Attempts of Forcing Oil Production on the Eve of the Great Patriotic War

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Abstract: In this study, the problem of attempts to reorganize the USSR's oil industry on the eve of the Great Patriotic War and speed up oil production and oil refining to ensure industrialization and defense plans are investigated. The conclusion is formulated that the plans were not fully supported by financial, human, and technological resources. The reasons for the failure to fulfill the plans were strategic miscalculations, ignoring the recommendations of leading scientists and the repression against a significant number of brilliant oil specialists who restored industry in the 1920s, reconstructing it and ensuring the flow of currency through the expansion of oil exports. The measures taken on the eve of the war to reorganize the management of the oil industry, its technical re-equipment, and intensification of oil production yielded specific results. But the growth rate of production was also hindered by insufficient exploration of areas and their unpreparedness for exploitation. Before the war, Azerbaijan remained the main oil base of the USSR. The development of "Second Baku" was unacceptably slow.

Keywords: Forced industrialization, technical re-equipment, oil industry, Great Patriotic War, industrialization.

INTRODUCTION

On the eve of the 75th anniversary of the USSR's Victory in the Great Patriotic War, it seems extremely important to objectively and on the basis of documentary data consider problems related to determining the degree of a country's readiness for war, the level of available economic and defense potential, and the significance of each year that separates the country from the outbreak of hostilities (Labzunov, 2017). In addition, the critical importance for modern Russia of the technological breakthrough is exceptionally relevant to the problem of studying the search for mechanisms of implementing national projects during the years of forced industrialization in the USSR, identifying both achievements and errors of judgment made in the 1930s. Historical experience allows us to draw lessons with a view to their non-repetition (Bodrova & Kalinov 2019).

METHODS

The current stage of Russian historiography of the problem is characterized by an attempt by the authors to go into wider analytical generalizations, to use various theoretical and methodological approaches. In recent years, a number of publications have appeared on the development of the oil industry in the 1920s and 30s (Igolkin 2005; Kalinov, 2018). But only at present days, many of the archival materials of that time were declassified.

The paper adopted the modernization theory as a base. The specifics of the Russian model of modernization consists in its catching up, military-political, and in many ways "borrowing" character which determined the special role of the state in its acceleration, progressive centralization, and mobilization management methods.

RESULTS AND DISCUSSION

The documents and materials that we studied prove that the development plans for the oil industry of the USSR were large-scale and impressive, but they were not fully supported by financial, human, and technological resources. On the one hand, the geopolitical situation did not give our country a chance to develop without extremely intensified statist and mobilization measures, and the results were more than impressive. On the other hand, forcing the pace and volume of production without taking into account scientific recommendations sometimes led to the most negative consequences for the economy and defense. A number of examples include not only miscalculations made during the implementation of state policy in the oil sector in the 1930s, but also oblivion of historical lessons in the late Soviet period, when, according to the most prominent industry experts, truly poaching methods of oil production were used, and the export of raw materials was boosted in every way; the export proceeds were mostly directed to food purchases, but

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not to technological re-equipment of the oil and gas complex and modernization of the country as a whole (Kuryatnikov, 2013). The inefficiency of the economy began to be offset by oil and gas revenues. The USSR continued its development within the framework of the industrial paradigm.

Among the strategic errors of judgment in the period of forced industrialization, we consider it legitimate to call the authorities' reluctance to take into account the proposals of specialists on the urgent conduct of large-scale geological exploration and the creation of an appropriate governmental service. So, in June 1932 academician I.M. Gubkin wrote about "an unacceptable lag in the area of reserves prepared for operation for many types of mineral raw materials, which could sharply adversely affect the capital construction of industry even during the 3rd Five-Year Plan." The basis of the search for minerals, i.e. the geological map was in a state which, according to his assessment, was “not ensuring the state interests and, due to the almost complete absence of attention from the leadership of the state, has significantly decreased in quality” (Igolkin 2009). If in the first half of the 1920s and in the first years of the first five-year plan, the development of the main deposits in the USSR (in Baku and in Grozny), was provided by reserves explored and prepared, at that time there was no gap between the mining works prepared for production stage (exploration and production drilling) and clean-up extraction (production stage). Later, the law on a strict ratio between reserves prepared for development, and the so-called second working at deposits was disrupted. The rates of oil production and oil export were boosted. But in the early 1930s, plans were not implemented. In 1932, almost 6 times more oil was produced in the USA than in the USSR. As a result, according to I.M. Gubkin and A.P. Serebrovsky (subsequently repressed), already in 1933, in a number of areas of Azneft a significant part of the wells could be decommissioned. “Another dismal situation is in the Grozny region,” wrote the most respected industry experts. “The total reserves were estimated at 100 million tons, while the prepared reserves were calculated in very insignificant numbers...” (Kuryatnikov, 2013).

They defined mastery of the “deep drilling technical process itself”, production of appropriate equipment; training qualified personnel who were to be sent for this purpose in the United States as “one of the most urgent tasks of this moment” (Gorbunov 1936). However, as evidenced by the materials of the meeting in the Industrial Department of the Central Committee of the Communist Party, held on April 4, 1935, and devoted to the analysis of the results obtained after training of engineers sent to the United States after graduating from Soviet universities for further training, they enthusiastically returned in the capacity of young specialists, and were very coldly received at home, where they were not allowed to execute serious work (Slavkina, 2012). Many of them were subsequently repressed. Of interest are the assessments given at this meeting to the Soviet and the United States’ system of higher technical education: "significantly less knowledge gained there (about 40% less), low level of fundamental training." But at the same time, among a number of features there were also called the following: the most appropriate form of work; a definite, “understandable” training system; gaining the ability to spend a minimum of time. Students in the United States were not too busy, but without fail, from the 1st year they were trained to follow the periodic technical literature and use it as an auxiliary educational material (Igolkin 2005; Kalinov, 2018).

The problem of the shortage of truly qualified specialists remained acute until the outbreak of war. The head of the People’s Commissariat of Heavy Industry, S. Ordzhonikidze, quite often in his speeches criticized technical colleges for the poor professional training of graduates, their inability to organize and manage, and low erudition: “Where there is no cultural knowledgeable engineer, there is no organized production”. And he called on the leaders of technical colleges: “You must give us those engineers and technicians!” (Slavkina, 2012; Bodrova, 2018).

When developing plans for the second five-year plan, they tried to take into account previous errors of judgement, but the task of “catching up and surpassing America” was determined as the main one. The pace was accelerated, oil production volumes increased without taking into account available resources. Then the plans had to be adjusted in accordance with reality, including due to the apparent stagnation in oil production, and a chronic shortage of all types of petroleum products. Oil refining capacities commissioned were less than in the first five-year period (Kuryatnikov, 2013). That was the reason for the repressions, including the arrest of industry leader M.V. Barinov and his deputies in 1937, who were accused of sabotage (Slavkina, 2012). Meanwhile, as G.G. Chakhmachev (in 1933 managing the affairs of the Azneft trust, and then, since 1934, the head of the department of Glavneft, Glavneftedobycha, Narcomneft) remembered in his memoirs, the plans of

M.V. Barinov included the introduction of new equipment, and the reconstruction of existing oil fields, oil refineries, and the expansion of existing and construction of new machine-building plants, and the intensification of geological prospecting, as well as the regular provision of the entire national economy, including defense facilities, with oil and oil products. But in September 1937, by order of L.M. Kaganovich, M.V. Barinov was arrested. More than 50 people working in the oilmen's house alone were repressed (Gorbunov 1936). Meanwhile, these experts in incredibly difficult conditions were able to recover the industry in the 1920s, reconstruct it and ensure the flow of currency for the country through the expansion of oil exports.

The oil industry was called upon to provide oil products also for the military-industrial complex that was forming during this period. One of the most important tasks set for the industry science in the 1930s was the improvement of fuel quality. At a meeting at Glavneft on April 17, 1933, Professor N.M. Yakovlev focused on this very basic issue - the quality of motor fuels and oils. Tractor fleet throughout the Soviet country was used by only 60% due to low-quality fuel (!). Moreover, a significant part of the machines continued to get out of order further (Gorbunov 1936). Speakers at the meeting also spoke about problems with aviation fuel. The following basic requirements for aviation oils were listed by experts: they should be of sufficient viscosity; should have a sufficiently low pour point; higher requirements were specified in relation to stability of aviation oils in comparison with all other oils. Therefore, it was necessary to use for aviation a product manufactured from Embino oil, which required an increase in the volume of raw materials (Labzunov, 2017).

The urgency of the issue on production of high-quality synthetic oils for the aviation industry was also emphasized (Igolkin 2009). Academician N.P. Gorbunov in 1936 called the development of gasoline substitutes, the creation of new types of engines capable of working on heavy oil fuel as the most important areas, including for demands of defense sphere. He evaluated the steam-phase generating oxidative cracking system developed by K.K. Dubrovay and A.B. Scheinman and the experiments of "laboratory and semi-factory type" that had taken place by that time as a promising project. It was planned already in 1936 to start designing the construction of a number of oil refineries using this system. But there were a lot of opponents of the project; their arguments boiled down to the fact that American experts had sharply negative opinion about the use of aromatics for forced motors, and the Houdry method of catalytic cracking was opposed to the Soviet method. The resolution of the issue was delayed. On January 5, 1938, at its meeting, the Presidium of the USSR Academy of Sciences positively evaluated the work of K.K. Dubrovaya: "The oxidative vapor-phase cracking process according to the method by K.K. Dubrovaya is original and certainly an achievement of Soviet science and technology". Experiments conducted back in 1937 at the Konstantinovsky plant showed that gas oil was obtained in quality much higher than in imported liquid-phase cracking units operating on gas oil. It was possible to increase the octane number to 81-82 instead of 58-62. At the same meeting of the Presidium, it was decided to recommend the industry to use the results obtained, to begin designing the industrial plant according to the method of K.K. Dubrovaya, report to SNK (Council of People's Commissars (Soviet Government) and People's Commissar of Heavy Industry L.M. Kaganovich about the results of the Institute's work on vapor phase oxidative cracking and on the decisions of the Presidium of the USSR Academy of Sciences. But a part of Narkomneft's (People's Commissariat of Oil Industry) senior officials sharply and emotionally protested against the decision of the academicians, considering the "oxidative cracking process as not an achievement of Soviet science and technology, but a regression in the field of technology" (Gorbunov 1936). The Presidium of the USSR Academy of Sciences was to once again consider this issue, and nevertheless confirmed the previous decision. In July 1938, during the tests in the Air Force Research Institute, it was possible to achieve an octane rating of 89-90. Only in May 1941, Deputy People's Commissar N.M. Chekryzhev approved the technical design of the plant No. 33, but the Great Patriotic War began, the construction of the plant was categorized as a high priority object. The annual defense application for 1941 for aviation gasolines and aviation oils could be satisfied by the domestic oil industry only by less than 50%. Throughout the war years, the Institute of Fossil Fuels of the USSR Academy of Sciences, with the support of the Presidium of the Academy, tried to achieve the implementation of this installation. But in 1942, 4 oil refineries were ordered in the United States. The first of them was launched only in September 1945 in Kuibyshev (Sokolov, 2013).

It cannot be said that the country's leadership before the war did not realize the importance of the industry for the economy and defense. In 1938, 36.9

million rubles were allocated to put in order the fishing facilities (construction of fishing roads, compressor stations, power plants, etc.). However, in 1939, oil production increased by only 73 thousand tons. This created a disproportion between the growth of the national economy and the country's fuel balance (Igolkin 2009).

The failure to fulfill the plans, as in the early 1930s, was largely due to the lack of financial, material, human, technological resources, and the lag in geological exploration. The quantity of modern equipment was not enough. At the same time, researcher A.A. Igolkin rightly called “theoretical and ideological ideas and political imperatives” as the main negative factor bearing in mind the unacceptably slow development of the Ural-Volga oil region due to the insufficient influence of the party and economic elite of the eastern regions. Coal mining remained a priority. The recognition by the central government of the need for the quickest creation of a second oil base occurred only during the years of the 3rd Five-Year Plan. As a result, in 1940, the Ural-Volga region accounted for only 6% of the all-Union oil production (Igolkin 2009). I.M. Gubkin and A.P. Serebrovsky repeatedly pointed out the military-strategic danger of the oil production and oil refining concentration in the southern regions of the USSR. In 1933 in their memoranda to the government, they focused on the “tremendous opportunities” of the Ural-Emba region, the deposits of Turkmenistan and Central Asia. In 1931, at a session of the USSR Academy of Sciencesm I.M. Gubkin drew attention to the problem of oil search in Siberia.

In the late 1930s the attitude towards this oil-bearing region has changed, but by 1941 they failed to create a second oil base in the country. A month before his death, on March 10, 1939, I.M. Gubkin as a head of Glavgeology (Main Committee of Geology in the certificate of the most important discoveries in the results of geological exploration in the USSR for the period of 1936-1937-1938. wrote to the deputy chairman of the Council of People's Commissars of the USSR L.M. Kaganovich about "the most important... achievement of the last three years" - "the full disclosure of a number of pseudoscientific theories regarding... the ore content of the Urals and the Caucasus, the industrial oil potential of the Ural-Volga region, etc.". He reminded of other significant achievements: the introduction of geophysical methods into geological exploration and geological prospecting work, the discovery of 41 new oil fields in 3 years, and the prospects of turning the Ural-Volga region into “Second Baku”. In 1939, 19 geological parties began their work in this region, 12 new deposits were discovered there. But the equipment, the qualifications of many specialists and the organization of work left much to be desired (Igolkin 2005).

For 1940, it was planned to develop oil production in other regions. So, on January 21, 1940, a special Decree of the Council of People's Commissars “On the National Economic Plan for 1940 for the Western Regions of the Ukrainian SSR” was approved, according to which it was supposed to produce oil in this area in the amount of 300 thousand tons, gasoline production - 83.5 thousand tons, kerosene - 103.2 thousand tons. On January 27, 1940 it was adopted the Decree of the Council of People's Commissars of the USSR No. 137 "On the organization of geological prospecting and exploration in the western regions of the Ukrainian SSR and BSSR in 1940." For this purpose, 1 million rubles was allocated. A branch of the Ukrainian Geological Administration in Lviv was organized, which was provided with appropriate personnel and equipment. During the war years, these territories were occupied, and the deposits were used by the Germans (Igolkin 2005).

On the eve of the war, the main stake was placed on the main oil-producing regions: Azerbaijan and Grozny. Meanwhile, archival documents indicate very rigorous assessments contained in the decisions of the highest party-state bodies with regard to the activities of the oil refineries operating there. A very severe situation that has developed in the oil industry on the eve of the Great Patriotic War is evidenced by the document that was not previously announced. The statistics and estimates contained in it demonstrate the true state of affairs. We are talking about the Resolution of the Central Committee of VKP (b) (All-Union Communist Party) and the Council of People's Commissars of the USSR No. 136 dated 01/27/1940 “On measures to strengthen oil production and refining in the Azerbaijan SSR” (Kalinov, 2018).

In particular, this document noted the lag in "the development of the Azerbaijan oil region which was the main oil base of the USSR" from the general development of the national economy. The Azerbaijani oil industry not only did not comply with the state oil production plan established for it in 1939, but also reduced oil and gas production by 274.8 thousand tons, or by 1.1% compared to 1938. The reasons were: insufficient attention from the All-Union People's Commissariat of Oil industry to the development of the

Azerbaijani oil industry, in particular, to the exploration and development of new oil regions of Azerbaijan; misunderstanding that "the all-round development of new areas of Azneft with a shallow bed of oil can give maximum effect with minimal metal consumption, limiting the rapid development of oil business in the USSR" (Labzunov, 2017). In addition, there were recorded absolutely insufficient rates of sealing in the oil and gas production. Among the most important negative factors, the Resolution referred again to flaws in the management system, the unsatisfactory work of the industry and the region's leadership, "which failed to timely rebuild and strengthen the material and technical base in accordance with sharply changed conditions and scope of work both in drilling, production, and on engineering plants. As a result, another reorganization of Azneftekombinat took place (Igolkin, 2007).

The management of Narkomneft was to eliminate the backlog of geological exploration, improve the quality and reduce rejects during their conduct, conduct an audit of all funds of oil fields in a 2-month period, etc. Among the measures that could give a result were: increase in salaries, premiums, increasing the number of working drilling rigs in the oil fields, and providing modern equipment. It was suggested that the regulatory authorities shall regularly check the implementation by other people's commissariats of a plan for the supply and shipment of materials and equipment for the oil industry. The Economic Council under the SNK of the USSR was charged with the obligation to ensure the priority supply of the oil industry with technical materials and equipment along with defense enterprises and construction sites. It was planned to send 187 compressors to the Azerbaijan oil industry, including 70 compressors of the "Clark" brand from the American order of 1939 (Kalinov, 2018).

At the same time, the Decree specifically stipulated that it was necessary to gradually reduce the production of equipment at the Baku plants for other oil regions, to speed up the construction of a chisel plant in Kuibyshev, to complete in 1940 the design and prepare for the construction of a heavy drilling equipment plant and a pump and reinforcement plant in the Urals region. In order to develop and improve the designs and quality of equipment and materials in accordance with the new requirements for the oil industry and in connection with an increase in depths and sinking speeds, it was proposed to widely attract research organizations, whose work during this period became increasingly relevant and close to production character. In this connection, in our opinion, the problem of the "radical restructuring" of branch science carried out at that time and its results are of extreme interest to future researchers (Igolkin, 2007).

Previously unpublished documents currently stored in archives make it possible to more reliably evaluate both the results of the implementation of the above mentioned resolution, other measures taken on the eve of the war, and the problems fixed by representatives of controlling structures and scientists. So, doctor of geological and mineralogical sciences, senior researcher at the Institute of Combustible Minerals of the USSR Academy of Sciences M.I. Varentsov sent to the People's Commissariat of State Control of the USSR on November 25, 1940, materials and conclusions on the status of oil and gas exploration in the oil-bearing regions of Azerbaijan, as well as Grozny (Chechen-Ingush Autonomous Soviet Socialist Republic), the Kuban-Black Sea Region (Krasnodar Territory - Maykopneftekombinat) and Glavgeology Narcomneft to manage the work in these areas. The presented analysis was compiled from surveys of the Azneftekombinat, Grozneftekombinat and other organizations, which werw conducted in the second half of 1940 by the commissions of Geological Control under the USSR SNK. In addition, data were compiled by an expert who personally visited a number of these districts in 1940. In general, characterizing the totality of all available materials on the implementation of the 1940 plan and the Government Decree on exploration in Azerbaijan, the expert recognized the progress in their implementation as clearly unsatisfactory. So, for 9 months, the Aznefterazvedka trust carried out a deep drilling plan at a level of only 70.5%; 36,923 m were drilled out of 70,000 m of the annual plan, and for all other Azneftekombinat trusts, the 10-month deep exploration drilling plan was completed in total only by 68.3% (194,000 m) (Labzunov, 2017).

When ascertaining some of the achievements of the trust in terms of quality indicators of deep drilling (reduction in the cost of drilling a meter), the expert should also acknowledge the increased downtime by 3.1% and the deterioration of indicators such as the percentage of production wells from the total number of all newly drilled wells. The leadership of the Aznefterazvedka Trust and Glavgeology of the People's Commissariat of Oil named the poor material and technical base as the main reason for the situation. Among others, they were listed:

- shortage of qualified engineering and technological forces (out of 31 leading

employees of 12 exploration areas, only 15 had proper engineering and technical training);

- significant turnover of not only drilling personnel, but also of the main management team (for example, for 5 months of 1940, 5 exploration work chiefs were replaced in Karadag);

- unreliable and unreasonable oil production planning, targeting with unexplored highly debit funds of “visible” and “estimated” reserves. An “overstock” of low-yield funds was created and too high discharge of a high-flow rate funds was observed. As the expert concluded: “This means that people were overwhelmed with too much “fountain” moods, pursued only fountains and ignored low-yield prey” (Igolkin, 1940).

Similar conclusions were confirmed by an inspection of the Glavgeology of the People’s Commissariat for Oil and Gas which stated that, since 1936, the volume of exploration and production drilling in Azerbaijan has been declining every year.

Even more rigorous evaluations of activity were contained in the Decree on the work of the Grozny oil refineries (Decree of the Council of People's Commissars of the USSR and the Central Committee of the All-Union Communist Party of Bolsheviks No. 1212 dated July 9, 1940 “On measures to raise the Grozny oil industry”), which not only recorded a systematic decrease in oil production in the region, but also called the reasons for “such a shameful situation with production in Grozny”:

- "Wrong and wrecking exploration direction which continued until 1939, when drilling was carried out in the mountains, in isolation from the main oil fields";

- “Depletion of the rich Oktyabrsky deposit”;

- “The practice of curtailing drilling in old areas under the guise of depletion of deposits”;

- “The failure and harmfulness of the “theory” which lays the foundations concerning the lack of oil in Grozny; this was proved by the discovery of new underthrust layers in the old area of the Starogrozneft trust in 1938. The theory is "still not fully revealed and demobilizing some workers in the Grozny oil industry";

- The People’s Commissariat of Oil Industry was also identified as the culprit, who “having discovered the wrong direction of drilling operations and discovered Starogrozneft’s underthrust layers, did not launch drilling and exploration in oil-bearing areas, and also did not organize the development of underthrust layers,” as a result of which oil production from newly discovered strata turned out to be insignificant by that time (Igolkin, 1940).

As a result of the decline in production, oil refineries in Grozny used only by 50-60% of their capacity. A particularly serious decline was observed in this region during 1939, when the total number of explored well points in the oil-bearing areas of Groznefteкombinat decreased from 1905 to 1423. From 1936 to 1940, exploratory drilling in the oil-bearing areas of the Groznefteкombinat declined from year to year.

By 1940, in the Grozny district, only 5 areas out of those 45 explored over the previous 15 years gave industrial oil. Over 40% of the drilled wells were ruined by an accident or out of order "for technical reasons." Moreover, as a rule, exploration services were scattered and dispersed over many objects(Sokolov, 2013).

Describing the situation as "completely intolerable," the country's top leadership ordered the People's Commissariat of Oil and the Groznefteкombinat to bring the average daily oil production in the Grozny district by the end of 1940 to 8,000 tons. The most important task of the Groznefteкombinat was defined as "comprehensive boosting of exploration work, concentration in 1940 of exploration work near the old areas of the Grozny district". The leadership of Grozneft was supposed to ensure the production of gas in the amount of 30 thousand tons - in 1941 and 100 thousand tons - in 1942 from the number of gas fields and gas horizons in oil areas. For this, it was necessary to organize work on exploration and production drilling for gas (Igolkin, 2007).

In 1940, it was planned to commission the Terek-Gorskaya water pipe, the Malgobek-Voznesenka water pipe, the Gorskaya-Grozny highway, infield roads, residential buildings with an area of 2330 m2, 2 new electrical substations in the Gore-Gorskaya field with the installation of transformers of 1800 kWh. Plans for the Starogrozneft trust were the following: a compressor station for 6 compressors, a highway; for the Groznefteзavody trust - the second stage of plant No. 3 and the first stage of plant No. 2.

A series of incentive measures included progressive surcharges for accelerating work, “strengthening” the geological management of Grozneftekombinat and its trusts by sending 20 engineers directly to work in the fields and factories, transferring at least 10 qualified geologists from other oil regions, and training personnel for field and oil refinery construction, for which a branch of oil field and plant construction, installation and electrical equipment industry was opened at the Grozny Petroleum Technical School, and Faculty of Geology was to be created in the Grozny Oil Institute.

The volume of capital construction in Narkomneft for the reconstruction and construction of oil engineering plants in 1941 was set in the amount of 227 million rubles, including 3 million rubles allocated to the design of factories to be constructed in future years.

As a result of the implementation of the measures outlined in the Resolutions of the Central Committee of the All-Union Communist Party (Bolsheviks) and the Council of People's Commissars of the USSR and oil production measures, oil production began to rise; in the plan for 1941, it was planned to increase it to 2794.5 million tons. It was planned to provide oil production mainly for 80% in old wells and only 20% in new ones.

Another special Decree of the Council of the USSR People's Commissars and the Central Committee of the All-Union Communist Party (Bolsheviks) No. 2628 dated December 24, 1940 was adopted with the aim of strengthening the material and technical base and ensuring the development of oil production and refining in the Baku oil district, including Turkmenneft and Gruzneft. For the period of 1941-1943, it determined comprehensive development in the Baku oil district of its own industrial production of the main types of equipment and materials in amount that meets the basic needs of the oil industry of Azerbaijan, the Georgian SSR and the Turkmen SSR as the most important task for the People's Commissariat (Igolkin, 1940). First of all, it was prescribed to organize the production of gas engine compressors, drilling equipment, chisels, deep pumps, instrumentation, steel reinforcement, cement slurry, sulfuric acid, alkali, and building materials. In 1941, the reconstruction of the Azneftemash plant was to be completed.

The SNK of the USSR and the Central Committee of the All-Union Communist Party (Bolsheviks) paid special attention to the need for a “wide turn of exploration work, which would ensure the preparation of new areas already in 1941-1942 to further increase oil and gas production”.

It was planned to build 12 engineering plants capable of producing sophisticated equipment for the oil industry. In that period, the most progressive turbine drilling sharply increased, the average daily oil and gas production increased, but there remained the lag behind the tasks of the third five-year plan and the plan for 1940, which was completed by less than 90%. The growth rate of production was slowed down due to still insufficiently explored and prepared for operation areas. The commissioning of oil refineries was planned only for 1942. The history of the implementation of the own created cracking unit, which lasted all the pre-war and war years, is full of drama and does not cause anything but regret (Sokolov, 2013). When the war broke out, there was not enough high-octane gas oil. It had to buy gas oil in the United States, as well as the factories that were delivered only in 1944.

CONCLUSION

A number of works appeared in which issues that previously did not attract the attention of researchers were considered. Thus, some authors who analyze the problem concerning the effectiveness of administrative-command methods in managing economic systems admit that at certain periods of time they gave very good results in economic, scientific, and cultural development. In particular, the successful implementation of post-war large-scale projects testified to the only possible strategy chosen by the country's leadership. The geopolitical situation and the need for the speediest recovery and strengthening of the USSR economy required the Soviet leadership to be as pragmatic as possible in the issue of "borrowing", but they also formed their own powerful scientific and technical complex (Igolkin, 1940). This was said in a farewell word at the closing of the last General Meeting of the USSR Academy of Sciences by its President, Academician G.I. Marchuk, who stated that the state science and technology policy was highly effective, since Soviet science showed effectiveness and amazing viability in a very difficult domestic and international situation, being a holistic system with a united front of scientific research (Sokolov, 2013).

We believe that, in general, the structural changes in the oil industry in the prewar years were significant, but nevertheless did not adequately meet the growing needs of the economy and defense. Plans turned out to

be overstated; funding was inadequate; there was a shortage and poor quality of equipment, and insufficient number of qualified specialists. The stake was again placed on the effectiveness of adjustments and tightening of management methods up to repressive ones (Bodrova & Kalinov 2019).

Thus, on the eve and during the Second World War, oil became a raw material of strategic importance. The directive of the OKB headquarters (the German High Command headquarters) dated May 4, 1941 set the goal very clearly: "Germany can cover its demand for oil only at the expense of the Caucasus". This is also evidenced by the materials of the Nuremberg trial.

Measures taken in the USSR during the interwar period to reorganize the management of the oil industry, its technical re-equipment, and intensification of oil production yielded certain results. Mate rial supply of the oil industry, including due to the growth of imported equipment, has improved. However, the government's ignoring of the recommendations of leading scientists led to the largest military strategic miscalculation: before the war, Azerbaijan remained the main oil base of the USSR, which accounted for about 70% of all oil produced in the country. The development of "Second Baku" was very slow.

During the years of World War II, thanks to the mobilization of all forces and means, despite the temporary loss and conservation of some oil producing regions, a significant decrease in oil production, a reduction in oil exploration, the oil industry of the USSR has been managed to be protected and partially relocated; oil refineries were restored, new deposits have been explored, and conditions for providing oil and oil products to the needs of the front lines and rearguard have been created.

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