

## STRATEGIC PROBLEMS OF THE PETROLEUM INDUSTRY OF BASHKORTOSTAN

For the last 64 years the petroleum industry of Bashkiria has passed a long and heavy way, since opening the first deposit near Ishimbay and finishing construction of the largest in Europe of a complex on oil refining. For this time in republic it was extracted more than 1,2 billion tons of petroleum, the enormous infrastructure including objects oil-extracting and a petroleum-refining industry and largest in Russia system of pipeline transport was constructed. On a boundary of change of millennia, during integration of economy of Russia in world economic system the petroleum complex of Bashkortostan appeared in heavy crisis. The whole cart of the strategic problems demanding the deep analysis and radical re-structuring of all fuel and energy complex of Bashkortostan has collected.

Perhaps, the most important strategic problem is *the exhaustion of petroleum deposits* in republic. Apparently from tab., the volume of an oil recovery in Bashkiria, since 1967 (peak of an oil recovery), was steadily reduced, having reached in 2000 11,9 million t/year. In comparison with peak of extraction the general decrease has made 4 times. The following tendency however is appreciable: rates of fall of extraction for last years have decreased about 5,2 million t/year up to 0,4-0,5 million t/year. The circumstance speaks application in the greater volume of methods of increase of oil recovery (including the latest development, such as horizontal drilling, physical and chemical and gas methods of petroleum extraction) and geographical diversification of activity of joint-stock petroleum company "Bashneft" (development of 2 deposits in Khanty-Mansiysk autonomous region).

The table

Volumes of an oil recovery in Republic Bashkortostan for 1967 – 2000 (million t)

Year	1967	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Volume of an oil recovery	47,8	28,2	23,0	21,0	19,0	16,6	15,6	14,3	13,4	12,9	12,3	11,9
Change of volume of an oil recovery	–	–	5,2	2,0	2,0	2,4	2,0	1,3	0,9	0,5	0,6	0,4

As a whole with the big share of probability it is possible to predict the further decrease of volumes of an oil recovery in republic. Such menacing forecast is made on the basis that the majority of maintained oil fields went in a late stage of their development, and some of them have already entered a finishing stage. Rates of petroleum stocks growth from realization of prospecting works three times lag behind rates of its extraction. As a whole the degree of petroleum resources development in republic has come nearer to 70 %. The staying in bowels of 30 % of petroleum has high cost of extraction. Under forecasts of experts of joint-stock petroleum company "Bashneft" the volume of extraction in 2005 will make 8 million t petroleum/year, and

more than 17 % of petroleum the company will extract outside republic.

However it is not necessary to exclude an opportunity of opening of the big oil fields in Bashkiria. In 20-s' years of the last century academician I. Gubkin carried out the comparative analysis of geology of North American and East Europe platforms which has shown their big similarity. According to forecast Gubkin, to the west from Ural the same large oil fields and gas, as in western spurs of Appalachians should settle down. Other large scientific academician Arkhangel'sky adhered to the same opinion.

Basing on the mentioned above statements of authoritative scientists the Bashkiria's geologists (T. Kazantseva, J. Kazantsev, D. Postnikov, M. Kamaletdinov) have put forward idea that in Bashkortostan still there are large rich oil fields. Their assumptions are based on opening of oil-and-gas deposits in a thrust belt of Rocky Mountains, and also in Appalachians which structure as it was already specified above, finds out the big similarity to Ural. The close geological structure also has open in reef adjoinment of Eastern Siberia a huge oil field with stocks more than 1 billion t. The Bashkiria's scientists conclude there is petroleum in republic. Realization of extensive front of geological researches with drilling prospecting chinks is necessary only.

For the sanction of a raw problem the Academy of sciences of republic Bashkortostan has accepted the program "Petroleum and gas of Bashkortostan" (head R. Nigmatullin) which is directed on creation of scientific ranges where authors of new ideas can test them and in case of success to finish them before industrial introduction. The Bashkiria's geologists chose range in territory of Bishbuljask's area, the license for studying of geology and searches of oil fields and gas was received. But as they say " a cart and nowadays there ". The program has not paid, that only testifies to the indifferent attitude of government officials to use of scientific ideas in innovational activity of the petroleum companies.

The problem of *introduction of scientific ideas and development in the industry* is complicated specificity of prospective oil fields. As is known, Pre-Paleozoic thicknesses are located deeply under the ground, demand rather deep drilling and, consequence, rather large financial expenses. Probably, it will more cheaply to buy raw material from other regions of Russia. However experience of the USA companies shows (in Appalachians already there is an industrial development of deposits), that the prospect of extraction in such deposits has high potential. Therefore the state should not shift completely investigation of deeply deposited thicknesses on the companies and to take a part of risk on itself. Especially it concerns the government of Bashkiria as opportunities of joint-stock petroleum company "Bashneft" to make such investigation with each year are reduced, in connection with that more forces, means and time for maintenance of a level of extraction of deposits taking place on a late stage of development are necessary to spend the company.

Nevertheless the company will carry out such deep investigation. So in Kigi area the parametrical chink was incorporated on depth of 4,5 km. Geophysics hope to open there a new oil field which will allow to stabilize an oil recovery in republic.

The exhaustion of petroleum deposits in Bashkiria has caused a problem of *loading of capacities of oil refining plants (ORP)*. Apparently from fig. 1, in Soviet times volumes of oil refining in Bashkiria lagged behind volumes of extraction in its territory almost in 1,6 times. Full loading of capacities was provided due to oil refining from

Western Siberia. To present time rate of backlog of extraction from processing has a little bit increased and has made 1,7 times. The situation in the most petroleum complex of Bashkiria however has already changed: it became independent, sovereign, and, consequence, without sources of raw material outside republic. The circumstance was directly reflected in manufacture of the basic kinds of mineral oil (see fig. 2). Since 1990 manufacture of gasoline was reduced in 1,5 times, diesel fuel in 2,2 time, black oil in 2,6 times. And only in 1999 in connection with growth of the world prices for petroleum the tendency to growth of volumes of manufacture of the groups of mineral oil was planned. To the greatest degree growth was observed on manufacture of gasoline from which the most part was received from petroleum which have handed over for processing.

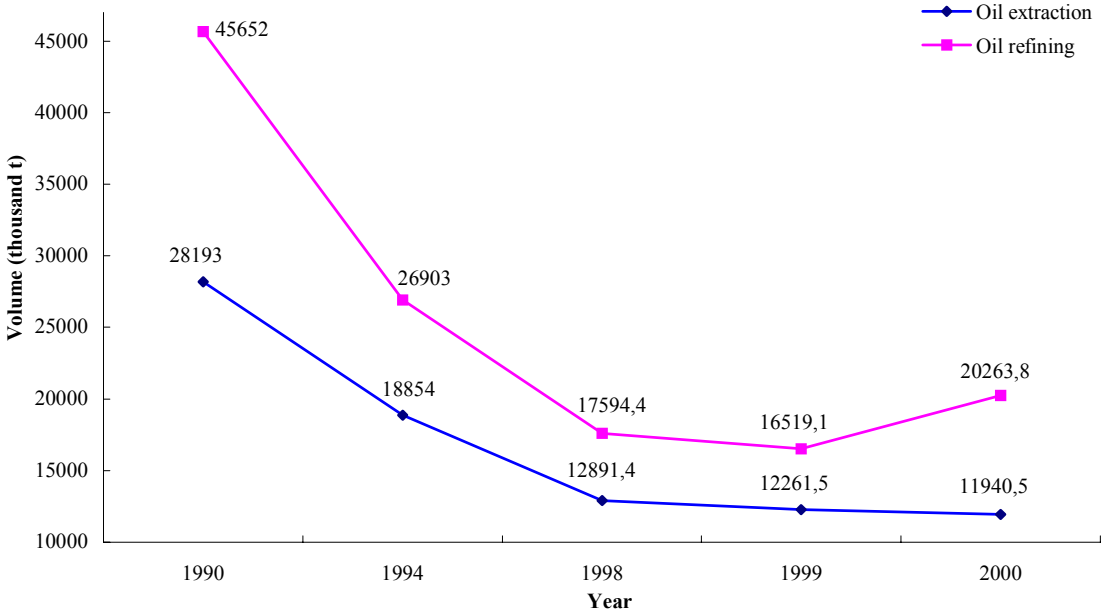


Figure 1 Extraction and oil refining in republic Bashkortostan

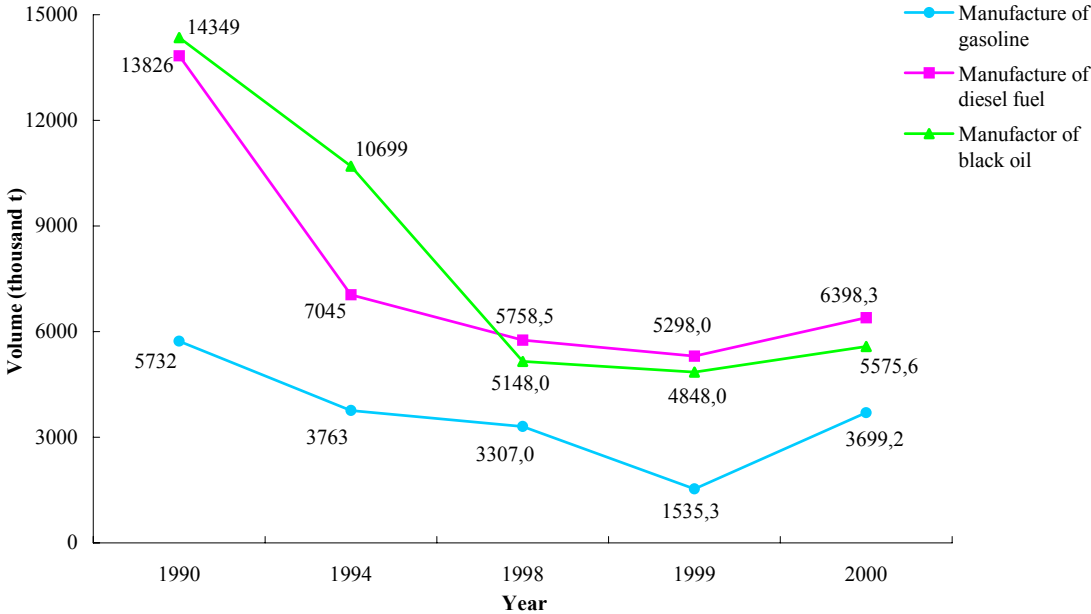


Figure 2 Manufacture of gasoline, diesel fuel and black oil in republic Bashkortostan

On results of 1999 loading of capacities on initial oil refining at the joint-stock company "Bashneftehim" has made 46 %, at the joint-stock company "Salavatnefteorgsintez" – 40,3 %. And the share of raw material which have handed over for processing, at joint-stock company "Bashneftehim" has made 68,1 %, at joint-stock company "Salavatnefteorgsintez" – 73,8 %. The main reason of such low loading became impossibility of creation high-grade vertically-integrated petroleum company (HgVIPC). Available in republic VIPC "Bashkiria's Fuel Company" is some kind of "the slow hippopotamus" in whom are combined a weak obtaining part, the "old" processing part (a high obsolescence of a fixed assets) and poorly ramified for HgVIPC in scales of Russia a marketing network. The disproportionate structure of the company is one of principal causes of inefficient functioning parts included in it. Probably, it is meaningful to consider the problem on integration with any large Russian petroleum company.

The high share of raw material which have handed over for processing in loading capacities reduces rhythm of manufacture, raises dependence on deliveries of raw material from outside of republic, that radically contradicts the position of the sovereignty borrowed with the Bashkiria's petroleum companies.

*High deterioration of basic production assets (BPA)* in a petroleum industry should be considered in two aspects: physical deterioration and an obsolescence. High *physical deterioration* of the equipment makes for today about 60-80 %, that besides growth of operational expenses and charges on repair reduces reliability and safety of equipment operation both for man, and for an environment. Now in conditions of toughening of requirements to emissions in an environment and rules under the safety precautions the petroleum companies of republic are compelled to pay the big sums of penalties for their infringements.

The greatest damage from high deterioration BPA is suffered by the companies of pipeline transport. In Bashkiria two such companies function: Open Society "Uralsib" and Open Society "Uraltrasnefteproduct". Despite of the monopoly position in the market these companies do not have means even for simple reproduction of the network of pipelines. The most part of pipes has approached to the normative service life, and another already has stepped over it. In a case of the cataclysms bringing in flood of petroleum or mineral oil these companies should spend significant financial resources on liquidation of consequences of failures not speaking about huge penalties.

As to *obsolescence* BPA here a situation is at all better. Despite of presence of the most up-to-date methods of increase of oil recovery it is continued to apply in oil extracting checked up by time but obsolete technologies. It is connected or to shortage of means for purchase of the equipment, or with unprofitableness of projects (for example, hydraulic fracturing of formation rather strongly increases the cost price of the Bashkiria's petroleum).

Depth of processing in republic averages 70 %, that it is slightly better than the all-Russian parameter (67,7 %). However real depth is below all-Russian parameter as some of the gas condensate raising an output of light mineral oil is processed on Bashkiria's ORP. If to compare depth of processing in Bashkiria to similar parameters ORP of the West-European countries, USA, Japan, it is possible to note backlog of Bashkiria on the average on 20 %.

Besides technological aspect modern management considers an information component of obsolescence BPA. Here it is possible to allocate aspiration of the majority of the Russian petroleum companies to introduce information control systems (ICS). The greatest distribution in Russia was received by system R3 (German corporation "SAP AG"), managed to integrate in itself various subsystems of the account, the analysis and acceptance of administrative decisions. In Republic Bashkortostan such system takes root on joint-stock company "Salavatnefteorgsintez". The question on its introduction in joint-stock company "Bashneftehim" also is considered. The ICS allows to save on payments, to optimize and to speed up process of acceptance of administrative decisions. System R3 reduces losses of the petroleum companies from a high degree of an obsolescence of the equipment for the account of more optimum production program in relation to consumers. Nevertheless, with universal introduction R3 in all petroleum companies of Russia advantage of the Bashkiria's companies will be leveled and so a problem of equipment obsolescence will come to solve.

Speaking about deterioration BPA always it is necessary to mean very important nuance. Despite of high deterioration BPA Bashkiria's ORP have loading at a level of 40-50 %. Therefore, considering on prospect a question on modernization of manufactures it is necessary to predict loading of factories in the future. While the most part of process equipment is inhibited. If the future of idle installations in 10 years it will be impossible to start these installations for technical reasons in the near future will not be determined.

The problem of BPA deterioration mentions other very important strategic problem: *deficiency of investments*. It is connected not only to necessity of simple or expanded reproduction of BPA, but also with an opportunity of diversification of industrial activity of the Bashkiria's petroleum companies. Since 90th years the tendency industrial diversification on the largest petroleum companies abroad was marked<sup>1</sup>. Diversification was shown in expansion in structure of a share of petrochemical and chemical manufactures, the rate of return in which with each year is increased.

Since 1990 in Bashkiria 2 objects of oil refining were entered into operation only: a complex catalytic cracking "G-43-107" on the ORP "UNPZ" and the combined process equipment on initial oil refining "ELOU-AVT-4" on the petrochemical plant "Salavatnefteorgsintez". It were reconstructed a complex of hydraulic cracking on the petrochemical plant "Ufaneftehim" (enables to manufacture diesel fuel with the maintenance of sulfur up to 0,05 %) and the process equipment catalytic reforming on the ORP "NUNPZ" (an opportunity of manufacture of world standards gasoline).

Small break was made in petrochemical branch. On the petrochemical plant "Ufaorgsintez" the complex on manufacture of polypropylene, on the petrochemical plant "Salavatnefteorgsintez" – manufacture of benzene, on Sterlitamac company "Caustic" – process equipment of vinylchloride synthesis was entered into operation. On the "Caustic" capacities on manufacture of polyvinylchloride, dichloroethane, and carbon perchlorate were reconstructed.

Thus, the most part of objects of oil refining was reconstructed that it is no wonder at surplus of processing capacities. And in petrochemistry, despite of construction of a

complex of polypropylene due to which all propylene burnt earlier has found application, the situation as a whole was not improved. The most part of objects was only reconstructed, and new objects (except for a complex of polypropylene) include manufactures of petrochemical products already made in Russia. The unique manufactures which are not having analogues in Russia are not present in republic. Is more truly, but all of them are not lead up to start. So Blagoveshchensk complex "Polief" became "the talk of the town". On the future factory the equipment on manufacture of terephthalic acid by a total cost 650 million US dollars is already put. However the enterprise tests shortage of means for the first-order start. The similar situation has developed on the Ishimbay specialized factory of catalysts where there is an equipment on manufacture of catalysts for the process equipment of catalytic cracking.

Other situation has developed on chemical plant "Ufahimprom" where the technological structure gives an opportunity of manufacture of polymers from carbonate substances. For construction of a complex of polycarbonates the enterprise does not have financial assets, as well as there is no opportunity to involve them from the outside.

To involve investments in a petroleum industry of Bashkiria rather difficult problem. The circumstance is caused by that in the advanced countries is considered favorable to make petroleum and petrochemical products instead of to export raw material; therefore all investment means there go on expansion of own manufacture. Therefore in Russia where all petroleum companies require modernization and test shortage of investment resources to expect for inflow of investments from abroad it is not necessary. Thus, to the petroleum companies of republic will come to expect or for own forces (that, basically, occurs), or to search for cooperation (by creation of joint ventures) with others VIPC of the Russian Federation or even with foreign VIPC.

However, despite of shortage of investments, in republic Bashkortostan there are objects which may work and give profit, but do not work. Such object is process equipment on manufacture of needle coke on ORP "NUNPZ". Because of absence of petroleum with the low maintenance of sulfur (it is necessary 6 million tons of petroleum per one year, which Open Societies " Bashneftehim " for today simply are not capable to buy) very expensive equipment while aluminum factories of Russia are compelled to buy electrodes abroad stands idle. And you see in 1996 of ORP "NUNPZ" was included in the federal program "the Russian coke" due to which the factory has received the state investments and credits. In a result at a loss there are both the enterprise, and the state, and, the most important, consumers.

The majority of the above-stated strategic problems result us in a conclusion about inability of the Bashkiria's petroleum companies to resolve these problems. The decision of many of them depends on *a state policy in the field of power*, and it just is not present. More truly the policy is, but was not realized.

In 1995 in Russia the new power policy which positions defined the basic directions of development of a fuel and energy complex of the country was accepted.<sup>2</sup> First, the enterprises of a fuel and energy complex were considered in it as the important source of financial resources and consequently it was assumed to carry on them of the basic tax burden. Second, it was provided support of domestic commodity producers

due to a special price policy who consist in an establishment of undercharges of energy for separate groups of consumers (the agricultural enterprises, the budgetary organizations). Thirdly, it was planned significant structural shift in consumption of energy, in particular mineral oil, from the industry to household sector and passenger motor transport which were traditionally subsidized by the state earlier. Fourthly, it was supposed to strengthen requirements to preservation of the environment and reliability of power supply.

Though in a new power policy comprehensive support of the petroleum companies by the state was provided there was the opposite. State financing large investment projects now has practically stopped, the petroleum companies should pay large penalties for delayed payments in the budget (which, in turn, were caused by non-payments of consumers of mineral oil), there is an active intervention of local authorities in activity of the companies. So, Bashkiria's ORP carry out shipment of mineral oil to the enterprises for the decision of the cabinet of Republic Bashkortostan. Shipped production in due time is not paid by consumers, but also it is not accepted in offset on account of payment of taxes in the local budget. All this has resulted in delay turnover of capital and to growth of creditor debts of Bashkiria's ORP.

As practice has shown carry of tax burden on the company of a fuel and energy complex has not justified itself. For ten years of reform the economic situation in the country has sharply worsened. The policy of decrease of power consumption of production and the power savings of resources has not received the real introduction. Thus, all budgetary and financial state support of the fuel and energy complex has not brought feedback and the fuel and energy complex appeared in a pitiable condition.

The legislation of our country is rather imperfectly. In joint-stock petroleum company "Bashneft" there is a plenty of the idle chinks which are taking place in preservation owing to unprofitableness of their operation. According to clause 46 of the federal law "About Bowels" providing an establishment of different rates of the excise on deposits with different mountain-geological characteristics, and according to the decision of the government of the Russian Federation N 1213 from the November, 1, 1999, appointing on petroleum extracted from reactivated chinks the zero rate of the excise, joint-stock petroleum company " Bashneft " has an opportunity to remove from preservation a number of chinks and thus to increase volume of an oil recovery. However the given opportunity is closed with last amendment of the law "About Excises". It establishes the uniform rate of the excise on petroleum irrespective of geological conditions of a deposit. Speaking language of logic the vicious circle was formed in the legislation. In result "Bashneft" and all petroleum companies of the Russian Federation appeared in an uncertain condition, planning manufacture why is at a loss. But, it very important, economic stimulus to prolongation of the period of chinks operation and introduction of methods of increase of petroleum feedback of layers vanish.

The certain work on development of strategy of development of a petroleum industry was undertaken in Bashkortostan. In 1997 the government of republic accepted the program of social and economic development "Bashkortostan. A Way to 21 Century: the Nature, People, Economy, the State". In this program in subitem "the Fuel and Energy Complex, Chemistry and Petrochemistry" were determined the basic

directions of development of a fuel and energy complex of republic. The basic strategic direction of the program was the output on power self-sufficiency of republic and on preservation of its power independence. In oil extracting it was planned to commission a part of the unprofitable and inhibited chinks, to increase petroleum feedback of layers by development of oil fields by system of horizontal chinks and lateral trunks in earlier drilled chinks, to introduce of physical and chemical and gas methods of extraction of petroleum. For increase of an oil recovery in the program it was assumed development of small petroleum deposits in republic and expansion in Udmurtiya and Western Siberia.

In the program it was planned also increase of efficiency of prospecting works due to perfection of methods of search of congestions of hydrocarbons. The source of financing of prospecting works determines means from republican fund of reproduction of a raw-material base.

In oil refining it was assumed optimization of industrial structure of Open Society "Bashneftehim" and Open Society "Salavatnefteorgsintez" with improvement of quality of made mineral oil.

As a whole strategy of the program was directed on search of internal opportunities of a survival of the Bashkiria's petroleum companies. For this purpose creation VIPC which was embodied later by formation of "Bashkiria's Fuel Company" was offered. However weakness of its structural parts, geographical isolation of the company and rather strong pressure upon it on the part of local authorities (real owners of the company) alongside with destructive on the character a state policy of the country concerning a fuel and energy complex have predetermined the further deterioration of an economic condition of a petroleum industry of republic Bashkortostan.

Though today because of the high world prices for petroleum the financial condition of the Bashkiria's companies was improved (all of them from unprofitable became profitable), all cargo of the above-stated strategic problems was kept at them. Development and acceptance in Russia a new power policy and revision of strategy of development in "Bashkiria's Fuel Company" are necessary for their decision. Probably, it is meaningful to think of refusal of isolation of the Bashkiria's companies and their integration with Russian VIPC (by merge to another VIPC, formations of a strategic alliance, or even sales of standing idle processing divisions).

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<sup>1</sup> More Money for the HPJ // Hydrocarbon process – 1991 – 70, №9 – p.15

<sup>2</sup> Новая энергетическая политика России.– М.: Энергоатомиздат, 1995