

# Production operation of small petroleum enterprises in Tomsk region

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**Abstract.** Implementing resource-innovative strategy to develop Russian fuel-and-energy sector implies the promotion of small oil production enterprises developing fields with the reserves of less than 5 mln. tons. However, the efficiency of such enterprises, investigated on the example of Tomsk region (considering the indexes of oil extraction, growth of reserves, amount of capital expenditures and geological surveys), signifies the presence of definite tendencies. Consequently, management decisions concerning economic, organizational, financial and fiscal character should be taken in order to eliminate detrimental factors.

## 1. Introduction

The objective set by Russian Federation Government to create favorable conditions to stimulate the activity of small and middle-size enterprises in the sphere of small and challenging field development, is supported by small petroleum enterprises in all oil producing regions of the Russian Federation, as well as in Tomsk region. However, the realization of these objectives does not always give positive results.

At present, the majority of fields, discovered in the Russian Federation, refer to the category of small ones, with the average reserves amount of about 4 mln.t. [1]. The large number of such fields is located in Uralo-Povolzhje and West Siberia.

Usually, small and middle-size fields are not very attractive for large petroleum enterprises. This predetermines the substantial contribution of small enterprises to the development of petroleum sector. For instance, there are more than 7000 of such enterprises in the USA and the total share of these enterprises in the whole petroleum production is more than 46%.

Considering the fact that in Russia, as well as in the whole world, small and medium-size enterprises develop the fields with the reserves of less than 5 mln. tons and that in the unallocated reserve fund there are only fields where it is unlikely to develop large deposits by implementing modern scientific knowledge and technologies, the social and economic significance of small and medium-size enterprises will be growing in future.

The present article aims to analyze features, tendencies and challenges of small petroleum enterprises in Tomsk region, which are the subsidiaries of large corporations or refer to the independent oil producing companies.



## 2. Small petroleum enterprises. Characteristics

Information field analysis has revealed the essential criteria-based differences when referring the company to the category of individual oil producer (IOP).

At present, according to the Ministry of Energy of the Russian Federation data on January 1<sup>st</sup>, 2014, among 294 of petroleum enterprises 111 are within 10 vertically integrated companies (VIC), the share of which is 87.4 %; 3 enterprises operate in accordance with the Federal Law “On Production Sharing Agreement”; 180 independent producing companies are outside VIC.

IOPs are the enterprises that produce oil with the amount of liquid hydrocarbons being refined of less than 1 mln. t., regardless the amount of extraction [2]. The same criterion could be applied when referring the company to the sphere of small subsurface users.

The Skolkovo Innovation Center and noncommercial association “Assoneft” suggest the following criteria of relevance to IOP (table 1) [3].

**Table 1.** IOP relevancy criteria.

Criteria	Definition
1 Oil refining limit	Outside the Group of Persons; total amount of liquid hydrocarbons being refined within the last year is more than 1 mln. t.
2 State freedom	Outside the Group of Persons, which includes legal persons, with the share of the Russian Federation in the authorized fund of more than 50%.
3 Retail trade limit	Outside the Group of Persons; total amount of hydrocarbon retail trade within the last year is more than 50 million rubles (excluding VAT and excise duties).
4 Group of Persons	In accordance with the Federal Law “On Protection of Competition” (Article 9) or in accordance with The Tax Code of Russian Federation (Article 20).
5 Scale of production operation	<i>Small enterprises:</i> outside the Group of Persons; total amount of hydrocarbon production within the last year is not more than 300 thousand tons.  <i>Middle-size enterprises:</i> outside the Group of Persons; total amount of hydrocarbon production within the last year is not more than 5 mln tons.

This approach focuses on the legal background of business operations and annual oil output. It should be noted that contrary to VIC, the production operation of small enterprises does not include all the technological processes such as exploration, transporting, refining and marketing. Basic operation areas are development and production of hydrocarbons.

According to the data, collected by “Skolkovo”, the share of IOP in exploration drilling for the year 2012 was 17%, in production drilling – 3.8 % [3]. Besides, 38 % of the companies were involved only in geological surveys while 52 % of the companies were producing oil. The rest 10 % of the companies were at the initial stage of their development.

The criteria-based differences, mentioned above, are clearly shown by oil production data. Considering “Skolkovo” data, the share of IOP in total oil production has reduced for the last 10 years to 3%. In 2012 it was 2.8 %, about 14.4 mln t. with more than 60 % of IOP producing less than 50 thousand tons of oil per year. However, according to the Ministry of Energy of the Russian

Federation, the share of IOP in total oil production is increasing. From 2005 to 2013 the growth was 5 %. In 2013 – 2.3 % (65.9 mln t). This underlines the social and economic significance of IOP both in national and regional scale of production operation.

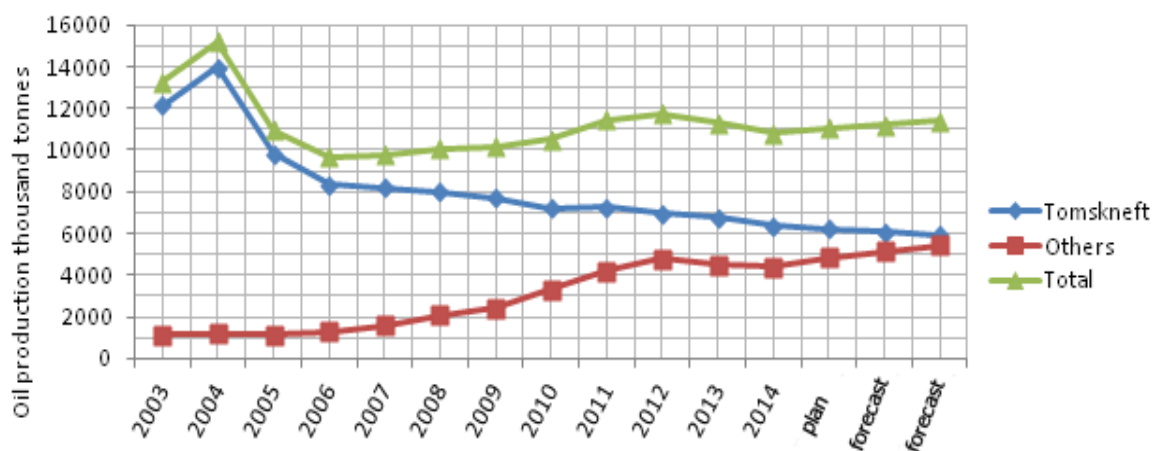
### 3. Production Operation of Small Enterprises in Tomsk Region

Tomsk region, due to its geological history, has a great number of small and middle-size deposits. According to “Tomsknedr”, 131 of hydrocarbon deposits were discovered in Tomsk region – 102 oil deposits, 21 oil and gas condensate, 8 gas condensate. Among 131 deposits, 112 refer to small deposits and 6 to large. 34 enterprises are operating on the territory of Tomsk region. Only 15 are engaged in hydrocarbon production.

Oil production analysis shows, that OAO “Tomskneft” has been the leader of oil production for many years. The other two groups are made by companies producing less than 1000 thousand tons and companies with oil production volumes less than 100 thousand tons. However, the role of small enterprises constantly increases. This allows maintaining the sustained level of oil production in the region – about 11 mln. t. (figure 1). Oil production targets were achieved on 96%. It should be noted that only three enterprises managed to increase oil production as compared with the year 2012 (OOO “Gazpromneft-Vostok”, OAO “Tomskgazprom”, OOO “Tomskgeoneftegaz”).

Reasons that lead to such situation:

- The majority of small enterprises obtained exploration license during the last 10 years. Due to this, they are only at the initial stage of development.
- The majority of companies own from 1 to 3 licensed fields with small deposits. The leading enterprise OAO “Tomskneft” VNK has 51 deposits, among which 29 are at the stage of development. This points to the conservation of fields as deferred assets.



**Figure 1.** Tomsk region production profile.

- Reducing exploration drilling volume and the number of production wells.
- Geological and operational arrangements of enterprises turned to be insufficient to compensate the natural decrease in oil production due to reservoir depletion and water content.

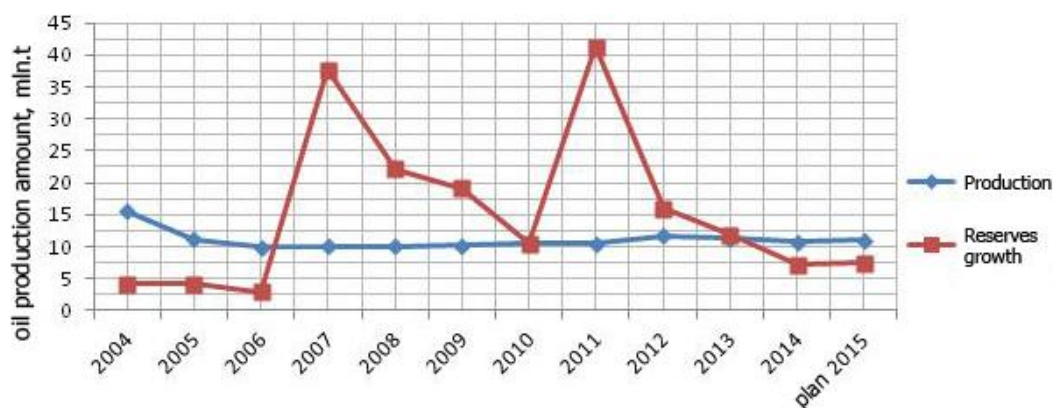
Besides, long term prospective of enterprise production operation is defined by constant growth of hydrocarbon reserves and consequently by geological surveys and drilling.

At present, subsurface users try to rehabilitate the mineral reserves base. But because of the lack of own financial-investment resources and difficulties in obtaining credit sources due to high interest rate, the geological survey programs could not be implemented into scale. Furthermore, the dynamics of finance provision, considering macroeconomic factors, is volatile despite the total positive trend

during the last ten years (figure 2, table 2). Innovative scientific methods play the basic role in the growth of reserves.

**Table 2.** Plans and execution of geological surveys in Tomsk region.

Year	Type of production operation					
	Drilling (thousand line meters)		2D seismic survey (line kilometers)		3D seismic survey (km3)	
	Amount	Compared to previous year	Amount	Compared to previous year	Amount	Compared to previous year
2009	71.2		4205		745	
2010	104.7	147.05%	1454	34.58%	535	71.81%
2011	92	87.87%	2514	172.90%	1350	252.34%
2012	52	56.53%	1996	79.40%	1140	84.44%
2013	38	73.08%	600	30.06%	1468	128.77%
2014	50.2	132.11%	673	121.17%	1335.8	90.99%
Plan 2015	64.6	128.69%	3750	557.21%	1885	141.11%



**Figure 2.** Production dynamics and reserves growth.

In general, enterprises investments into the basic stock are distributed as follows:

- field facilities construction;
- exploration drilling;
- oil and gas pipeline construction;
- equipment;
- well workover;
- design an survey works.

It should be mentioned that there is a growth in expenditures on field facilities construction (44% from capital expenditures in 2012, 49% – in 2014) and exploration drilling. As a result, further growth in oil production could be observed among small petroleum enterprises [4].

#### 4. Fiscal stimulus of small petroleum enterprises production operation

In order to stimulate small petroleum enterprises production operation, the coefficient, characterizing the amount of reserves of definite field ( $K_r$ ) (equation 1), was introduced on January 1<sup>st</sup>, 2012 to calculate the Severance Tax ( $ST$ ). This coefficient allows decreasing tax burden as it depends from the amount of extracted oil reserves ( $V_r$ ) and the degree of reserve depletion ( $C_{rd}$ ) of definite field [5].

$$K_r = 0,125 \times V_r + 0,375 \quad (1)$$

Conditions of given calculation algorithm application:

- Amount of initial extracted oil reserves  $V_r$  should be less than 5 mln t.
- Degree of reserve depletion  $C_{rd}$  should be less or equal to 0.05.
- Date of issuing the license for the right of subsoil resource use (January 1<sup>st</sup>, 2012), which defines the period of fiscal preferences.
- The given algorithm could not be applied to the zero-rated oil and to the oil, which was produced in the amounts not exceeding the initial oil reserves. In this case  $K_r$  is equal to 1.
- Each well should be equipped with oil metering units.

Definite positive influence on oil production enterprises should be considered [6]. However, despite tax preferences, tax burden remained quite high. Calculations, made according to the data obtained from small oil fields in Tomsk region, showed that the share of  $ST$  in production costs was 50%. The share of  $ST$  in tax payment – 70%.

From January 1<sup>st</sup>, 2015  $ST$  calculation formula has changed (equation 2). In accordance with the Article 342.5 of The Tax Code of the Russian Federation, the specific rate  $K_{st}$  changes as follows: 766 rub/t in 2015, 857 rub/t in 2016, 919 rub/t in 2017. It should be mentioned that earlier the planned rate for the year 2015 was 530 rub/t, for the year 2016 – 559 rub/t.

$$TotalST = Q \times (K_{ST} \times K_P - D_s) \quad (2)$$

where:  $D_s$  – index, characterizing oil production (equation 3)

$$D = K_{ST} \times K_P \times (1 - K_{fd} \times R_r \times R_c \times R_{rd} \times R_{rp}) \quad (3)$$

where:  $K_{rp}$  – coefficient, characterizing region of oil production and oil properties;

$K_p$  – coefficient, characterizing dynamics of world oil prices;

$K_{fd}$  – coefficient, characterizing degree of definite oil field depletion;

$K_c$  – coefficient, characterizing the degree of oil production complexity;

$K_{rd}$  – coefficient, characterizing degree of definite oil reservoir depletion.

The essence lies in transferring of tax burden to the production sector and cutting of export tax in order to stimulate oil refining industry [7, 8], as well as applying of tax incentive to stimulate the production of hard to develop reserves. It should be also mentioned, that in the world petroleum market unconventional oil reserves that are hard to develop will be more attractive in the long run [9,10]. Consequently, small oil production enterprises of Tomsk region have a large potential as the region is rich in unconventional oil reserves, for example Bazhenov suite. However, small enterprises, as it was mentioned above, are not engaged in oil refinery and foreign trade. The analysis showed that the amount of  $ST$ , per one ton of oil paid in December 2014 and January 2015, increased on 17%. This could exacerbate the unstable financial position of small enterprises.

Additional factors of economic and organization character, negatively affecting the production operation of small enterprises, could be defined.

- Small enterprises could not establish the oil sale price independently. Prices are established by:
  1. VIC when transporting oil to the oil refinery plant (ORP);
  2. Higher corporation or the Headquarters;
- Prices in the domestic market are lower than in the foreign market.
- Dominating petroleum corporations create additional barriers in order to block the access to oil pipeline system and trading markets.
- Higher specific expenditures, as compared to VIC, namely on preparation of commercial oil before transporting it to the main pipeline system.

- Limitation of access to financial and investment resource of banking sector and stock exchange due to relatively low income.

These facts significantly reduce the possibility of business development.

## 5. Conclusion

- Petroleum industry of Tomsk region is attractive in terms of investment potential due to the demand for small and middle-size deposits in the world market, as well as due to the presence of large number of unconventional oil reserves.
- Further development of financial and tax tools for stimulating small petroleum enterprises production operation is necessary. It is also more efficient to replace the Severance Tax with Tax on financial result for reserves which are hard to develop, as current financial benefits are more reasonable for financially stable large corporations, not for small oil production enterprises.
- It is necessary to adopt a special law to eliminate industrial factors restricting small oil production enterprises development.

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