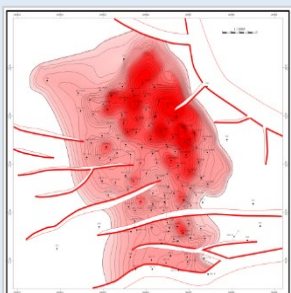
Fault Interpretation



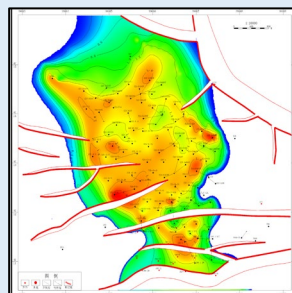
Sedimentary Characteristics



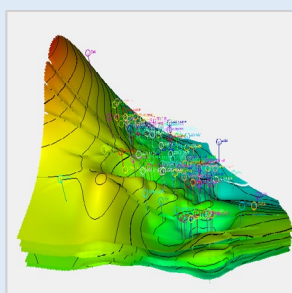
Oil Reservoir Thickness Map



Reservoir Characteristics

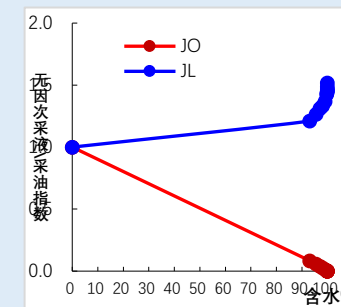


3D Geological Model

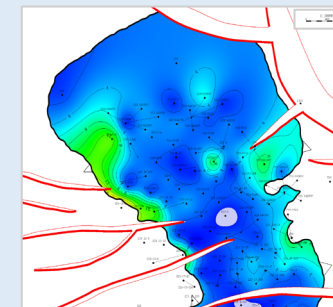


Development of Integrated Programmes

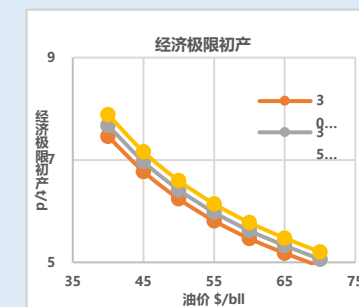
Dimensionless Fluid and Oil Production Index Curve



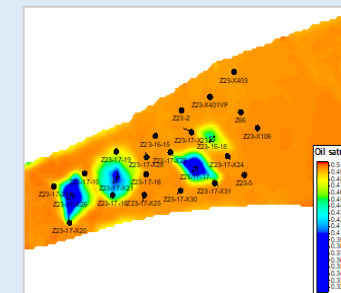
Numerical Simulation



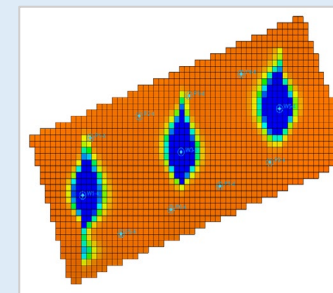
Economic Limit Production



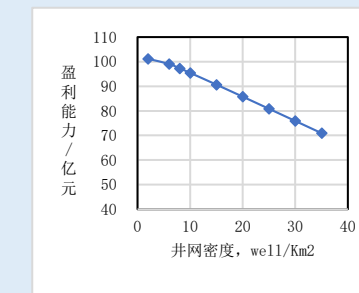
Water Injection Saturation Simulation



Well Pattern and Spacing Optimization

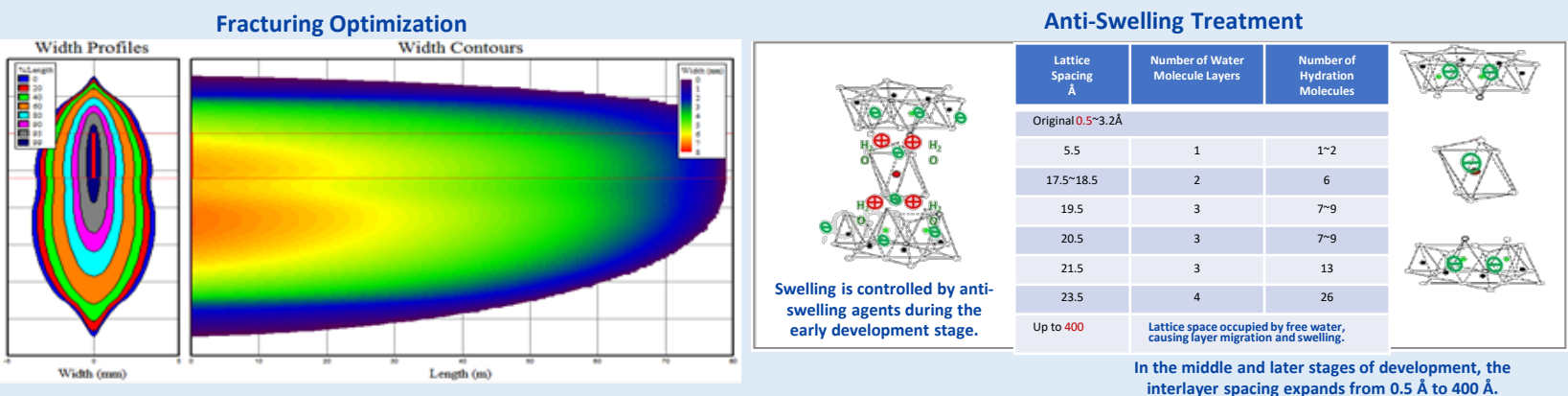
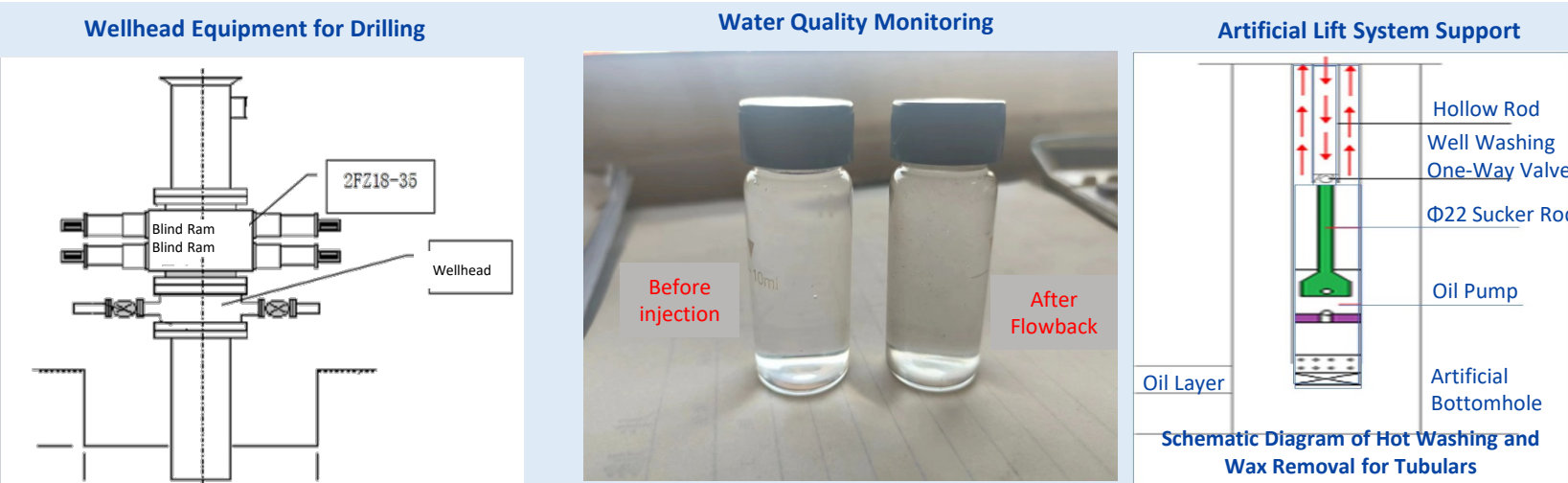


Well Pattern Density and Profitability

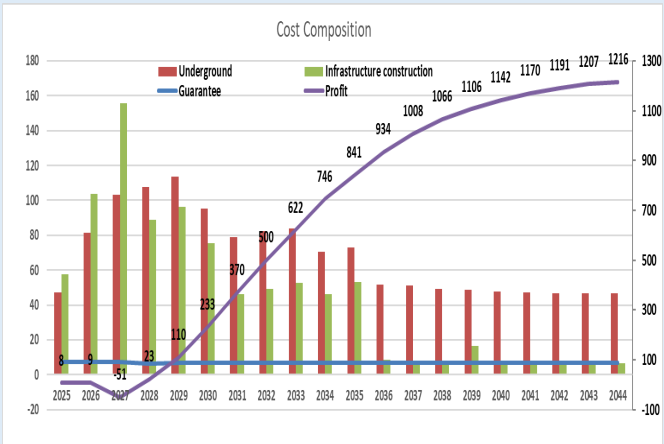
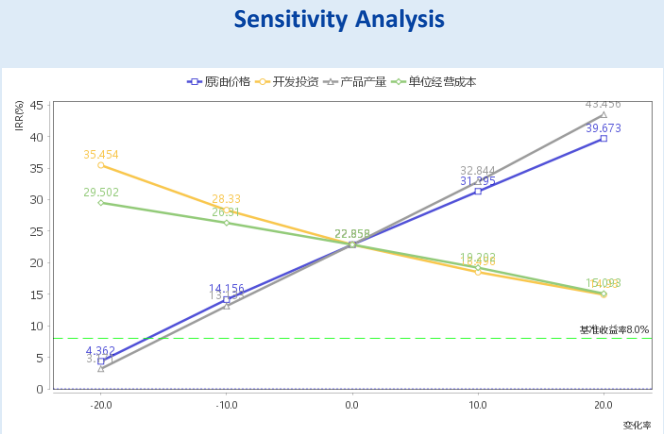


Scheme Application and Field Implementation

Drilling and Production Engineering with Surface Facilities Support



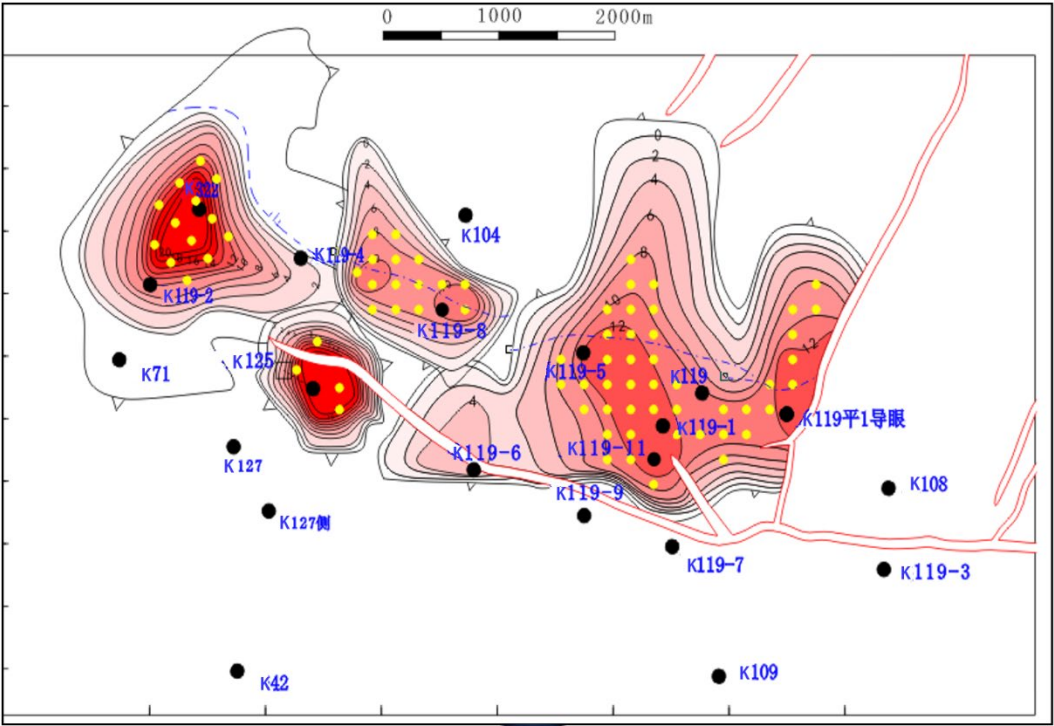
Economic and Technical Evaluation



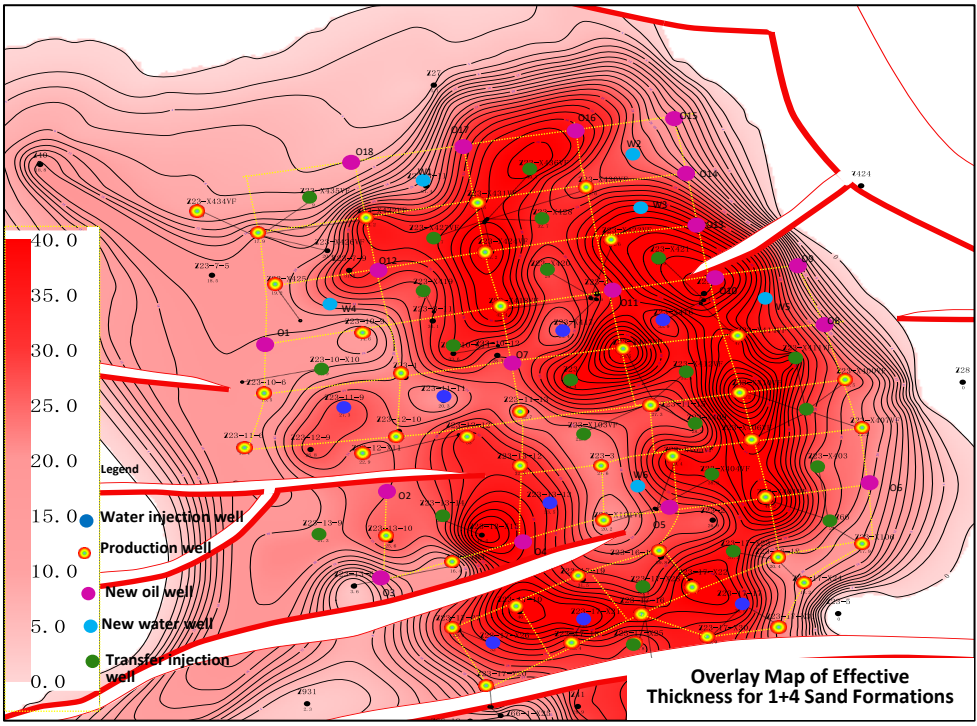
Scheme Application and Field Implementation

A total of 95.7 million tons of sandstone reserves have been confirmed and development plans for 8 different types of reservoirs were developed.

KX-SHC Well Site Deployment Diagram



Well Pattern Deployment Diagram for the II Sand Group in Block 23



ACHIEVING, CREATING AND SHARING TOGETHER

Shandong Kerui Petroleum Technology Co., Ltd.

