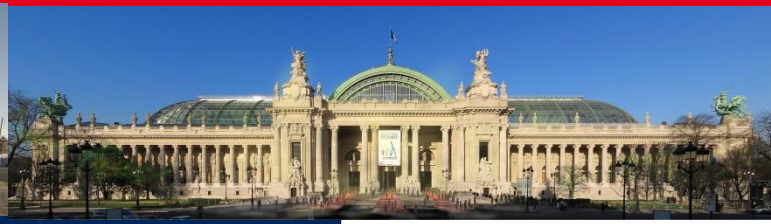
26th World Gas Conference

1 – 5 June 2015, Paris, France



CONSTRUCTION AND DEVELOPMENT OF THE FIRST HORIZONTAL COALBED METHANE WELLS IN KUZBASS, RUSSIA

A. Kalinkin
JSC Gazprom

IGU
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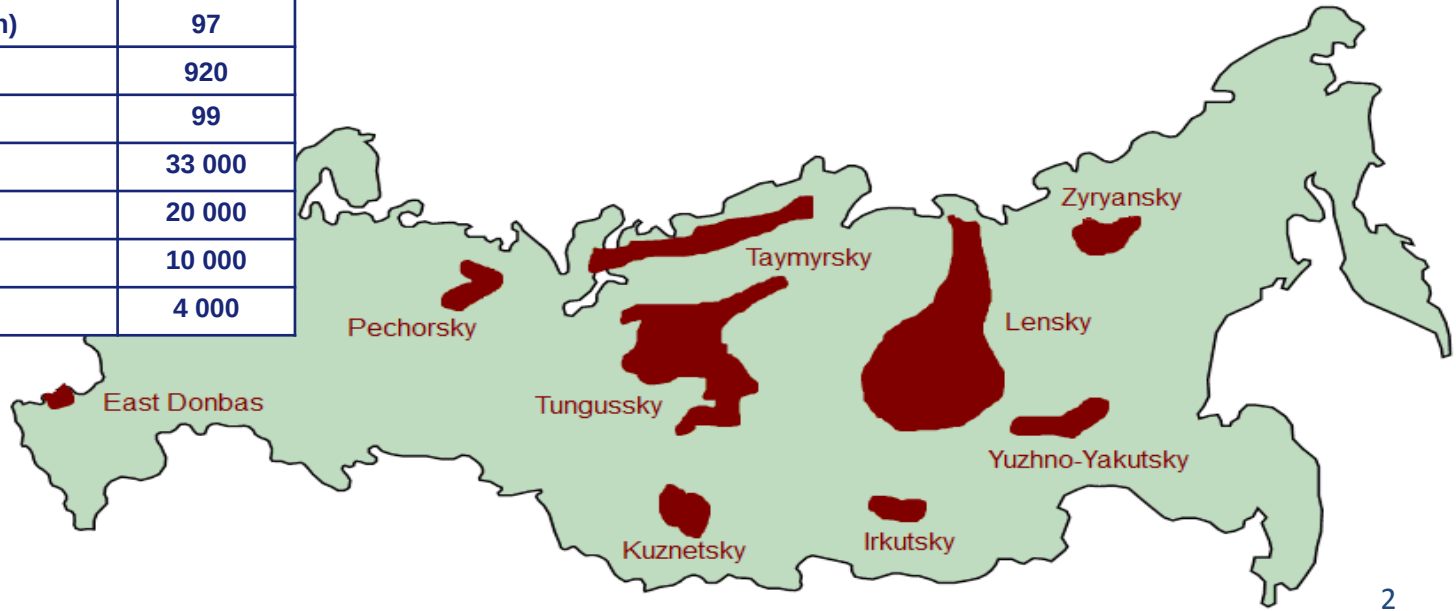
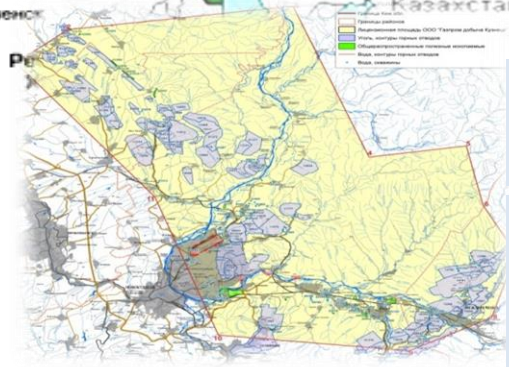
CBM reserves in Russia

Basins	Field reserves, trillion m^3
Total, including:	83 700
Kuznetsky	13 100
Pechorsky	1942
Donetsky (Rostov region)	97
Yuzhno-Yakutsky	920
Zyryansky	99
Zapadno-Sibirsky	33 000
Tungussky	20 000
Lensky	10 000
Taymyrsky	4 000



Kuzbass CBM project area

Kemerovo region



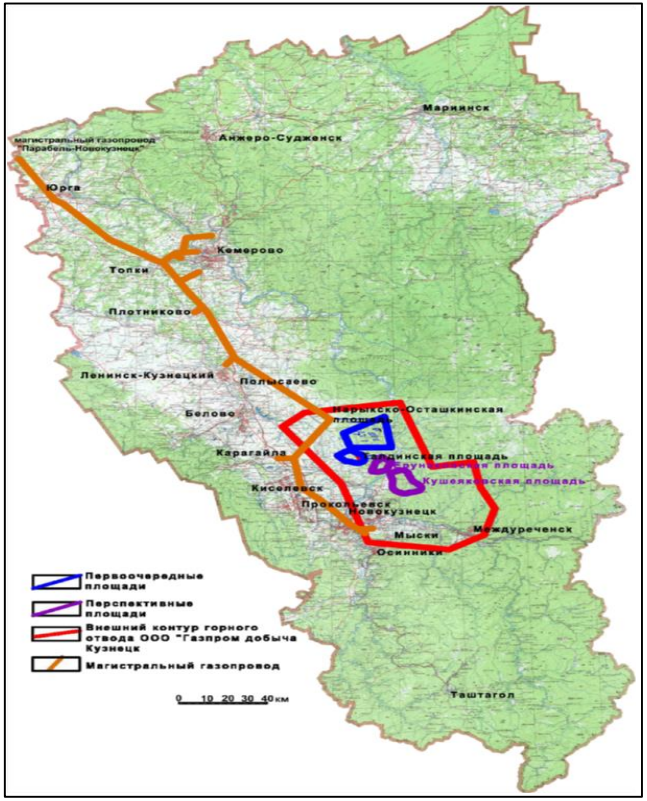
Subsoil usage area (license KEM 14700 HP dated 25.06.2009)

Naryksko-Ostashkinskoye (Naryk) CBM field

Taldinskoye (Talda) CBM field

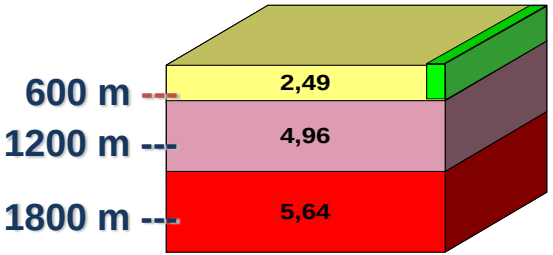
Tutuyassko Raspadskaya area

The distribution of methane resources within depths and fields



Kuzbass	Field reserves, billion m^3
Total	13 100
Priority fields	558,8
Talda	42,7
Naryk	410
Kusheyakovskoye	77
Erunakovskoye	29,1

Distribution within depths, trillion m^3



Within the boundaries of the mine fields - 0,21 trillion m3

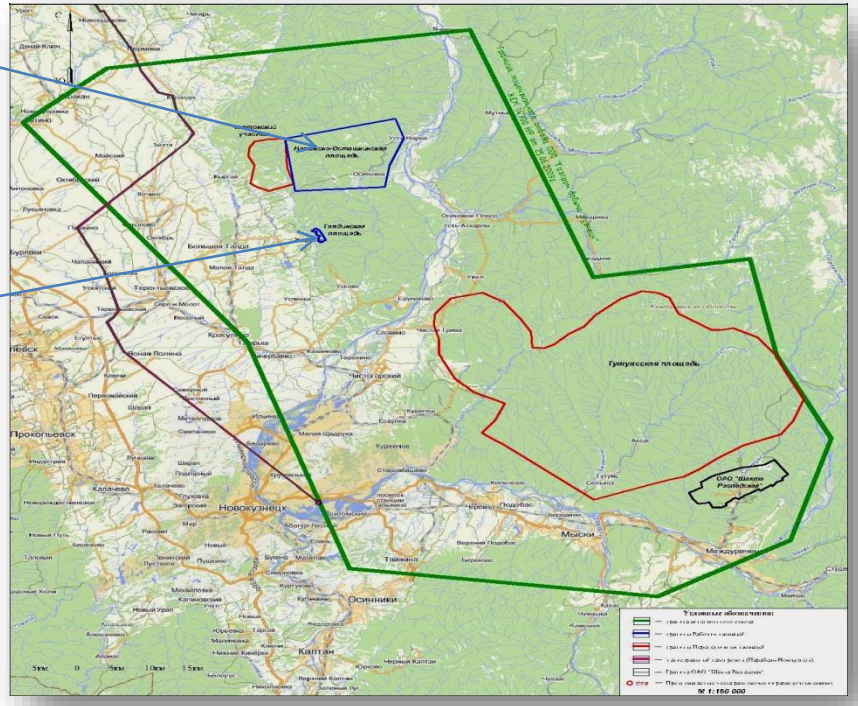
Coalbed methane fields

Naryk field:

- ✓ 18 vertical wells with downhole pumping equipment (sucker-rod screw pumps, bottom-hole pumps)
- ✓ 4 directional wells(equipped with sucker-rod screw pumps)
- ✓ 2 horizontal wells connected with vertical well (no downhole pumping equipment)

Talda field:

- ✓ 8 vertical wells with downhole pumping equipment (sucker-rod screw pumps, electrical centrifugal pump)



Field infrastructure

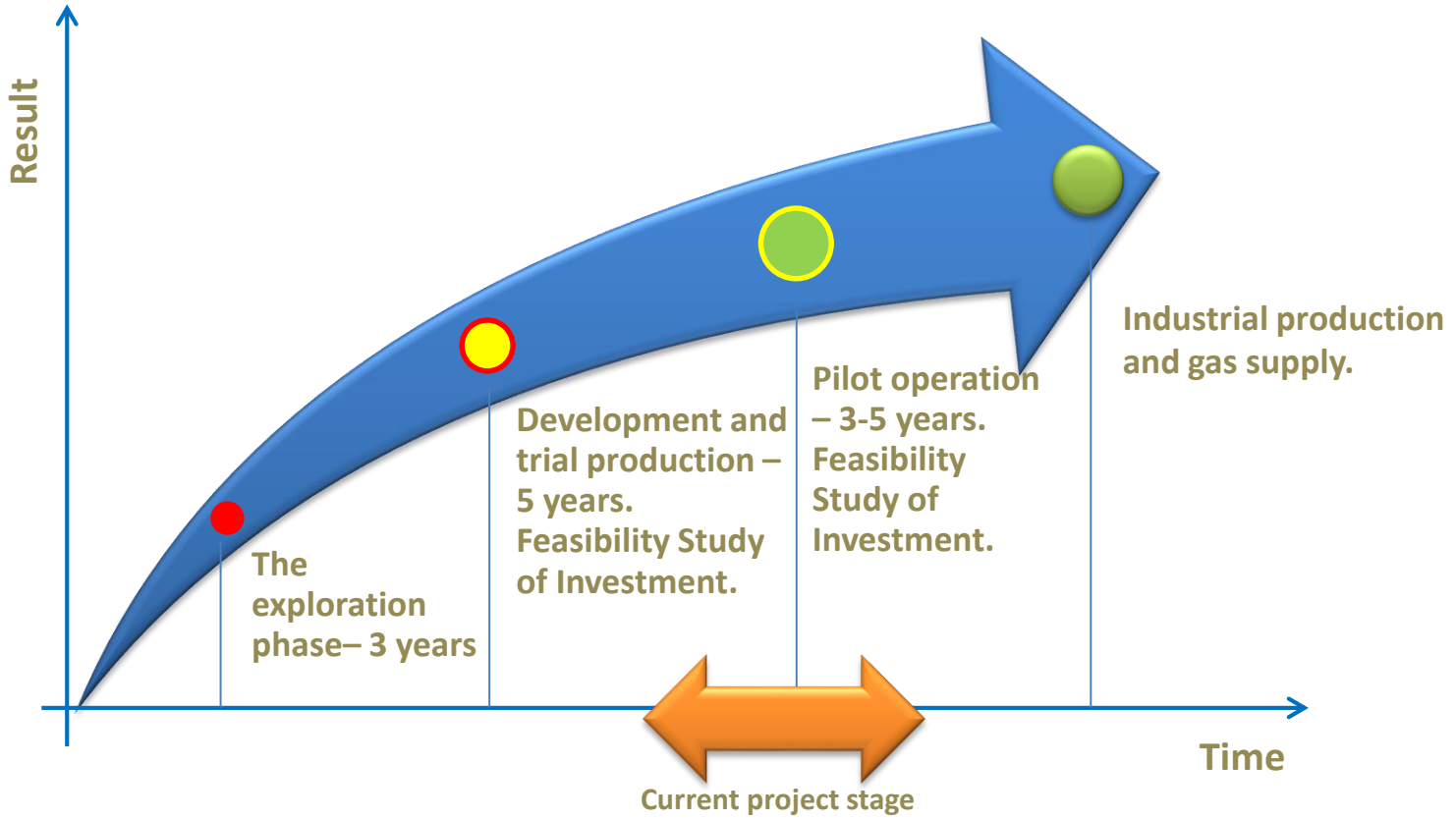
Talda

- **Natural gas motor fuel**
  - **CNG filling station**
    - **Own vehicles, selling to other companies**
- **Garage**
- **Power generation**
  - **Gas engine generator – 1,35 megawatt**
    - **Own needs and to external power mains**
  - **Gas engine generator – 1,06 megawatt**
    - **To external power mains**

Naryk

- **Natural gas motor fuel**
  - **Gas filling station**
    - **Own vehicles**
- **Power generation**
  - **Gas engine generator – 1,1 megawatt (2 pc.)**
    - **Own needs and to external power mains**
  - **Mini gas engine generator – 60 kW (3 pc.)**
    - **Own needs**

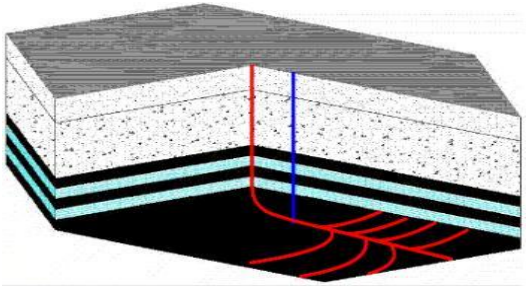
CBM project execution in Kuzbass



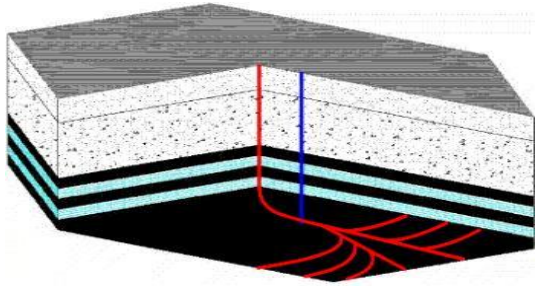
Project efficiency improvement through the construction of horizontal wells with completion in coal seams in Kuzbass

Available choice of well design

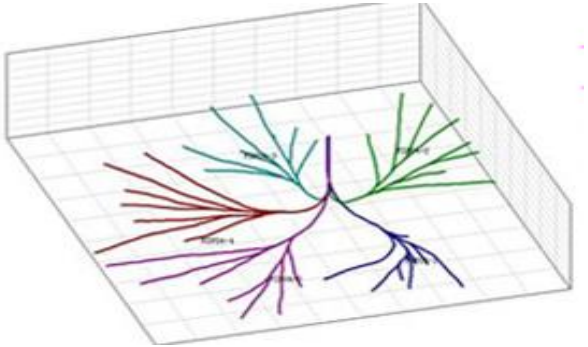
U-shaped well



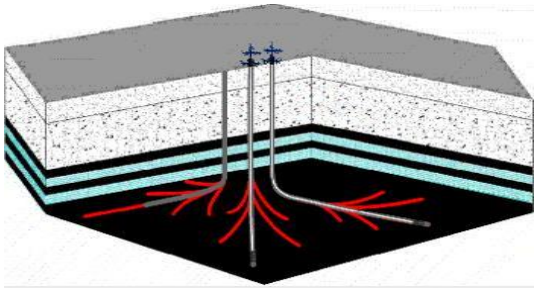
U-shaped multilateral horizontal well



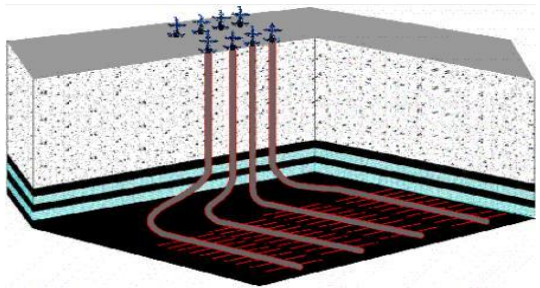
U-shaped multilateral horizontal well with two main wellbores



Multilateral well with several main wellbores

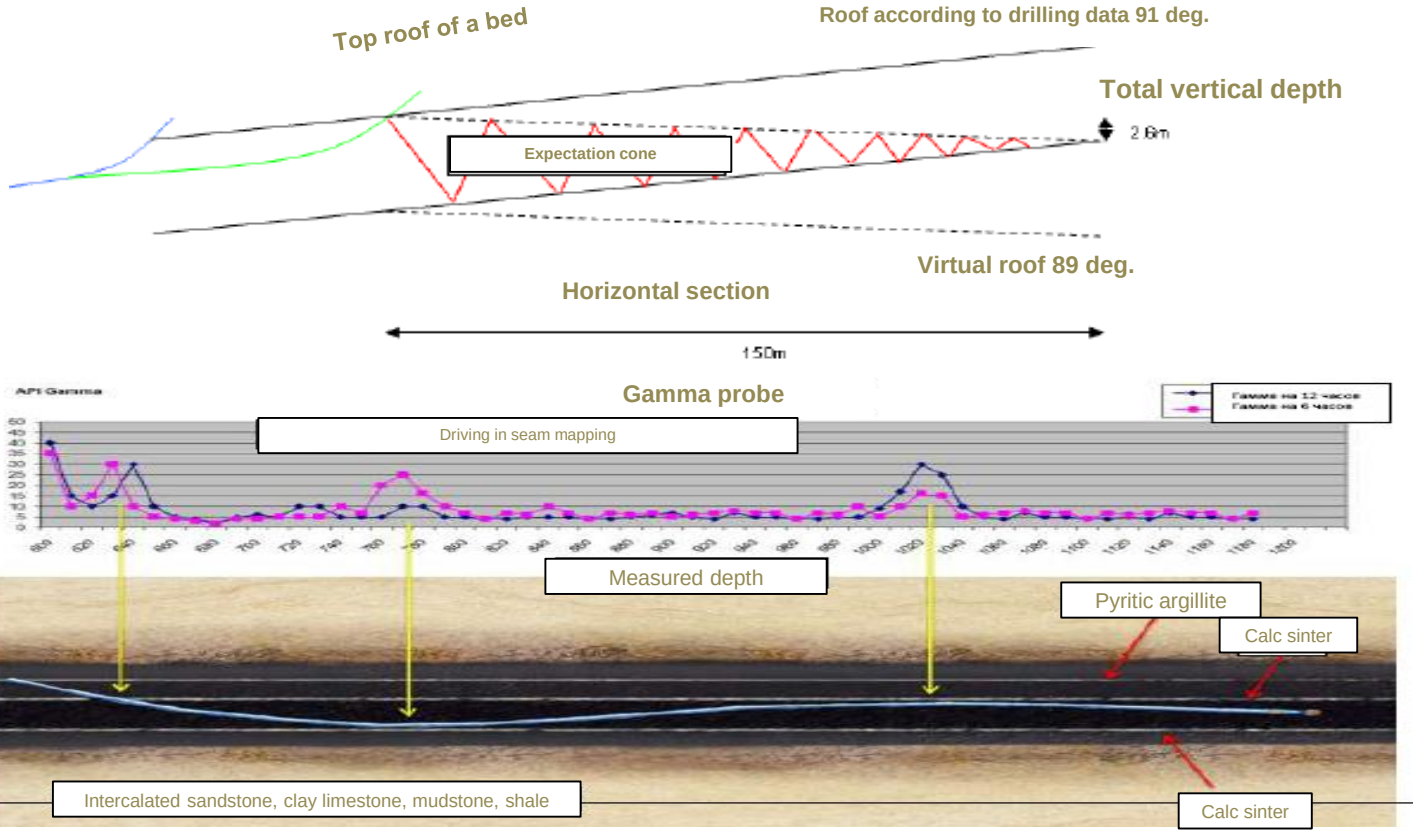


Cluster of multilateral wells

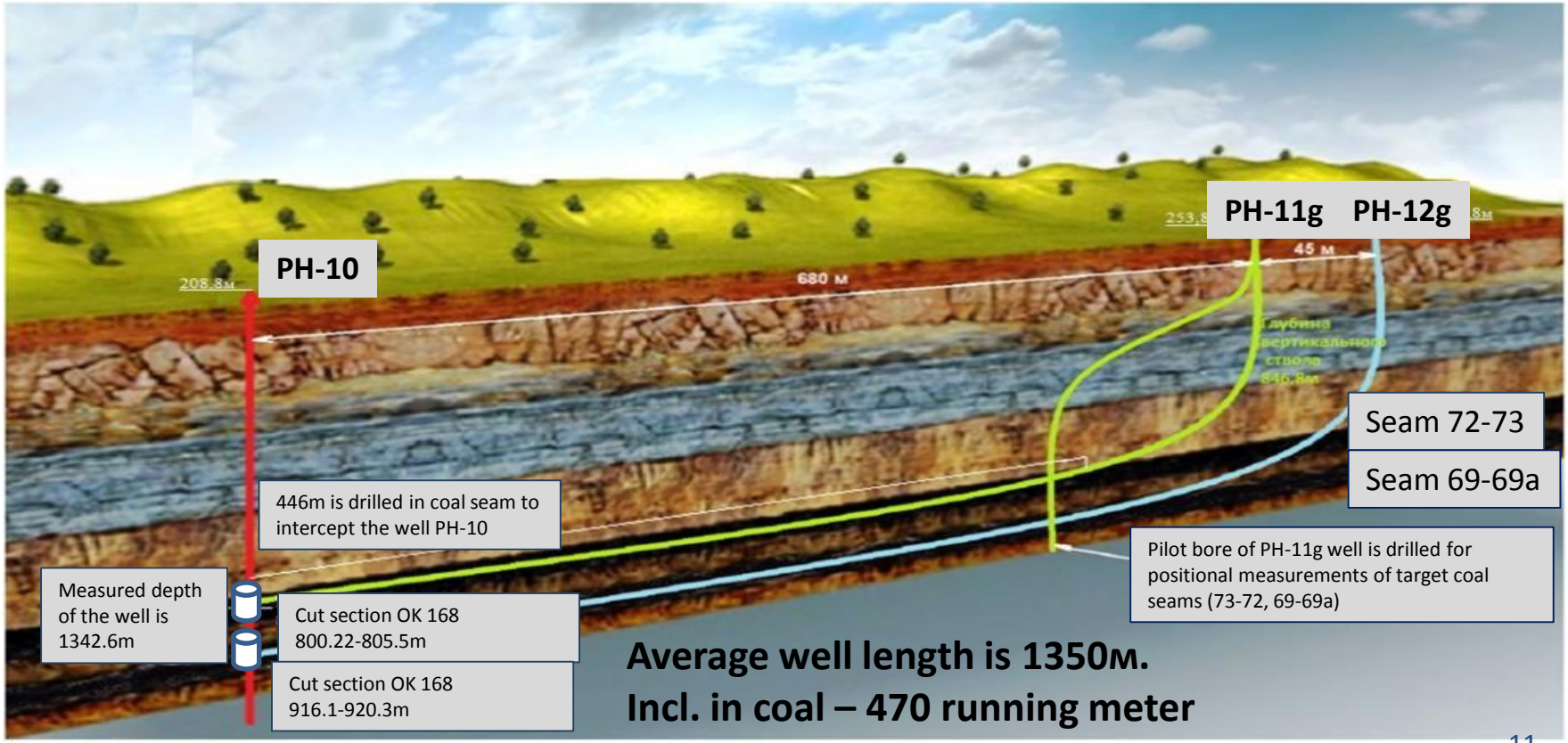


Cluster of multilateral horizontal well with multiple stage fracturing

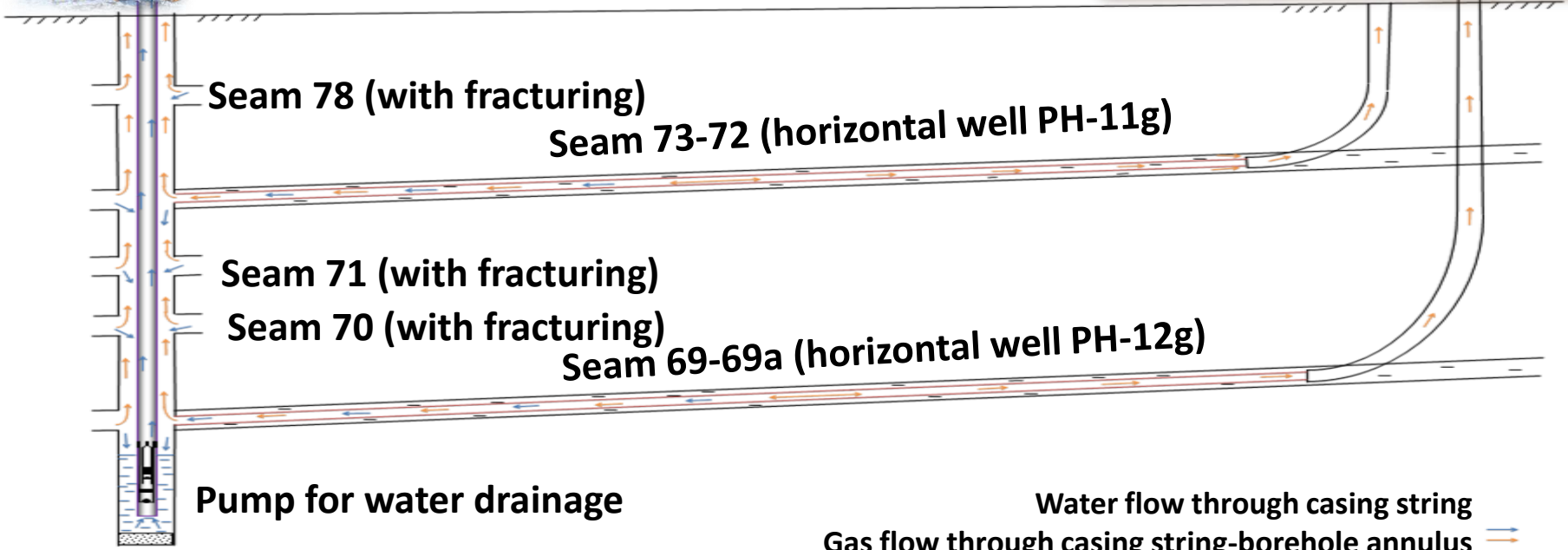
Technology of in seam well construction



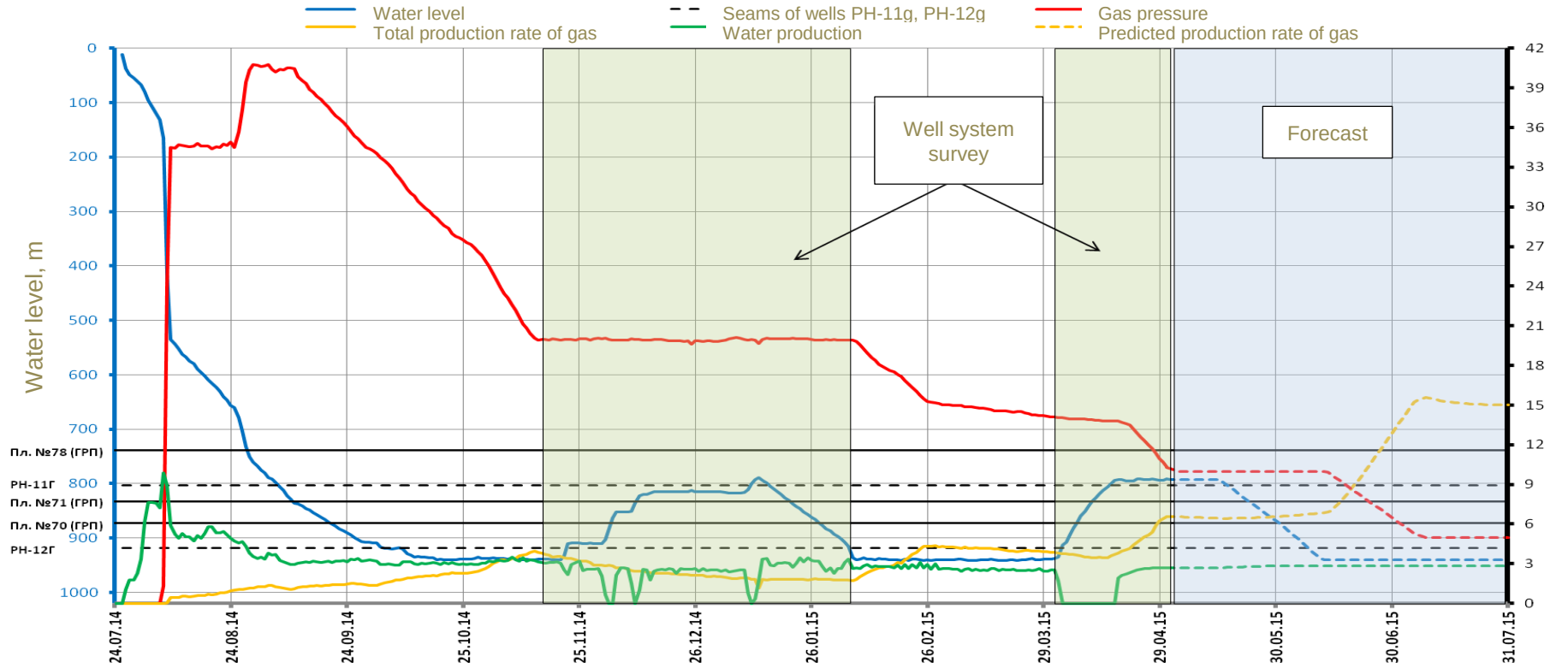
Scheme of CBM wells drilled in Kuzbass



Development and stimulation scenario of wells system



Development and exploration graph of wells system PH-10, PH-11g, PH-12g



Final word

As practice shows, the success of coalbed methane projects depends on the qualitative approach to the development of ideas for the drilling rate increase, better gas flow rates with lower costs.

Executed work in construction and development of horizontal wells at Naryk field of Kuzbass provides reduction of produced gas self-cost, and confirms the promising outlook for development of CBM fields.

Efforts offered by JSC "Gazprom" will give a new impulse to the development of CBM gas production in Russia and will let not only significantly expand the resource base of the domestic gas industry, but also greatly improve the work safety in coal mines due to reducing of coalbed methane emissions.

Thank You for Attention!