CONCEPTUAL APPROACHES TO THE DEVELOPMENT OF THE RESOURCES OF EAST SIBERIA AND THE FAR EAST

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ABSTRACT

This paper deals with the prospects of East Siberia and the Far East region gas resources development.

East Siberia and the Far East possess significant resources including oil and gas. Gas resources of eastern Russia are several times greater than those of any natural gas exporting country of this region.

The development of this region hydrocarbon reserves is dependent on the deployment of corresponding infrastructure in severe geological, environmental conditions and significant distance of hydrocarbons delivery to consumers.

To optimize the complex development of gas industry in East Siberia and the Far East a “Program to Establish a Unified System of Gas Production, Transmission and Supply in East Siberia and the Far East with Potential of Gas Export to China and Other Asian Pacific Countries” has been adopted by the Russian government. JSC Gazprom has been authorized to coordinate activities under this Program.

The development of oil and gas resources of East Siberia and the Far East in line with concept approaches stated in the Program which provide for coordinated actions and optimum schemes of gas transmission system in the eastern part of Russia will be a driver of a long-term economic growth of this region and will enhance security of supply of export gas thus ensuring energy security of Asian Pacific countries.
1. Introduction

East Siberia and the Far East are major industrial regions of Russia playing an important role in the national economy development.

Regional gas industry has not yet reached any significant level of development in spite of the fact that gas potential of East Siberia and the Far East amounts to about 20% of the initial gas reserves of Russia.

East Siberia and the Far East possess significant resources including oil and gas. Gas resources of eastern Russia are several times greater than those of any natural gas exporting country of this region.

2. Resource Base of the Region

Initial total onshore gas resources of East Siberia and the Far East amount to approximately 50 Tcm (20% of the Russian initial total resources); offshore resources – some 15.0 Tcm. Onshore natural gas reserves equal to 6.7 Tcm and offshore reserves – 1.2 Tcm. Major part of the fields of East Siberia and the Far East are gas-condensate or oil-gas condensate fields with high oil-gas ratio. Gas of the region is featured with high content of valuable components, like ethane, propane, butane, heavy hydrocarbons, helium, the content of which is in the range of 8 – 32%. Actually all helium explored reserves of Russia as well as a third of the worldwide helium reserves are concentrated in East Siberia and the Far East.

Projected growth of the regional demand for energy resources in line with significant gas reserves increment in the region are favorable prerequisites for development of a new gas industry center in East Siberia and the Far East.

3. Complex Approaches to the Development of the Resources of East Siberia and the Far East

However, hydrocarbon resources development is dependent on the deployment of corresponding infrastructure in severe geological, environmental conditions and significant distance of hydrocarbons delivery to consumers. Moreover, a large number of new projects were announced in the sphere of the fuel and energy complex designed for the East Siberia and the Far East resources development (including oil, power and gas projects), the projects being targeted at the same markets and competing with each other. All these facts in the aggregate may lead to significant reduction in the
efficiency of regional resources development or even make development of certain fields economically unfeasible.

The government of the Russian Federation has adopted a resolution on development of the “Program to Establish a Unified System of Gas Production, Transmission and Supply in East Siberia and the Far East with Potential of Gas Export to China and Other Asian Pacific Countries” (hereafter the Program), imposing a duty of the Program’s implementation coordination on Gazprom.

According to the principles of the Program implementation approved by the government, gas industry development should proceed on the assumption of the priority of gas supply to Russian consumers through extension of the Unified Gas Supply System to the East, arrangement of favorable conditions for the socio-economic development of East Siberia and the Far East, coordination and optimization of attractive projects for gas fields development and gas transmission, improvement of gas supply and energy security of the consumers both in Russia and in the Asian Pacific countries.

It would be appropriate to go into development of the gas resources in the eastern regions of the country on the basis of biggest gas fields making the basis for the four gas producing centers: Sakhalinski, Irkutski, Krasnoyarski and Yakutski. Aggregate production capability of the region amounting to about 200 bcm of natural gas by 2030 will guarantee meeting of the regional demand for natural gas, secure gas deliveries into the Unified Gas Supply System of Russia in order to maintain gas production-consumption balance and arrange for export gas deliveries to the Asian Pacific countries.

Hydrocarbon reserves of East Siberia and the Far East are mainly oil-gas condensate fields. That’s why the technological capabilities for rational and efficient development of such fields should be considered while determining the time for the start of gas production to ensue oil extraction in the first place.

4. Development of Regional Gas Processing and Chemical Industry

Due to the presence of valuable components (ethane, propane, butane, heavy hydrocarbons, and helium) development of the fields should be considered in complex with building new gas processing plants providing for helium and heavier hydrocarbons extraction and liquefaction of hydrocarbon gases. In order to improve the hydrocarbons utilization factor new synthetic hydrocarbons (like liquefied hydrocarbon gas, polyollines, polyvinyl chlorides, glycols, etc.) production may be arranged at the gas fields under development.

In view of development of regional markets of synthetic liquid fuels new gas chemical plants will be build in the East of Russia for production of new goods (synthetic liquid fuel and DME) on the basis of dry gas (methane) using the “gas-to-liquids technology”.

Special attention should be paid to helium – the product with a wide range of applications. Russia is the world leader as far as the explored reserves of this unique raw material are concerned. Russian helium reserves amount to about 9 bcm which is approximately one third of the world reserves. The latter makes Russia potentially the biggest supplier to the helium market capable to meet the major portion of growing global demand for the product.

Implementation of existing plans will provide for major high-technology gas processing and gas chemical enterprises deployment in East Siberia and the Far East capable to cover both the internal demand and export deliveries.

Such an approach will allow to use part of the gas produced as a feed for production of goods with higher added value and ensure improvement of economic efficiency of the projects.

5. Set-up of Export Supplies to Asian Pacific Countries

The growth of demand for gas in the Asian Pacific countries and favorable geographic position of Russian gas resources in relation to external market provides for prerequisites for Russian natural gas deliveries to the region.
Russian natural gas exports should be reasonably arranged as a combination of the pipeline gas supply (to China and Republic of Korea) and liquefied natural gas deliveries (to Japan, Republic of Korea, the USA and Mexico, China and Taiwan).

At the same time, export objectives should be considered in terms of their most efficient linking with the plans of economic development of the region and the country on the whole. Russian natural gas deliveries to external markets will be made from the gas supply system on principles of a single export channel based on intergovernmental agreements. Development of the regional gas supply system will ensure system reliability of long-term gas supply to consumers, adaptability to conditions of emerging market by way of staged hookup to the gas fields as well as minimization of project risks for the companies – subsoil users due to delivery to the markets volumes of natural gas that make it possible to supply gas abroad on the most favorable terms.

6. Conclusion

The development of oil and gas resources of East Siberia and the Far East, in line with concept approaches stated in the Program which provide for coordinated actions and optimum schemes of gas transmission system in the eastern part of Russia will be a driver of a long-term economic growth of this region and will enhance security of supply of export gas thus ensuring energy security of Asian Pacific countries.