

Assessment of prospects uranium resources Southern Yakutia in formation uranium complex in the east of the country

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The program of progress of the nuclear industry and power in Russia requires an increase of manufacture of uranium in 6 times up to 2020 year. In Russia after disintegration of the USSR remains no more than 20 % of a uranium stock of the former USSR. As a result of raw potential of Russia 615 thousand t uranium has made.

Today with atomic engineering in the world connect prospects of break in structure of a power balance.

For this purpose it is required not only reconstruction of the existing enterprises, but also extensive directions of progress of a uranium complex of Russia. Prime-minister of Russia V. Putin who is calling up increases of a fraction of the atomic power station in a power balance of the country up to 25-30 % insists on it also. Now this parameter makes 16 %. For comparison we shall note, that in France the fraction of the atomic power station reaches 70 % in the USA – 25 %. In this connection till 2030 in Russia plan to construct 26 new reactors, 20 more abroad. The demand for natural uranium as a result rises sharply. World extraction of uranium (in recalculation on pure metal) in 2007 made 41 thousand t, from them to Russia 3,4 thousand was necessary t or about 8 % of world extraction. Annual consumption of uranium in the world is made nearby with 70 thousand t. As of June, 1st 2008 in the world is 439 power nuclear reactors using uranium as fuel and making 16 %. Thus, world deficiency in uranium reaches 30 thousand t, and domestic capacities on uranium satisfy the demand for Russia of nuclear branch only on 30 %.

In territory of Siberia and the Far East it is reconnoitered 610 thousand t uranium, prognoses resources of categories $P_1 + P_2$ – 465 thousand t. In the east of the country unique mountain-chemical association (Open Society "PPGHO", Transbaikalian edge) with annual production rate up to 3 thousand now operates t uranium, OS "Hiagda" (Republic Buryatiya) and Elkon-

skiy MMC (Republic Sakha (Yakutia)) are designed. Commissioning of these objects is planned for 2020, the designed capacity makes 2 thousand t and 5 thousand t uranium accordingly. Due to commissioning Elkonkiy MMC in 2020. Total manufacture in region will be made not less than 14 thousand t in a year that will allow to liquidate deficiency of uranium raw material in the country, and the uranium combine of Southern Yakutia will take leading seat in a uranium complex of Siberia and the Far East and its fraction in the all-Russian balance of uranium raw material will exceed 50 %. Besides there will be a possibility to export uranium to Japan as a result a fraction of the Russian uranium in the Japanese market of nuclear fuel will increase twice with from present 15 % up to 30 %.

With input in 2020 Elkonkiy MMC manufacture of uranium in Russia will reach 18 thousand t, that will allow it to pass from 7-th seat to the third, and OS "Tehsnabexport" also becomes the third company in the world, thus, development of uranium resources of Southern Yakutia will allow to strengthen not only a uranium complex of Siberia, but also to strengthen a mineral-raw and economic security of the country.

Now in the world 35 thousand is extracted nearby tons of uranium, and the annual demand of atomic engineering makes 67-68 thousand tons. The difference replenishes basically due to warehouse stocks. In Russia at annual extraction of uranium in 3,2 thousand tons demand makes nearby 10 thousand tons (in view of own consumption and export deliveries). About Russia imports 800-900 tons of uranium to a year from Ukraine, the rest becomes covered from warehouse stocks. Russia in a rating on stocks of uranium has taken the third seat after Australia and Kazakhstan, having risen with the eighth seat in 2005. The increase of the Russian stocks is connected with statement on the account of stocks of some deposits Elkon-

skiy of uranium ore area in Southern Yakutia and Transbaikalian edge. In 2007 OS "Atomredmetzoloto" has received licenses for their development and has founded new уранодобывающие the enterprises - Joint-Stock Company "Elkonskiy MMC" in Republic Sakha (Yakutia), Joint-Stock Company "UDC Mountain" and Joint-Stock Company "Olovskaya MCC" in Transbaikalian edge.

Russia to the full the world problems connected with this energy carrier are inherent: significant excess of demands for uranium over its manufacture, fast exhaustion of their warehouse stocks of natural uranium which should suffice no more than for 10-15 years, and absence of sufficient volume prepared for profitable development the geologist; stocks in bowels. In this connection the Government of the Russian Federation the decision on essential progress of atomic engineering and on the accelerated progress of its raw-material base is accepted, the manufacture of the uranium which is carried out in the only thing an industrial mountain-chemical association which has remained in Russia Priargunskiy (OS "PIMCA"), than 3,2 thousand t makes no more t year (about 20 % of necessary volume).

Besides two new enterprises chink underground extraction are under construction: to Zauralye (Joint-Stock Company "Dalur") and Transbaikalia "Hiagda") with design annual production rate 1000 g everyone. Deficiency while becomes covered by reduced warehouse stocks. At a present level of extraction already with 2011 is possible deficiency of uranium at a level 8 thousand t in a year.

For its elimination it is necessary to increase extraction of uranium sharply. Russia as in manufacture of fuel should have one of world leaders own reliable МСБ, guaranteeing stable. Existing and creation of the new mountain-ore enterprises.

On total raw potential regions of Eastern Siberia and the Far East on which fraction 93 % of the reconnoitered stocks and 56 % Per 2007 "Uranium holding ARMZ" was included into the five of the largest companies on extraction of uranium, having overtaken англо-Australian company VNR Billiton. At its enterprises in Russia and Kazakhstan it has been extracted

3527 т uranium that has made 9 % of world extraction. To 2015 the company plans to reach a level of extraction 10 thousand

Æ/year due to progress of the operating and under construction enterprises, and after commissioning designed the enterprise to leave on extraction 20 thousand t year to 2025 of Russia to the full the world problems connected with this energy carrier are inherent: significant excess of demands for uranium over its manufacture,

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The largest Russian enterprise and one of the world's largest - OS "Priargunskiy industrial mountain-chemical association" (PIMCA) - on results of extraction in 2007 has left on the fourth seat. With 1968 it develops unique deposits Strelcovskiy uranium-ore area. For the 40-years period of the activity here it has been extracted more than 130 thousand t uranium. Any uranium extracting the enterprise of the world for today has not reached such result. It is planned, that total productivity of three enterprises will be increased in 1,7 times to 2015 However this level cannot provide demand completely. To not admit possible deficiency, it is necessary to put into operation new mines and to increase manufacture of uranium in Russia more than in 3 times to 2020 Only in this case it will be possible to provide with fuel the Russian atomic power stations and to keep an export potential in the market of fresh nuclear fuel and NOU.

Key directions of the decision of this large-scale problem are: 1. Progress of manufacture and a raw-material base of uranium of the op-

erating enterprises; 2. Development of domestic alternate uranium deposits.

Modern annual demands of Russia for uranium make 19,3 thousand t. Extraction of natural uranium at the Russian enterprises totally reaches only 3,3 thousand t, i.e. covers less than 20 % of demand. Calculations show, that in the further a level of production of uranium in Russia, really achievable due to sources of raw material existing now, will regularly lag behind its consumption.

Even at freezing export NOU the saved up deficiency of manufacture will be made, at least, to 2010 nearby with 90 thousand t, and to 2020 – 200 thousand t.

As a whole the modern mineral-raw-material base of uranium of Russia is very impressive. The general stocks of uranium on cat. C_1+C_2 make 652,8 thousand t among which 67,7 % are necessary on cat. C_2 . Actual for development in the near future it is possible to consider stocks in volume 615 thousand t. Territorially they settle down in four federal districts — Southern, Uralsk, Siberian and Far East. Thus in two last it is concentrated about 95 % of all stocks due to Strelcovskiy both areas Vitimskogo in Siberian and area Elkonskiy in Far East districts.

The prospect of industrial development Elkonskiy of group of alternate deposits of uranium is certain by the interdepartmental program "Uranium of Russia".

JSC Elkonky GMK is created in November 2007г. For working off of deposits Elkonky of the uranium-ore area, being one of the world's largest (4,3 % of taken world reserves). Now there is a development of the feasibility report and works on progress of an infrastructure are carried out. Stocks of passing gold in contours of uranium-ore bodies only on deposits of a zone Southern exceed 140 t (an average content - 0,8 g/t), silver - nearby 1800 t (an average content - 10 г/т). On deposits Amicable and Mineevskiy in a southeast part of area there is a molybdenum which total stocks here make 97 thousand t at an average content of 0,12 %.

The net cost of the Yakut uranium will make no more than 80 руб./kg while in the world market this kg costs from 170 up to 250 \$. In

parallel with uranium ore, from deposits will take gold and silver besides in this area molybdenum.

Itself ARMZ is detected also is ready to attraction of strategic investors. While a unique example of participation of the private company in the uranium project is development of a deposit Lunar in Yakutia which ARMZ it is measured to carry out together with «Gold Seligdar».

But the company also declared, that negotiates with «Metalloinvest», «Базэлком», "Interros" and Japanese Mitsui for their participation in development Elkonskiy in Yakutia, as well as Оловского and Mountain in Transbaikalian edge.

Elkonskiy uranium ore area is located in 50 km to the east of Aldan and in 40 km to the south Tomмота. On the area 40 km² is about 40 uranium deposits. Largest of them are sites of Southern zone Elkon - deposits Elkon, Elkonskiy a plateau, Kurung, Impassable, Amicable.

On these deposits it is planned to construct Elkonskiy mountain-metallurgical combine a designed capacity up to 5 thousand tons of uranium a year.

Thus in passing 1570 kg of gold and 17900 kg of silver every year will be extracted. The period of a recoument of the project will make 13,2 years, time of operation - 70 years. Realization of project Elkonskiy of metallurgical combine will allow to increase extraction of natural uranium in Russia 2,5 times in comparison with 2006.

The modern mining complex will carry out all the works connected with extraction of uranium ore, its enrichment, processing and release of a concentrate of natural uranium on creation MMC rub. Timeframe of construction Elkonskiy of mountain-metallurgical combine - with 2009 for 2016 is required up to 90 billion. The beginning of trial operation is planned for 2013, an output on a designed capacity - 2024.1. Quantitative and qualitative parameters of uranium resources of Southern Yakutia will allow to change cardinally a complex situation in a uranium complex not only Siberia, and all country the nearest years will strengthen MMCБ uranium in Russia.

Scales of stocks of uranium resources of area and accordingly significant capacities designed uranium extracting the enterprises capable to finish extraction of uranium ores up to 10 thousand tons, will allow not only to exclude expensive import, and to the contrary, to export uranium raw material.

The role of uranium resources of Southern Yakutia consists in the maximal self-maintenance of the country with uranium raw material, minimization of import.

2. Will expand geography and scales of presence of the Russian raw material in the world market of uranium.

3. Completely will provide internal demand of atomic engineering of Russia, at the same time significantly reducing import of uranium.

4. Russian «Uranium holding ARMZ» will leave on leading positions in the world uranium market.

Thus, development Elkonkiy of uranium area is a strategic branch problem as a result of which decision east vector of a uranium complex will take leading seat not only on Russian, but also the world market of uranium.



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