南海东部海域勘探开发实践

Exploration and Development Status of Pearl River Mouth Basin, South China Sea.

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2015年9月17日 重庆

Sep 17, 2015  CHONGQING
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3. 可持续发展
   Sustainable Development
CNOOC is the largest producer of offshore crude oil and natural gas in China and one of the largest independent oil and gas exploration and production companies in the world.

The Group's core operation areas are BoHai, Western South China Sea, Eastern South China Sea and East China Sea in offshore China. Overseas, the Group has oil and gas assets in Asia, Africa, North America, South America, Oceania and Europe.
4.48 Billion BOE  
Reserves of approximately 4.43 billion BOE

1,184,977 BOE  
Its average daily net production was 1,184,977 BOE

17,553 Employees  
The Group had 17,553 employees

RMB 662.86 Billion  
Total assets of approximately RMB662.86 billion

As at 31 December 2014, the Group owned net proved reserves of approximately 4.48 billion BOE, and its average daily net production was 1,184,977 BOE (unless otherwise stated, all amounts of reserve and production in this report include our interests in equity method investees). The Group had total assets of approximately RMB662.86 billion.
Name: CNOOC China Ltd. Shenzhen

Established in 2000 Staff: 3,500 (in 2014)

Engaged in oil and gas exploration, development and production through joint venturing and independent operation in the eastern area of South China Sea.
Since the establishment of CNOOC Nanhai East Corporation in June 1983, we have established cooperation with 14 countries and regions (Including America, Japan, Britain, France, Italy, Norway) and more than 50 companies for the exploration and development of oil and gas resources in the eastern area of the South China Sea.

Since 1990, the first cooperative oil field set on production, we have put more than 25 Oil Fields and 5 Gas Fields successfully into production. By the end of 2014, we had for 19 consecutive years achieved equivalent oil and gas production of over 10 million cubic meters annually.

In the process of developing international cooperation, the advanced technology and management were introduced from international oil companies. Through the combination of practice and experience, we have formed our unique management style with win-win culture.
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Phase 1: regional prospecting （油气区域普查 before 1979）;

Phase 2: cooperative exploration （对外合作 1980-2000）;

Phase 3: independent & cooperative exploration （自营合作并举 since 2000）;
Phase 1: regional prospecting

The petroleum and geology units conducted gravitational prospecting, magnetic prospecting and seismic acquisition from 1974 to 1976 in south China sea.

Seven wild cat were drilled during 1977 to 1980. The well Zhu 5 has got the successful DST test with 1,822 barrels oil per day.

<table>
<thead>
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<th>年份</th>
<th>井号</th>
<th>完钻井深（米）</th>
<th>油气</th>
<th>油气显示井</th>
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<td>ZHU1</td>
<td>1847.02</td>
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<tr>
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<td>ZHU2</td>
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<td></td>
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<td>ZHU4</td>
<td>3225.42</td>
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<td>3262.34</td>
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<td></td>
<td>ZHU6</td>
<td>3683.00</td>
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</table>
When the State Council implemented the Regulation of the Petroleum Resources in Cooperation with Foreign Enterprises on January 30, 1982, CNOOC was incorporated and authorized to assume overall responsibility for the exploitation of oil and gas resources of offshore China in cooperation with foreign partners. Since 1980, numerous seismic campaigns (2D & 3D) have been carried out, and more than 250 exploration and appraisal wells have been drilled.
历年2D采集情况

2D地震243,436km（自营120,153km，合作123,283km）

历年3D采集情况

3D地震32,275km²（自营14,914km²，合作17,361km²）

历年钻井

累计钻探井267口（自营90口，合作177口）
BY-LW deepwater area in Pearl River Mouth basin lies on a slope zone along the northern shelf margin, South China Sea. It has been proved by the recent several gas discoveries on the north slope of BY-sag and the breakthrough in LW3-1 gas area that this sag is abundant in hydrocarbon generation.

More than 10 gas fields have been discovered in Southern part of the PRMB, the OGIP: 5.64 tcf.
Good sand distribution
Adequate natural water energy
Light & low viscosity crude oil
Robust Productivity
Bottom & edge reservoir dominate
High recovery rate & factor

Reservoir characteristics
Simple and integrated geometry
Adequate natural water energy
Light & low viscosity crude oil
Robust Productivity
Bottom & edge reservoir dominate
High recovery rate & factor
Development and Production Status

Peak Annual Production Rate of CCLS
Average 7.1%

Production rate of Onshore Fields China

Production rate of Offshore Fields
Development and Production Status

The operation area of CCLS is Pearl River Mouth Basin which locate at northern continental margin of South China Sea. Since the first oil of 1990, over 25 years operation experience.

- **8 sets of oil and gas production systems**
- **27 Oil fields**
- **6 Gas fields**
- **365 Producing wells**
- **Daily oil production:** 200 MSTB ($3.2 \times 10^4 m^3$)
- **Daily gas production:** 400 MMcf ($1130 \times 10^4 m^3$)
- **WCT:** 92.7%

Note: As of Dec. 31, 2014
Development and Production Status

1979—1982: Construction Period

1983—1997: Fast growing period through international cooperation

1998—Now: Featuring both independent operation and cooperation

Graph showing annual and cumulative production from 1990 to 2014.
Development and Production Status

From single crude oil production to oil and gas yielding simultaneously

From corporation to both Independent and corporation
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1. The 13th five years Oil and Gas development plan of CCLS was based on the Second Leap Forward Development Programme of CNOOC.
2. Relying on the existing facilities of deepwater gas project to push the gas production to higher level (70 × 10^8 m^3 per year);
3. Enhancing deepwater oil exploration and engineering innovation to keep oil production over 1000 × 10^4 m^3.
Rolling exploration around developed shallow water area, strengthening exploration on mid-large size targets and combined new area exploration, 50000 × 10^4 m^3 oil and 5.6 tcf gas resources are quite expectable in the next decade.
Sustainable Development
Sustainable Development
Long Term Development Programme

Long Term Production Plan of CCLS

Long term oil production plan

Long term gas production plan
THANKS!
谢谢！