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by a sound-proofed window, through which the working of the engine was observed. These were Diesel engines, 12 cylinder, V-shaped, using heavy fuel. The engines carried the designations V-2, V-2-V and V-2-K-V. Engines V-2 and V-2-V were almost identical.

6. The engines were of 400 to 450 horsepower, manufactured in series production. They were delivered from the assembly shop to the testing shop. The foreman on duty decided which station was to do the testing. The standard number of engines tested was 120 per month. Each station operated in four shifts of six hours each. If the norm of 120 engines tested during one month was exceeded, a bonus of one hundred rubles was paid to the four brigades for each engine tested in excess of the norm. Each testing station tested from 145 to 157 engines per month. Often, there were no engines to test and some of the testing stations remained idle.
7. The V-2 and V-2-V engines received at the testing shop were tested for six hours. The tests started at 800 revolutions per minute and reached 1300 revolutions, with five minutes at each stage in order to warm up the engine. The stages from 1300 to 1700 revolutions per minute lasted ten minutes each. Measurements were taken at the rated rotation speed of 1700 r p m with a load of 375 kilograms by means of hydraulic brakes at 400 h p and a metered supply of fuel.
8. A record was kept for each motor, showing every flaw in the engine and the process of its operation. The engines consumed 168 litres of gasoline per hour; the temperature of the water entering the motor was 65 degrees (Centigrade or Fahrenheit not known) and leaving 80 degrees; the temperature of the oil entering was 45 degrees, and leaving 55 degrees. Tests were made (a) at a minimum rate of 1850 r p m and a load of 400 kilograms by means of hydraulic brakes; (b) at a maximum rate of 1950 r p m with 450 kilograms; (c) without any load and with an unlimited supply of gasoline 2000 r p m during one minute to check the stability of the engine; and (d) while reducing speed to 100 r p m to check the stability of the engine.
9. Measurements of the exact number of r p m in order to check the stability of the engine were taken by means of manual speedometers [redacted]. The Soviet speedometer of Dnepropetrovsk manufacture lacked stability in showing the number of revolutions, as the needle jumped in all directions and it was impossible to take an exact reading. 50X1-HUM
10. After the three-hour preliminary running the engine was subjected to a three-hour control test. This testing (six hours) did not require exactitude. All defects were noted on the record. While the engine was running every part was checked and remounted. After the six-hour test was completed, the engine was taken to the dismantling shop where all the parts were washed and the inner parts were checked. If it proved necessary to alter some detail, such as the cylinder, the connecting rod, the lower or upper crankcase, or the cylinder block, then the engine was sent back to the testing station for a three-hour "penalty" test, after which it was returned to the dismantling shop for washing and inspection, and finally returned again to the testing station for control tests. 50X1-HUM
11. The control tests lasted one and a half hours, one hour of which was used in preliminaries, warming up and testing at 1700, 1850 and 1950 r p m to determine the gas consumption and stability of the engine. The supervisor of the inspection shop carefully examined the engine before giving permission to subject it to the thirty-minute test. The supervisor reported to the chief military inspector of the plant, who personally checked and signed the documents on the acceptance of the engine.
12. Engine V-2-K, 600 h p, was tested in the same manner: 1700 r p m with a load of 400 kilograms, 1800 with 450 kilograms, 1950 with 550 kilograms. The consumption of fuel was 185 litres, and the maximum number of revolutions without load was 2200. This engine had some serious defects; the lower crankcases often cracked, the water and oil pumps and the fuel sprayer supplying gasoline to the cylinder broke down.

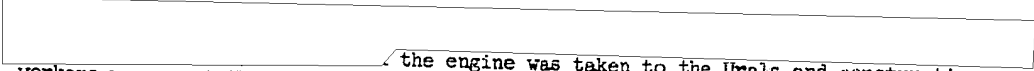
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Also, rather large tongues of flame spurted from the exhaust pipes, which was considered a serious fault (when the tank was in operation, the enemy could easily determine its location). These engines were manufactured in smaller quantities than the others.

13. Early in 1941 the management organized four new teams for Station No. 9; these teams were cleared by the Special Section of the plant and were assigned to the testing of a new model engine, equipped with a supercharger with additional air. The tests were supervised by two designers and a great many persons unknown to us. Entries in the record were strictly checked. The designation of the engine was not given in the record. This engine was of about 800 h p. It was impossible to determine the maximum speed because all the in-and out-going pipes were detached during the tests. The fuel pump and all fuel pipes were also detached and it was, therefore, impossible to determine the consumption of fuel, but it was over 200 litres per hour. The engine became very hot. After each short test the engine was taken away for an examination of its inner parts. 50X1-HUM
14.  the engine was taken to the Urals and construction workers were sent to erect plants there.
15. In wartime all kinds of small defects were acceptable, and the six-hour tests were shortened to three hours. In 1941 workmen began to dismantle the lathes and load them on railroad cars for removal to the Urals. However, German Intelligence found it out and bombed the trains and many of them were lost in transit.
16. The main office employed about 500 persons, including those who worked on the plant newspaper. The office was housed in a four-story building with antiaircraft guns on the roof. The testing and assembly shops had their own office in a two-story building; there were about 40 employees. The name of the shop supervisor was Korobov. The chief engineer was Malyshyev; he had been decorated twice by the Red Army. During the war no record was kept of the number of engines tested. Plant No. 75 employed about 25 thousand persons. Next to the plant foundations were laid for an expansion of plant No. 75. During the evacuation the plant was destroyed by fire. The plant was built of cement and concrete; the entire roof was made of glass. Plant No. 183 was undamaged during the evacuation.

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ENCLOSURE (A): Sketch Showing Layout of the Kharkov Tank Factory

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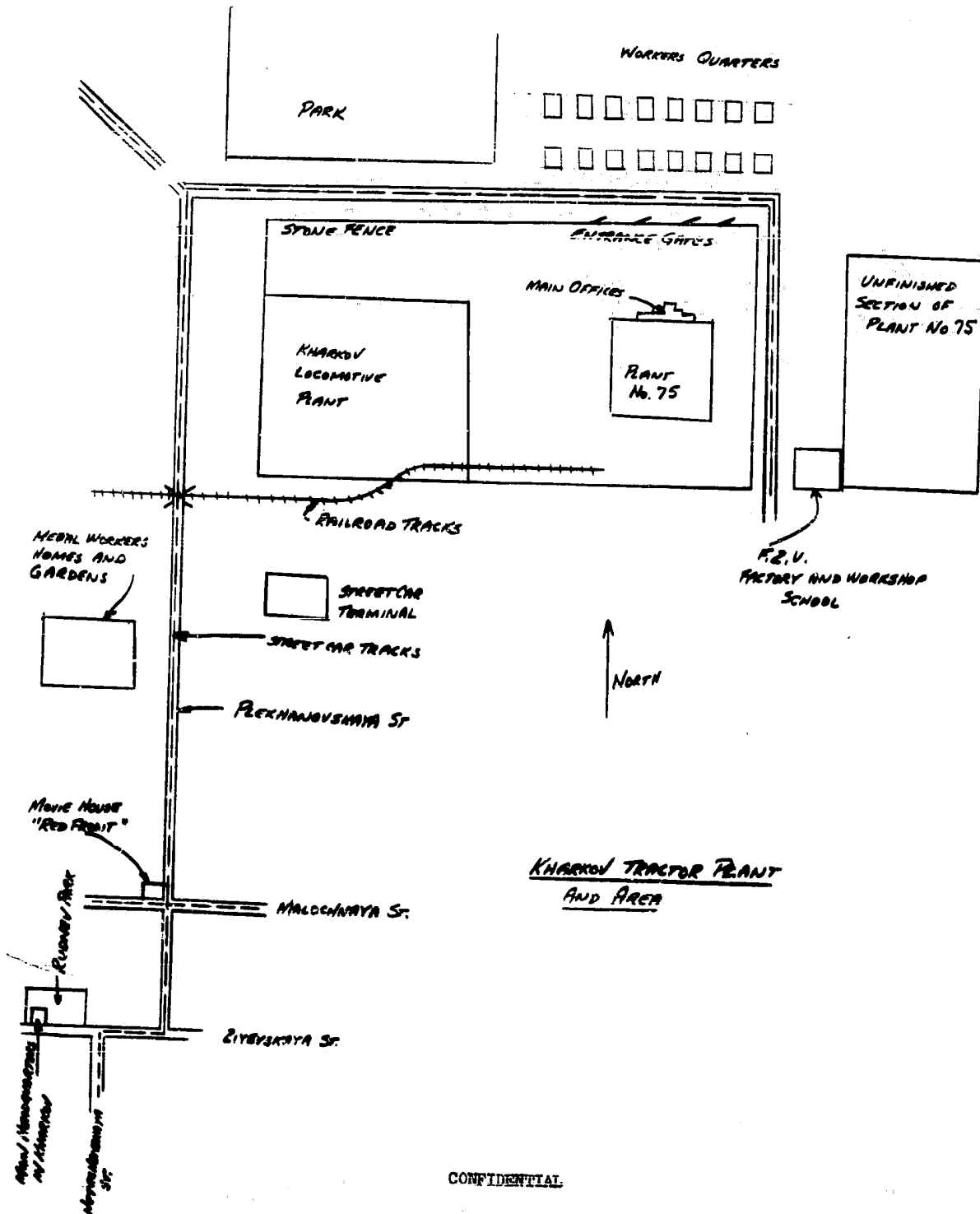
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ENCLOSURE (A)

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SKETCH SHOWING LAYOUT OF THE KHARKOV TANK FACTORY



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Four diagrams attached to this manuscript.

Introduction

Mineral raw material (petroleum, ferrous ores, non-ferrous ores, ores of rare metals) were and continue to be "the apple of discord" between large and small nations alike. The struggle for the possession of raw material sources and for markets for the finished products continues, as before, in the open and in secret, drawing into its orbit more and more new countries.

The struggle for supremacy in the world market has ceased to bear a parochial character and thanks to the achievements of modern technology, has entered the world arena.

In our century, to this struggle, was added the struggle for political domination, which we shall not stop to discuss, but we must note that political influence is buttressed not only by ideas but by force of arms and by the end-products of the working and processing of mineral resources. Therefore, mineral resources as before, continue to be a dominant political and economic factor in the struggle among competing socio-political theories.

For example, in contemporary events we see how political influence is acquired through the force of arms. In view of this, the supply of mineral resources is the vital nerve of heavy industry, producing tanks, aircraft, tools, fuel, shells, bombs, explosives, etc. The country that has more rare ores, more fuel and construction materials, and more metallurgical plants, <sup>and</sup> machine-building factories, has more arms and a greater defensive capacity.

Since, unfortunately, wars have not been eliminated in our century, it is natural that one country <sup>should</sup> want to know about mineral resources of another country, about its factories and plants, their

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locations, their annual output, the railway system, i.e., about its defensive capacity. In view of the growing interest of other countries in such intelligence, it is natural that counter-activities developed, with a view toward concealing more adequately from other countries the stocks of mineral resources in the country and, with the assistance of the press, to mislead foreign opinion about the true situation in the country, either exaggerating or understating its defensive-capacity. It is well known that Germany, after the first World War, was restricted in the field of arms, but she rapidly accumulated them, successfully concealing everything.

The significance of mineral resources in the struggle for independence was recognized clearly enough by the Soviet leadership from the first days of the establishment of Soviet power in Russia. The fight for economic independence vis-a-vis foreign powers began in the Soviet Union during the first years of the establishment of Soviet power. At first it was carried on with the assistance of helpful foreign nations, their capital and their specialists, and through the aid of the private initiative of businessmen during the years of the NEP. Later, with increasing speed, a study of the internal mineral-resources was carried on. Old-time specialists were utilized and new cadres were trained, so that the country might be completely freed from foreign assistance and the undesirable presence of foreigners on the territory of the USSR. More and more attention was given to the geological study of the USSR. In the beginning there were only hundreds, but in the succeeding years before the War thousands of geological survey parties <sup>were</sup> sent annually to various parts of the USSR, to uncover more and more new deposits of useful minerals.

The geological service was continually reorganized, and, from a subordinate to the People's Commissariat of Heavy Industry, was

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made into an independent Geological Service, located in a separate ministry which now bears the name Ministry of Geology of the USSR. It was created by decree of the Presidium of the Supreme Soviet of the USSR on June 14, 1946.

The Ministry itself in no way carries on geological work, but is only a planning, controlling, and budgetary organ. In connection with the ministry, there were set up the Central Geological Archives, the Central Commission for the Ascertainment of Reserves, and the State Geological Control Section. The direct execution of geological work assigned by the Ministry to the republic, kray, oblast and inter-kray divisions of the Ministry of Geology USSR.

Each Geological Division, independently of other divisions has a Section of Geological Archives (duplicated) and a Regional Commission for the Ascertainment of Reserves. These divisions, in all the territories of the USSR, conduct geological surveys, geological exploration, hydro-geological operations, and geological engineering work. But geological work is also conducted by other geological organizations under other ministries.

To the All-Union ministries which have geological organizations, belong the following:

1. Ministry of Petroleum Industry
2. Ministry of Railways
3. Ministry of Coal Industry
4. Ministry of Non-ferrous Metallurgy
5. Ministry of Ferrous Metallurgy
6. Ministry of Maritime and River Fleets
7. Ministry of Military and Naval Enterprises
8. Ministry of the Chemical Industry

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To the Union Republic ministries having geological organizations, belong the following:

1. Ministry of Public Health
2. Ministry of Light Industry
3. Ministry of Construction Materials Industry
4. Ministry of Fishing Industry
5. Ministry of Internal Affairs

All the geological organizations of these Ministries, not directly subordinate to the Ministry of Geology USSR must coordinate their geological work with the Ministry of Geology USSR, with the object of avoiding duplication, and transmit to it for approval their projected annual work-plans.

The Ministry of Geology USSR considers these plans in relation to over-all USSR aims, independently of the subordinate geological organizations.

The Ministry of Geology of the USSR considers all these plans, amends, revises, supplements, and approves them for the new production year.

Each geological division of the Ministry of Geology USSR annually presents to its own Ministry ~~the~~ production, technological, and financial reports for the past year and copies of all geological reports to the Central Division ~~Geological~~ of <sup>Geological</sup> Archives of the Ministry of Geology USSR (i.e., the results of all geological work undertaken during the given year).

The geological organizations of other ministries submit their annual reports to their own ministries, but must submit to the Geological Archives Division of the Ministry of Geology USSR copies of all geological reports, as well as to the regional sections of Geological Archives of the Geological Divisions, of the Ministry of Geology USSR in the territories in which geological operations were conducted.

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Assuming that the geological organization of the Ministry of Fuel Production conducted coal explorations in the Donbas region, then the geological report must be transmitted in duplicate to the Central Geological Archives of the Ministry of Geology USSR and to the Section of Geological Archives of the Ukrainian Division of the Ministry of Geology USSR. In addition, these geological organizations must submit data on the presence of useful mineral reserves to the Regional and Central Commissions for Reserves attached to the Ministry of Geology USSR.

Thus, in the Ministry of Geology USSR, are concentrated all the data concerning all of the geological operations of the geological organizations of any subordinate rank, which at any time were conducted or are being conducted or will be conducted in the future.

In the present essay, we shall not touch on all the activities of the Geological Services on the territories of the USSR, and will consider only questions of security in this service.

1. A Brief Account of Security in the Geological Service of Pre-Revolutionary Russia

No importance was attached to the question of security of geological targets in pre-revolutionary Russia. The quantity of reserves of various ores, the ore potential of the seams, the metal content of the ore, etc, were not security-restricted, were not considered state secrets nor even secrets of the private owners. Each entrepreneur or geology specialist interested in questions of mineral ores could find a wealth of geological literature in specialized libraries. It is possible that a few entrepreneurs wishing to belittle their profits minimized the data about output, but this bore an episodic character.

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In any case, the Mining Department of the Ministry of Internal Affairs had at its disposal all the necessary information about output and reserve deposits of coal, petroleum, gold, iron, graphite, asbestos, copper, platinum, silver--lead--zinc ores, chrome, sulphur pyrites, common salt, construction materials and other useful minerals. Annually, in the publications of the Geological Committee, summaries of balances of useful minerals deposits were printed, as well as statistical data about production at the site of these deposits. The results of geological survey operations conducted on a one-verst topographic basis by military topographers, as a rule, were published and were accessible to all persons interested in questions of the geology of Russia. Many of these works have been withdrawn from general use in the USSR. For example, one may cite the geological survey operations in the petroleum regions of the Caucasus areas, which were conducted until the revolution by Gubkin, Bogdanovich, Prokopov and others.

Hydro-geological works, whose aim at that time was chiefly to secure water supplies for populated areas and to investigate the mineral sources, were not considered security targets. In pre-revolutionary geological publications one could find a great deal of literature on artesian basins in the Moscow area, the Crimea, Kuban' and other areas.

All the most significant results of geological operations were published by the Geology Committee and found their way to the book market and abroad. One can point to many geological works on the study of platinum deposits, gold, petroleum and other minerals, which were withdrawn from general circulation in the Soviet Union, but can be found, for example, in the Main New York Public Library. For instance, one can point out the following works:

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1. Grigorovich — Berezovskiy: Materials on the Hydrogeology of the Eastern Sections of the North Caucasus. Works of the North Caucasus Association of Scientific Research Institute.
2. P. N. Chirvinskiy: A Geological Summary and Hydro-geological Sketch of the Terek and Kuban' River Basins.
3. Bogdanovich: Geological Investigations of the Kuban' Petroleum Region.
4. Vysotskiy: Platinum Deposits in the Urals
5. Charnotskiy: Geological Investigations of the Kuban' Petroleum Region
6. Lodochnikov: One-Verst Geological Survey of the Caucasus Mineral Water Region, and many others.

In municipal and private libraries, were assembled great quantities of geological literature in all branches of this science. This is explained, to be sure, not only by the fact that the regime acted carelessly with respect to this branch of knowledge (and this, of course, was the case) but also by the narrow standards of technical knowledge which then existed and, of course, by the different state of international relations.

Russia was basically an agricultural country with a weakly developed technology. The manufacturing and extractive industries were to a considerable degree in the hands of foreign concession capital. A great number of foreign entrepreneurs were found on Russian territory, who often were more interested in the mineral wealth of Russia, than the Tsarist government, and frequently knew more than the native specialists. For example, the petroleum deposits of the Caucasus were in the hands of the English. In the Donbas, there were 25 joint-stock companies of which nineteen were French and Belgian. They, and many other bases of mineral resources, came into the hands of foreigners.

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The limited development of the mining industry, the inadequate study of the depths of the earth, the lack of plants and factories, the presence in the country of foreign capital, and the insufficiently serious attention given to questions of economic independence on the part of the tsarist regime did not give rise to any questions of resources security. Foreigners freely travelling about Russia, had intimate connection with many of the prominent leaders of Russia, participated themselves in studies of the country's deposits. Each of them could collect information at will and transmit it to his government if it was of interest to them.

In time of war, there was no accumulating of stocks of structural raw-material (at that time, such a term did not even exist). Reserves of useful minerals, hydro-electric data, geological surveys, the output of mines, the export and import of mineral resources were not regarded as objects of security.

Only the First World War compelled Russia and many countries re-examine to ~~the~~ the role of mineral resources in the national economy. Foreign countries from the first days of the war realized the role of mineral resources in the military equipment of armies.

Methods of war became complicated; armament techniques advanced; significantly, wars, instead of being local, assumed a world character. More and more mineral sources of mineral ore was required for the equipment of armies both in quantity and variety. At Verdun, the Germans expended millions of tons of metal. The Americans in a single battle at St. Mihiel, in a four-hour period, fired one and a half times as many shells as were expended by the Russians in the entire Russo-Japanese War. Owing to this ~~an~~ increased tempo and scale of military operations, the stocks of mineral resources quickly began to run short.

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"At the end of 1917, the French had an insignificant amount of steel left; their explosives had been almost wholly expended. The Germans were no better off. They lacked nickel, copper, and aluminum, and by the Spring of 1918, resins and petroleum"

The quantity of chemicals expended in the First World War was not yet so vast as in the Second War, but the quantity of mineral ores used in the war significantly exceeded the conjectured figures.

Although the war of 1914-1918 was called a world war, its scale, the numerical composition of the armies, the armament techniques, etc. were significantly inferior to those of the Second World War.

The importance of mineral ore reserves, their territorial distribution, remoteness from frontier areas and the location of the extractive and manufacturing industries <sup>were</sup> already realized in the first years of the first World War. The outcome of the battles depended not only on the personal courage of the soldiers and the genius of the generals but on the combat equipment. Who can fire more shells in a given time? Who can supply military equipment more intensively to the firing line? Who will be exhausted first? Already in the First World War these questions occupied the minds of government leaders, economists, and technical specialists. Without the answers to these questions it was impossible to predict the outcome of battles and the war as a whole. Knowledge of their own defensive capacity also was of little help; it was still necessary to know about the armaments, industry, and so forth, of one's enemies. Therefore, the First World War underlined the necessity of concealing the information concerning one's mineral, mineral ores, heavy industry, and the numerical strength of one's armies, particularly in those countries which did not consider themselves especially powerful.

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All the lessons of the First World War were learned by the Soviet government and well studied in order to avoid repetition of the mistakes of the tsarist regime in paying insufficient attention to the mineral reserves.

2. A Brief Account of Security in the Geological Service of the USSR

After the end of the First World War and the conclusion of the Revolution in Russia, with the establishment in Russia of the Soviet power, the period of reconstruction set in. The Soviet government proceeded to heal the wounds which were sustained by the general economy of Russia during the World War and the Civil War.

But from the first days, a course was established by the Soviet power, directed towards world revolution. Political war was declared on capitalism as the most dangerous enemy of Communism.

The first years of Soviet rule already show that the Soviet power itself was not in a position to reconstruct quickly the industry of Russia with its own methods and forces. The N.E.P. was announced. The worst enemy of Communism, - Capitalism, was invited to assist in the reconstruction of Russia's ruined industry. A series of undertakings were turned over to foreign firms -- concessionaires. Order were given to foreigners for the construction of new factories and plants. The private initiative of old-time specialists was enlisted. The Chiatura manganese deposits were given to an English concession; Americans built the Gorkiy Automobile Plant; German drilling experts were summoned to the oil fields of Uralneft' [Ural Petroleum Works], who brought with them Virtovskiy drilling machines, etc., etc. This gave the Soviet power the opportunity to mend the destruction fairly quickly and to erect new plants and factories, to familiarize themselves with new European techniques, and to create cadres of new Soviet specialists and leaders.

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During this time the geological service continued in the same way as prior to the Revolution. The Geological Committee which existed in tsarist Russia, passed over to Soviet rule unchanged and remained so for twenty years. The regional branches of the Geological Committee were preserved, with their functions, fields of work, geological terms, geological publishing houses, etc.

Special attention was not yet given to questions of security of geological objectives; a central leadership and control of all geological operations did not yet exist. The Geological Committee operated in the old way -- mainly, in direct geological-survey operations; prospecting work was pursued by individual organizations, Glavki [Main Administrations] and people's Commissariats. Nevertheless, the Geological Committee retained the right to gather to itself all the data on the exploitation of useful ore deposits and reserves. Annually, summaries were published of the output of minerals, including petroleum, gold and non-ferrous metals. In the collections of statistical information on the mining and metallurgical industries, published at the end of the 'twenties, we find detailed information on asbestos, petroleum, platinum, mercury, silver-lead-zinc ores, sulphur pyrites, common salt, coal, chromite, copper, etc. The last such full collection was published in 1929.

At the end of the 'twenties and during first years of the 'thirties, a sharp change is observed in the Geological Service of the USSR, with the organization of the Central Geological Exploration Survey Board in the People's Commissariat of Heavy Industry. All the old geological literature was reviewed and classified and the important material, from the point of view of the public interest, was withdrawn from general use, <sup>and</sup> assembled in special archives, inaccessible to persons not having special permission. The stamps, "Not for Publication", "Secret",

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"Top Secret" appeared more and more frequently on geological publications (books, geological reports, and manuscript materials) published in pre-Revolutionary times and after. More and more new geological targets and aspects of geological work were taken possession of. The use of topographic maps for the needs of geological exploration work became more difficult, and the stamps "Not for Publication", "Secret" and "Top Secret" spread to more and more topographic maps of new regions, drawn to new scales. At first, the one-verst maps of all frontier regions were given security classifications; then, contour maps of cities with situation details, all geological works containing such plans, as well as geological reports on petroleum prospecting, non-ferrous and rare metals, and hydro-geological data. were made secret.

In those same years (the end of the 'twenties), in view of the growing accumulation of secret geological material, secret governmental instructions, decrees, directives, orders, confidential instructions concerning the mobilization of stock-piles, secret plans, materials dealing with the security-classification of specialists, etc. , an organization of special sections of the secret service was carried out not only in the geological service but in all the governmental, economic, industrial, scientific, co-operative, and other organizations of the Soviet Union.

Geological literature, subject to security, was removed from private and public libraries, institutions and enterprises, and concentrated in special repositories. Works on the study of the mineral waters of the Caucasus Mineral Waters. Administration carried out by Professor Ogil'vi. and the geologist, Langvagen, were made secret. Works on geological surveys in the region of

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the petroleum deposits in the Kuban' and Chernomorskaya Oblast, <sup>[Black Sea]</sup> Maykop, Groznyy and Baku, made by Academician I. M. Gubkin, Bogdanovich, Charnotskiy, Prokopov and others were made secret. The hydro-geological reports of Professors Chirvinskiy, Gatuyev and Lodochnik were made secret. All the works on the study of the landslides along the lines of the Black Sea railroad, the engineering-geological works concerning the construction of sanatoriums in Sochi-Matseyeta, ~~■~~ all the engineering-geological and hydro-geological investigations for construction of hydro-stations, etc., were made secret.

New geological works, if subject to secrecy from the point of view of the State, were given security classifications and those specialists were entrusted with the composition of such works to whom the party and the government assigned the execution of these projects, having screened these specialists, i.e., having permitted them to carry out secret projects.

The functions of the secret special sections were constantly expanded, their staffs were enlarged, and they acquired an especially great importance in the geological service. The initial role of the chiefs of the special sections was enlarged, and they began privately to influence their own chiefs (the heads of those organizations in which they were chiefs of special sections), in the process of carrying out instructions received from the NKVD, to whom the chiefs of the special sections were secretly responsible.

At the beginning of the thirties, the special sections became powerful, carrying out the manifold secret operations of a given institution.

We shall pause to consider the work of the special sections at length in another place, but here we shall permit ourselves to note that these sections, when finally formed, became the eyes and ears of the MVD (NKVD) in the geological services of the Soviet Union.

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The distrust of the old-time specialists and the younger members of the old intelligentsia necessitated the emergency training of cadres of geologists from the proletarian strata of USSR population -- workers and peasants. Parttysyachniki [outstanding workers sent to special school in batches of thousands], who were graduates of workers' schools, <sup>and</sup> demobilized persons from the Red Army and Navy increasingly filled the geological institutes, reducing in this way access to the institutions by the children of the old intelligentsia. Thus, the so-called student proletariat was organized. The institutes began to turn out engineers not according to the principle of academic aptitude but the principle of party-membership and proletarian origin, with bad results. Incompetent specialists were being turned out, and therefore, in 1926, access to the institutes was granted for the first time (in small numbers) to persons completing the secondary school by way of competitive examinations and without work experience.

Through the industrial academy, were turned out new Soviet leaders who replaced the old engineers, since they did not have the confidence of the Soviet government. The Stalin Five-Year plans were begun, which necessitated an expansion of geological survey work to assure mineral ores to the growing industry. A period of persistent struggle began for the creation of their own mineral ore bases with the aim of liberation from foreign economic dependency. Geological, geological-survey, engineering-geological, and hydro-geological, task units, parties, and expeditions annually went into various regions of the Soviet Union for a systematic study of all the territories of the Soviet Union. In regions especially remote from communications routes, the labor of the old specialists, interned in camps, and that of new "offenders" was employed. The search for petroleum, iron ore, non-ferrous and

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and rare metals, and raw materials for the chemical industry was extended. Geologists taken from among the prisoners, carved a path for the first time in places inhabited only by wild beasts, in severe conditions of arctic cold and northern winters.

All these measures were carried out earlier and are being carried out now with one aim -- to expand the defense potential of the Soviet Union by creating necessary, mobilized reserves of mineral ores and processed products by any means and at any price.

The Soviet leadership, desirous of concealing the true position of the country, more and more distrustful of their own specialists, introduced security into many areas of geological work. How deeply and widely security was installed into the geological service of the USSR, we shall see in the following chapters.

### 3. Mineral Resources and the War of 1941 - 1945

From the first days of the establishment of Soviet power in Russia, it set itself one final goal -- world revolution -- and in order to accomplish that, it was necessary "to overtake and surpass capitalistic countries in the economic sphere."

All the basic economy of the country <sup>and</sup> the entire population of the Soviet Union, was mobilized for the creation of a powerful defense potential, and, by means of the one-party Soviet press, the working masses of the world were indoctrinated with the "great" achievements of the Soviet Union in ~~the~~ construction, unprecedented in history of a socialist society. The newspapers were full of reports about the opening of new petroleum deposits -- the SecordBaku, the Uralneft', the new deposits of iron-ore and non-ferrous metals, the completion of new metallurgical plants, factories, mines, etc. In the mind of the Soviet population was

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instilled the idea of the invincibility of the Red Army, the solidity of the frontiers of the Soviet Union, the misery and poverty in capitalistic countries, and the good, prosperous life of the Soviet citizen. All the Soviet papers were filled with the clang of arms. But as reality has shown, to make noise about arms and achievements in the press is scarcely enough. In the event of a defensive war, and more so in the case of an offensive war, it is necessary to have colossal stocks not only of mineral raw materials but also the extracted products. It is not only necessary to have them but to be able to conceal from the enemy one's combat potential, which was assiduously practiced by the Soviet government before the Second World War.

We all know now that those achievements of Soviet power, which were disseminated in the press, were far from real. The Soviet armies were not only unable to hold the Germans at the frontier, but gave over to pillage and destruction the richest regions of Russia, allowing the Germans to advance deep into the country. Were it not for the strengthening of the Soviet armies with military equipment from England and America, it is doubtful that they would have been able to defeat the Germans. We know of the enormous deliveries of military equipment and construction supplies which were assembled by America. For many years the Soviet press considered England and America as the most terrible sharks of capitalism. And again the Soviet Union, as in preceding years, defending its very existence received aid from those capitalists, whom it always considered and does consider its worst enemy, with whose assistance, however, it defended its independence. But it ascribed the victory in this struggle only to itself.

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Considering the scale of the Second World War, the Soviet Union from the first days after the termination of the war undertook a feverish preparation and build-up of the mineral reserves and war materiel, undoubtedly in preparation for new war clashes. America, in this period, squandered its armaments and transferred to the production of peacetime products.

What military resources the Soviet Union now has at its disposal, no one knows precisely, but, still, this potential can be measured. In any case, it can be asserted that the Soviet Union is not yet so strong as to engage in a war, but its conduct is such that to the naive person it seems frightening. In any event, the USSR is not yet ready for war, since its industry exceeds only slightly the production level which existed at the beginning of the war. Of course, the Soviet Union stretched out, with impunity a hand of "brotherly help" to Latvia, Estonia, Northern Bukovina, but surely not because it was strong. The international situation at that time was such that there was no concern about it. The Soviet leaders knew then that no one would stop them, because at that time another, more serious danger developed. Why at present does not Eastern Germany, under the protection of the Soviet Union, offer the hand of fraternal assistance to West Germany? Because the Soviet Union has not yet had time to accumulate a sufficient quantity of structural raw-materials, because no one knows what may come of such "philanthropy", and because behind West Germany stands America, whose mineral resources, by many indications, far exceed the Soviet.

Were it not for this, the "fraternal" hand of the Soviet Union would be extended in the West very far indeed.

The role of mineral raw-materials again occupies a primary position. Where there are more of them, where there is a more developed industry, there, also, is the greater strength.

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Finally, it is well known that our mortar industry during the period 1942-1944 produced annually, on the average, nearly 100,000 mortars. It is clear, that simultaneously with these items, comparable quantities of artillery shells, various types of mines, and aerial bombs, rifle and machine-gun cartridges were produced. It is known, for example, that in the single year, 1942, in excess of 240,000,000 shells, bombs, and mines, were produced as well as 7,400,000,000 cartridges.

Professor A. A. Yakovlev has made a tentative calculation of the outlay of structural raw materials for the needs of a 6,000,000-man army and a small navy over a one year period, as follows:

Iron and steel - 30,000,000 tons  
 Petroleum and Petroleum products - 25,000,000 tons  
 Coal - 250,000,000 tons  
 Manganese ores - 2,000,000 tons  
 Nickel - 20,000 tons  
 Wolfram - 10,000 tons

For the needs of military construction an additional 10,000,000 tons of cement is required. Considerably larger quantities of ore will be required for the extraction of these metals.

Granted that these figures and estimates are tentative, even then, they speak of enormous quantities of mineral raw-materials which must be obtained, processed and concealed i.e. given security classification as mobilized reserves, which is being painstakingly done in the Soviet Union.

#### 4. Security Problems in the Geological Service of the USSR

In the preceding chapters we spoke of the importance which mineral resources have in war time. We clarified the reasons <sup>for</sup> placing security classifications on the mineral raw material bases and their role in the nation's economy.

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In this connection, from the beginning of the 'thirties, security questions in the Geological Service of the Soviet Union were given increasingly great attention, and security operations enveloped more and more types of the mineral raw materials and new types of geological works, including geological-survey, engineering geology, and hydro-geology works.

Security control of geological operations and their products is established not only because of the secret nature of the geological objectives (petroleum, gold, scarce and non-ferrous metals) but, also because of other considerations, namely, because geological work is conducted in frontier areas, because it <sup>is</sup> conducted for the construction of military plants and factories, because of the military constructions are involved, and because secret maps are handled in the geological operations.

Every secret geological operation is executed by specialists entrusted with the carrying out of secret works, i.e., persons to whom the Communist Party and the Soviet government entrusts state secrets.

Let us consider security problems in greater detail.

Security for secret geological objectives

Geological surveys are made secret in the event that, independently of the territories of the Soviet Union, studies are pursued in regard to the location of petroleum, gold, platinum, nickel, wolfram, vanadium, molybdenum, lead, zinc, antimony, tin, and deposits of other scarce and non-ferrous metals. In the reports of these operations, the location of deposits are indicated in detail, and attached to the report is a topographic plan of the deposits showing in absolute terms the extent in area of the deposits, the quality of the ore, the place where the sample was taken, the chemical analysis of the sample, the quantity of the

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deposit reserve, and other geological, hydro-geological, mining, and economic data, necessary for the planning of ore-extracting and processing enterprises.

Search operations may also be free from security classification since they are intended only to provide material for the planning of geological prospecting operations.

Subject to security are all aspects of hydro-geological work, independent [?] of the territories of the Soviet Union, which are concerned with the study of artesian basins, sub-soil water, their deltas, the course and speed of ground water streams, and their chemical composition.

Exploratory hydro-geological operations, whose object is the collection of material necessary for the planning of hydro-geological operations, may also be unrestricted, if the reports on the execution of the work do not contain practical conclusions.

All geological engineering operations, conducted with the aim of planning new cities or developing old ones, are also made secret. Geologico-technological reports in connection with these operations are supplemented with large-scale maps, accompanied by physical and mechanical analyses of the soils, analyses of the sub-soil water, etc.

Of course, not all the material in the indicated geological operations is secret, but the geological reports on them are made secret in entirety. Actually, the secret material in such reports may be contained in a few pages, but the entire report is considered to be secret, and therefore access to it is limited only to persons who have access /sic/ to it and additional permission. In reality, therefore, secret data in geological surveys consists of the following: the location of the deposits, <sup>the</sup> percentage of ~~the~~ yield of

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metal from the ore, the chemical analyses, the maps of the location and the deposit itself.

In hydro-geological reports, the essentially secret materials are the areas of distribution of artesian basins, the flow from artesian wells, their absolute reference data, the direction and velocity of the ground-water streams and their deltas, and the chemical analysis of the water.

Special attention is given by security to the speed and direction of the ground-water streams, because in war-time conditions they may be infected by poisons and harmful bacilli.

Reports dealing with geological engineering operations, conducted with the aim of the replanning of old cities and the construction of new cities are considered especially secret materials, since many sections of these reports and cartographic materials may be used in war-time conditions. They contain physical and mechanical analyses of the soils, and hydro-geological data which can be employed in the erection of fortified structures. They contain detailed plans of cities with indications of industrialized areas and structures, tunnels, bridges, indications of artesian outlets, their locations etc. -- in other words, everything that in war time may become a military objective.

It is still necessary to note, that insofar as the reserve deposits are made secret, the output of such deposits are also secret. Therefore, the calculation of the yield in security-classified deposits is carried out very strictly and the yield itself is subject to security measures.

Security Imposed on Geological Operations, because of the Secret Nature of Construction Objectives

Security on geological operations in these areas is imposed not because of the secrecy of the geological target, but because

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of the secret nature of the construction. To secret construction targets belong: plants of military significance producing military equipment, airdromes, military cantonments, quartermaster depots, railway stations, railway bridges, strategic highways, railroad lines, electric stations, water-towers, hydro-electric stations, government buildings, etc.

Geological engineering operations in such construction areas aim to determine the supporting capacities of the soils for calculations connected with the laying of foundations for industrial and other buildings, landing and take-off areas at airdromes, the construction of highways and railroads, the erection of bridges, etc.

Hydro-geological operations aim to study sub-soil and artesian waters, in the event of trouble from the flooding of the lower portions of structures, to gauge the stability of foundations, and to provide installations with drinking and industrial water to buildings.

All these reports are supplemented by detailed topographic maps with indications of the results of all geological and laboratory research. All reports on such work are considered especially secret

C. Security of Results of Geological Operations (Connected with Secret

Maps

General, geological survey operations are conducted mainly on the basis of one-verst topographic maps (scale: 1 : 42,000, that is, one verst to an inch)

These maps are under the charge of the Soviet Army. Therefore, all geological reports on geological survey work are classified secret.

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Geological material, set forth in such reports, is not secret since these are general geological treatises about geological formations in a specific region of the Soviet Union; but since maps are attached to such accounts, the material as a whole is classified secret.

In pre-Revolutionary times there was much available data on such operations, but under Soviet rule they were withdrawn from general use and assembled in special archives.

Security of the Results of Geological Operations Conducted in Frontier Regions

All geological-survey, geological engineering, hydro-geological and topographic operations for the needs of geology, carried on frontier regions, are subject to security-restrictions independent of the objective they may pursue and whatever minerals they may study.

Every item of information touching on a frontier region, whether geological, topographic or any other type of data, may from the point of view of the Soviet government, be of use to foreign states for their own aims, and, therefore, everything pertaining to the frontier areas of the Soviet Union is subject to security provisions.

Much of the work which is carried on by geologists in frontier regions contains no secret material whatever (either in the maps or the texts of the reports), but for the sake of complete security everything is made equally secret. Therefore, many geological reports contain no secret data whatever but are all made equally secret.

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5. The Work of the Special Sections of the Secret Service  
in the Geological Service of the USSR

Just as each factory, plant, scientific organization, bank, industrial cooperative, economic organization, public organization, etc., has a special section, so there are security sections in the entire system of the Geological Service of the USSR, abbreviated "spetsotdel" or "spetssektor". In the geological services they are usually called -- spetsotdel [special section].

In the course of a long period of time, the Soviet authority believed, and certainly believes at present, that a number of old-time specialists (not many of them remain today) and new Soviet specialists, under the influence of the others, intentionally concealed from the Soviet government, the mineral wealth of the Soviet Union, conducting geological operations in useless locations, or that they had resorted to sabotage and wrecking, delaying by these tactics, the development of the country's industry or harming the security of the mineral resources already being processed by industries. It is sufficient to recall the Prospartiya [Industrial Party] trial, the Shakhminskiy, the Ramsin and other trials to be convinced of them.

The level of geological research, as is well known, depends not only on the technical knowledge of the geologist, but also on a great number of his subjective qualities -- on his observational ability, his administrative capacities, his ability to orient himself quickly in different special areas of geology, undoubtedly on his love for the science, and on other subjective qualities. Apart from these considerations, the work-product is also affected by the selection of subordinate technical personnel, which carry out

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independent expeditions in prospecting work, on the technical equipment and on the money for allocations to the operations. For this reason the Soviet government considered every blunder as an act of deliberate sabotage (yet, any specialist may commit a blunder). As a consequence, a heavy load was placed on the special sections in regard to the investigation of the geological cadres.

The special sections in the geological service have separate quarters, equipped with fire-proof safes, iron-barrred windows, and felt-covered doors of sheet-iron. The doors (entrance) are provided with little peep-holes. They are always locked, and access to these quarters is only possible when the peep-hole is opened, the person <sup>is</sup> identified and, if he has the right of entry, then the door is opened and the visitor admitted.

Workers of the special sections and field-liaison men of the NKVD (MVD) may enter the special branches unhindered. All other persons -- only those, to be sure, who are permitted to do security work -- may enter the secret sections only when they are called there or when they have official business.

On the conclusion of work in the special section, all secret materials are put into fireproof safes which are sealed with wax seals. Only the chief of the special section or a person authorized by him may remove the seal.

The Special-Section is headed by the Chief, who, independently of the size of the security operation, may have his own deputy, typist, secretary and other employees. All employees of the Special Section are, of course, security-screened, i.e., selected by the NKVD for the performance of security work.

All the secret correspondence of geological organizations is concentrated in the Special Section. It receives and dispatches

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secret packets, letters, and parcels, keeps all secret documents (excluding secret geological reports, which are in a different class), secret directives, <sup>and</sup> instructions of higher organizations, keeps a record of the moral and political status of the employees of the entire organization, issues secret reference papers, keeps a record of exempt personnel in the event of war, makes temporary and permanent security clearances of specialists, safeguards secret topographic maps, receives and transmits them, etc.

Legally, the Chief of the Special Section is subordinate to the chief of the entire geological organization, but secretly he is responsible also to a special section of the NKVD (MVD) from which he received various instructions pertaining to the geological organization. In this case, the Chief of the Special Section insists that the chief of the organization execute measures recommended by the NKVD. The Chief of the Special Section is the eyes and ears of the NKVD in any Soviet organization and, particularly, in the geological organizations.

The importance of the Special Section chiefs in the geological service is especially great and they are selected from among the particularly intelligent special workers, since they must work among the highly intelligent personnel of the geological organization.

Regular mail is received by the secretary of the organization, registered, and forwarded to the chief of the organization for examination.

Secret correspondence is delivered by an NKVD man (one of the field-liaison staff) directly to the Special Section and given to the Section Chief or to the secretary in exchange for a receipt which is entered in a special book kept by the bearer of the secret mail.

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The stamp of the Special Section is placed on the signature without fail, and if not, the stamp of the organization is affixed by the secretary. In this manner, secret mail, by-passing the chief of the organization, goes directly to the Special Section.

Depending on the contents of the secret packet, appropriate measures are taken by the Chief of the Special Section. Either the letter is filed for information and guidance, or a reply to the letter is made without the knowledge of the chief of the organization, or he informs the chief of the organization of the contents of the letter so that the letter may take necessary measures, etc.

Thus, the Chief of the Special Section does not always inform the chief of the organization about the receipt of secret mail. The Chief of the Special Section may receive from the NKVD any inquiries whatever, even about the chief of the organization, and the latter will not know about it.

We shall not stop to consider in its entirety the work of the Special Section, but will concentrate our attention on the problems of liaison with the geological service.

In the Special Section are also kept weapons (revolvers) which are distributed to the leaders of geological parties who are working in places far from populated areas and especially in isolated areas. Weapons are issued only during the period of field-work. On the conclusion of the work the leader of the party must immediately return the weapons to the Special Section.

The number of cartridges and the number of revolvers issued are entered on a special register, a copy of which is received by the leader of the party. A statement is entered for each cartridge expended (the use of a cartridge is allowed only in the case of obvious danger), to which are added the empty shells.

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As we noted above, topographic maps, necessary for geological work, are kept in the Special Section. The receipt of such maps by leaders of parties is handled in the following manner:

The leader of the geological party (security-cleared, of course) writes a report to the chief of the geological organization, pointing out that he needs certain topographic survey maps in order to carry out the geological work. The chief engineer adds an indorsement to this report, verifying, that the specified maps are actually necessary for the execution of the work. Only then does the chief of the organization add a statement directed to the Chief of the Special Section for the issuance of the requested maps. After this the leader of the party delivers the report to the Chief of the Special Section and receives from him the necessary maps, signing for them on receipt. The report is written thus:

To the Chief of the Moscow  
Geological Division of the  
Ministry of Geology USSR

From the Chief of the  
Orekhovo-Zuhevskiy Geological  
Party, Ivanov

Report I

I request your order for the issuance to me of the one-verst maps named below:

V-31 S-31 D-31

The maps are needed for work on the geological investigation of the N \_\_\_\_\_skaya area for the construction of the ZIP plant.

(Signed) Ivanov

19/12/1951

6 (Six) of the above-indicated maps (two of each) received

Ivanov

Returned in full  
Chief of the Special Section

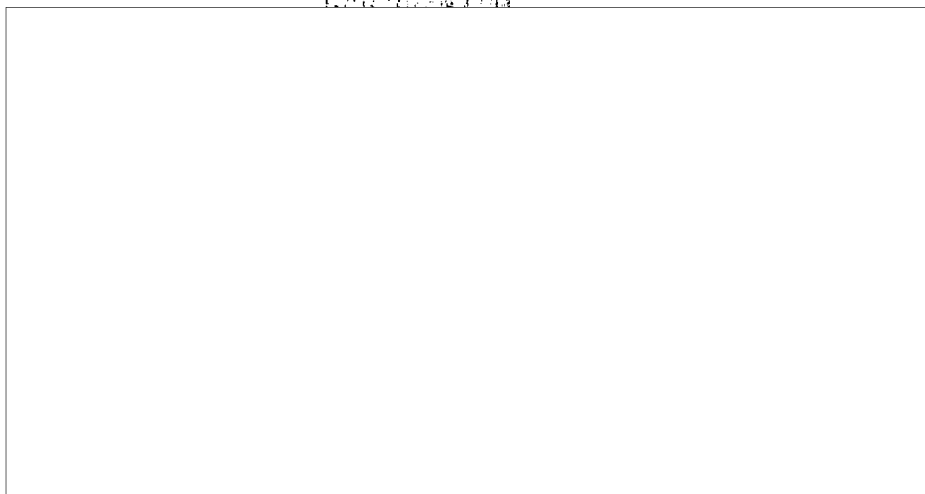
15/11/1952

Signature

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The leader of the party may use  maps only in quarters (rooms) which are reserved for the engineering and technical personnel, performing secret geological work. It is categorically forbidden to take them home, to make photostats or any sort of copy of these maps. At the conclusion of the work, the maps must be turned in for safe-keeping to the Special Section until the following work-day. However, if the leader of the party leaves for work in the field and he needs the maps there, he seals them up, writes the address of the expedition and his own name on the cover and sends them to the special section, which transmits these maps to the leader of the party in the field by an NKVD field-liaison man. In the field, the leader of the party, or his deputy, receives this packet from the NKVD, or the NKVD brings him the packet to the office of the geological party. Upon the conclusion of work, the party chief sends the packet back in the same way. He is not allowed to carry secret maps with him.

Already in peace-time, exemption (released from military service) is granted to those specialists who, in the event of war, will be needed by a given geological organization. Exemptions, i.e., orders for deferment from military service, are signed by the chief of the organization and the commissar of the Military Commissariat (Voyenkomat). The Special Section has custody of these orders and none of the exemptees knows that in the event of war he will not be called into the army. In the event of a declaration of war

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(the exemption orders are made up of two parts), a part of the exemption order is given to the person deferred, and the other part remains, as before, in the custody of the Special Section. If the exemptee receives a notice calling him up, he produces the order and receives a deferment from military service.

The Special Section handles the permanent and temporary security-screening of geologists. After the Special Section has confidentially collected all information about the moral and political character of the geologist who is being screened for security (no one knows about the intention to screen him until the time that he receives his questionnaire), he receives a questionnaire intended for the records of the personnel register and a special questionnaire designed for those undergoing security-screening.

The questionnaire for the personnel register was always filled upon entrance into the service, but the person screened was required to fill one a second time, without referring to the first questionnaire. The object of the second questionnaire, is to check the truth of the information given the first time by the person being screened.

Having filled out the questionnaire for the personnel register and the special-questionnaire, the person screened is further obliged to write out a complete autobiography, and by hand only, not on a typewriter. The same thing applies to the filling in of the questionnaires.

When every thing is prepared -- personnel questionnaire, the special questionnaire, and the autobiography -- the person screened transmits these materials to the chief of the Special Section. The latter finally receives from the chief of the organization the working qualifications of the geologist, and all this material is

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transmitted through security channels to Special Section (Osoby Otdel) of the NKVD (MVD), which decides whether the given person is to be admitted to secret operations, and communicates this decision to the Special Section.

If the geologist is permitted to do secret work, none of the documents about this decision are given to him. This information is given him orally by the chief of the Special Section. Both temporary and permanent screening is carried out in this way. In connection with temporary security-clearance, the work for which the geologist is cleared must be specified.

The questions in the special questionnaire differ little from the questions in the personnel questionnaire, but in it are such points as: "Have you any relatives in foreign diplomatic missions?", "Have you any correspondence with foreign countries?" At the end of the questionnaire there is, for example, the following: "If I shall find that any of my relations are in foreign missions, I bind myself to make this fact known immediately." And at the end: "I realize that I will be answerable to the law for divulging secret information entrusted to me." Signature.

To be granted access to secret work still does not mean to be absolutely clear in the eyes of the Soviet regime. The NKVD in granting access to secret work is guided by some special considerations. There are cases known, when a geologist was admitted to secret work without concealing his noble origin, and it is also known that some party members were not granted access.

Finally, there is one other activity which the Special Section carries out. This is the accounting and control over the safe-guarding of secret geological reports, located in the Geological Archives, mention of which will be made later.

F. The Secret Work of the Geological Archives Section

Every geological party, on the completion of its field work proceeds to an office processing of the geological data gathered.

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The result of the office processing is the geological report, consisting of the text and the cartographic materials.

Where, then, are the secret geological reports stored, i.e. the results of geological-survey, geological-exploratory, hydro-geological and geological engineering operations?

All geological reports (secret and non-secret) are kept in the Geological Archives Section, attached to each branch of the Ministry of Geology USSR, as well as in the Central Geological Archives in Moscow.

For the keeping of secret reports special quarters are set apart, equipped in <sup>the</sup> manner of the special sections.

Each geological branch [Republic, kray, oblast] of the Ministry of Geology USSR has a Geological Archives Section, and the Ministry of Geology has this section also, but it is called the Central Geological Archives Section.

Sections of Geological Archives are to be found in other specialized geological organizations not under the jurisdiction of the Ministry of Geology USSR, such as in the Ministry of Coal Industry, the Ministry of Non-ferrous Metallurgy, the Ministry of Petroleum Industry, and others.

All the geological branches of the Ministry of Geology USSR are obliged to transmit full copies of all geological reports to the Central Geological Archives Section and to have these reports in their own Archives Sections.

All geological organizations, not responsible to the Ministry of Geology USSR, are also obliged to transmit full copies of all geological reports to the Central Geological Archives Section <sup>and</sup> <sub>(to</sub> the Geological Archives section <sup>s,</sup> of the kray and oblast branches of the Ministry of Geology USSR, and to have them in their own Geological Archives.

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To the kray and oblast branches of the geological archives are transmitted those geological reports which elucidate geological work carried out on territory under the jurisdiction of the geological [sic] branch of the Ministry of Geology USSR. But sometimes it happens that the geological organizations of other ministries submit geological reports only to the Central Geological Archives, ignoring the local branches.

In this way the kray and oblast branches the Ministry of Geology USSR have in their geological archives sections all the geological reports for the territory serviced by it [the Ministry] independently of what particular geological organization conducted the geological work, and the Central Geological Archives have all the geological reports of geological work conducted on the total territory of the Soviet Union independently of who executed these activities.

The functions of the sections of the geological archives ~~of~~ of the geological branches of the Ministry of Geology USSR include the following:

1. the registration of all opened, surveyed and exploited deposits on the territory which <sup>are</sup> serviced by a given geological branch;
2. the verification of all reports concerning the discovery of new deposits and the granting of rewards for the discovery of such deposits;
3. the composition of maps showing useful mineral deposits on the basis of the one-verst topographic maps;
4. the safe-keeping of secret and non-secret geological reports, maintenance of an accounting system in regard to them, the reception of geological reports from other geological organizations, and the issuance of geological reports showing the availability of this information;

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5. the issuance of all possible types of information touching on deposits of useful minerals, hydrogeology, and geological engineering;
6. the ~~annual~~ composition of an annual balance sheet for deposits under exploitation.

We shall not pause to consider all the activities of the Geological Archives Section and will speak only of those operations which are secret.

As we have already indicated, in the Geological Archives Section are kept secret geological reports, separately (in other quarters) from the non-secret.

The quarters where the geological materials are kept, are especially equipped, the windows have iron grills, and there are fire-proof safes as well.

Next to the room where the secret materials are kept, is a work-room. Geological secret reports may not be taken further than this room, in which one may familiarize oneself with them. At night the Geological Archives Section also is sealed with a wax seal.

Only specialists from among those cleared for security, may use the secret geological reports, if they have appropriate pink permits. Practically, this is accomplished in the following way:

Geologist N., must examine a report on the results of geological-survey work of the N\_\_\_\_\_sky wolfram deposits in order to draw up a plan for new geological prospecting operations or for the comparison of new results of prospecting operations with the old, -or for the composition of an explanatory memorandum, or, speaking generally, in the line of duty, and not for reasons of personal interest. In this case also, as in the receipt of secret

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maps, Geologist M. writes a memorandum to the particular chief of the geological organisation requesting permission to examine such a report. The chief engineer verifies the propriety of such an examination of the report, and then the organisation chief appends an indorsement for the issue of this report for examination. Geologist M. having received such permission, goes to the chief of the Archives Section, who either issues the report himself or authorizes his deputy to issue the requested report. Then Geologist M. goes to the room reserved for secret work (it is located next to the secret reports storage room) and, there, waits until an employee of the Geological Archives Section brings him the report. It is categorically forbidden to make written extracts from such reports in regard to the deposit reserves, the thickness of the seams, the percentage of metal content in the ore, depth indications, etc.

Having finished <sup>the</sup> work, Geologist M. must return the report to the employee of the archives section and the latter makes a mark on his report, indicating that the report was returned.

Still another secret activity is conducted by the Geological Archives Section -- the making of balance sheets concerning deposits of useful minerals. All organisations, independently of their organisational location, which engage in the extraction of useful minerals, must transmit annually to that Geological Archives Section on the territory in which they are working, a summary of the output of useful minerals. Reports are presented for both secret and non-secret deposits. On the basis of these summaries, the Archives Section makes up annually the balance and sends it by secret channel to the Central Geological Archives, where such a balance is made up for the USSR as a whole. Therefore, the

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status of the mineral raw material base for the entire Soviet Union is known to the Central Geological Archives Section, the quantity of ores available, and what ores must be intensively searched for.

The Archives Section conducts the work of assembling maps of useful minerals. Each declared deposit, surveyed or exploited, is indicated on a map of a scale of 1 : 42,000 (1 verst = 1 inch) and attached to this map is a card index of the deposits, giving detailed data on all the literature touching on this deposit. All this material is classified secret.

In a similar manner are assembled maps of all wells, and all artesian wells, with a detached card-index. These materials are also classified secret.

Secret correspondence is also conducted in connection with the issue of all kinds of information and the receipt of information from other organisations concerning mineral ores.

All secret correspondence -- its dispatch and receipt -- is carried on through the Special Section.

At the head of the Geological Archives Section is the section chief, subordinate to the chief of the organisation. All employees of the Geological Archives Section must, of necessity, be cleared for secret work. No one of the security-cleared geologists, excluding employees of the Archives Section, has the right, without special permission, to use the secret geological materials of the Archives Section; nor may the Chief of the Archives Section, without permission of the chief of the organisation, grant access to anyone for the inspection of secret geological reports.

Neither may the Chief of the Special Sector [spetssektor] give permission for the use of secret geological materials, but he is obliged, if so required by the Chief of the Archives Section, to confirm that a given person (particularly from other organisations) was cleared for secret work.

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The Geological Archives Section carries on its own secret work within the section quite independently, but the Chief of the Special Sector [Spetssektor] watches over the observance of the security regulations, and carries out, through the Chief of the organization, all measures which may be necessary for the observance of the security regulations.

A register of all secret materials, coming into the Geological Archives Section is kept in a separate volume in which they are all described in detail. The Special Section maintains this register.

7. The Manner of Keeping, Employing, and Transmitting Secret Geological Materials in Geological Expeditions

In the two preceding chapters we familiarized ourselves with the secret geological work of the Special Section and the Geological Archives Section, and now we shall acquaint ourselves with secret work in geological expeditions.

As we have already noted above, the geological branches of the Ministry of Geology of the USSR service a definite oblast, kray, or republic. Therefore, the Moscow Branch of the Ministry of Geology of the USSR, for example, conducts the geological work on the Moscow Oblast territory; the Stalingrad branch on the Stalingrad Oblast territory; the Azov-Black Sea, Black Sea Branch, on the territory of the Azov-Kray, etc. Annually, the geological branches send to various regions of the krays or oblasts which they service, geological, geology-survey, geological engineering, hydro-geological, topographic and geodesic detachments, parties, complex parties, or expeditions. Naturally, such operations of detachments, parties, etc., may be conducted near inhabited points, and sometimes at a great distance from them.

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The following question, therefore arises: how can the leaders of the geological parties, if their place of work is sometimes more than a hundred kilometers from their geological branch, acquire all the secret geological materials needed for the execution of the work, if it <sup>is</sup> impossible to take them with them (to carry them out of the office of the Geological Section?) In such a case the field-liaison man of the NKVD [MVD] comes to their assistance.

The leader of the party—the engineer - geologist, or geologist — <sup>when</sup> (a geological-survey is being conducted), selects, in the Special Section of the geological branch, the topographic maps which are necessary to him in the operation and leaves the address to which the Special Section must forward them. In the Geological Archives Section he takes the excerpts out of the geological reports necessary to him and transmits them to the Chief of the Archives Section, and the Chief of the Archives Section transmits them to the Special Section. In the Special Section everything is packed and forwarded through the field-liaison man of the MVD, according to the address, to the particular leader of the party.

If the office (sometimes this is only a part of the room in which the leader of the party lives) is in a populated area or not far from one, the secret mail is delivered to the office of the leader of the party.

If the office (when operations are located far from populated areas, the geological party settles in tents) of the leader of the party is remotely located, the secret mail is delivered to the nearest populated point, to the authorized MVD man (they are located in every sizable populated area), and in this case the leader of the party must himself receive his packet from the authorized MVD man.

Having reached the field location of the geological operation, the leader of the party must go to the local government center,

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produce his credentials and declare that geological work will be carried on in that area. All secret geological documentation produced in the course of work must be directed back through channels to the Special Sector [Spetssektor] of the geological branch in the name of the party leader. In this case, the leader of the party himself delivers everything to the MVD.

On envelopes, packets, and parcels forwarded through security channels, the following is written:

Ministry of Geology USSR  
Moscow Branch  
Moscow, Boulevard Ordynka 20

SECRET  
Type "A"

Orekhovo-Zuyevo City  
Leninskaya Ulitsa 25

To the Leader of the Orekhovo-Zuyevo Geological-Survey Party,  
Comrade I. Ivanov

When the leader of the party, at the conclusion of operations, transmits secret mail, he writes thus:

The Orekhovo-Zuyevo Geological Survey Party  
Orekhovo-Zuyevo  
Leninskaya Ulitsa 25

SECRET  
Type "A"

Moscow City  
Boulevard Ordynka 20

Moscow Branch of the Ministry of Geology USSR

To the Leader of the Orekhovo-Zuyevo Geological-Survey Party,  
Comrade I. Ivanov

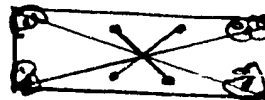
Letters, packets, or parcels of a secret nature must always be stitched with thread or cord with supplemental wax seals, but the seals must not be on the knots. It looks like this:

Face side of envelope

Address of sender Secret



Reverse side



The envelope may be stamped in the corners. Large packets and,

by the same token, parcels may be stamped on the sides.

The recipient of secret mail must ascertain that the seals are unbroken.

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At the place of work, in the office, the leader of the party has a fire-proof safe in which the secret documents are stored. He, also, like the Special Section Chief, must seal up the safe with a wax seal.

It is natural that when the leader of the party is on the scene of operations, he should have before him secret maps, if they are needed.

Secret geological materials, in the field, are used mostly by the leader of the party, who has over-all direction of operations and who is personally responsible for the execution of all work. He is the administrative and technical director, and as it were, also the chief of the Special Section of the party and the chief of the Archives Section of the party. In most (seasonal) geological parties, everything is concentrated in the hands of the leader of the party, including finances and book-keeping.

Such are the security regulations for the leaders of geological parties as established by law, but as to whether they are always carried out, we shall see in the next chapter.

#### 8. The Breach of Security Regulations

No matter how severe the regulations concerning the use of secret materials, how severe the punishment for breaches of these regulations, breaches do occur with and without the knowledge of the Special Section.

First of all, in almost all geological parties working only in the summer season (and they are by far the most numerous), there are no safes. Therefore, the leader of the party keeps all secret materials on his person in a field pouch, and when he sleeps, he puts them under his pillow. If the material is bulky, he keeps it in a portable trunk, locking it with a padlock, or conceals it in his room in a place known only to him.

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It is known to the chief of the Geological Section and the Chief of the Special Section, that the leader of the party keeps secret documents in such a manner. If then, a loss or theft of these documents, so kept occurs, the leader of the party is solely responsible, since he, knowing the manner prescribed for the custody of secret documents, acted carelessly in regard to this serious matter.

It happens very frequently that the leader of the party, going into a region remote from populated areas, carries secret maps and geological materials on his person, risking his head. This occurs especially frequently when the geological party travels by automobile. Those who travel by rail or water transport, run less risk.

This happens because the leader of the party is bound by definite dates for the beginning and the completion of field work. Delay in the transmission of secret materials, especially when the scene of operations is very remote from populated points, where there are authorized MVD agents, may sharply affect the execution of the work plans and the financial condition of the party, and that is why the leader of the party (without the consent of the chief of the geological branch or the Chief of the Special Section but with their knowledge and sometimes without it) risking everything, carries secret material with him.

Not a single geological branch chief or chief of a Special Sector [spetssektor] gives permits such an illegal act, in order that they themselves might not become responsible, but every one of them may advise the leader of the party to take secret material with him, since they also are deeply concerned with the execution of the work-plans.

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Of course, not all party leaders wish to risk their heads so blindly and, therefore, require the chief of the geological branch to supply them with a fire-proof chest, although it may be small. Such party leaders who stubbornly insist on these legal requirements, do not enjoy the especial confidence of their chiefs. Nevertheless, all party leaders try to guard themselves against accidents, and, therefore, write a report to the chief of the geological branch. They give this report to the secretary of the organization and keep a copy for themselves, on which the secretary writes that the report was received. In the report, the chief of the party write to the chief of the branch that in view of his lack of a safe, he is obliged to keep secret materials on his person and, therefore, declines responsibility for undesirable consequences which may occur.

Naturally, in any event the leader of the party is guilty, but the existence of such a report may lessen his guilt.

It frequently happens that an inter-kray or inter-oblast geological branch in some city opens its own branch, which is distinguished from a geological party in that it has a permanent address (i.e., a permanent location) over a period of two, three, or more years. Such branches are called stationary geological parties or a geological group of parties. They have their own offices (two or three rooms), a small staff of employees (finance officer, planner, secretary, and technical personnel), and small geological archives, but no Special Section, and therefore many security problems are handled in an illegal manner. Secret materials are not kept in special rooms but in the study of the group leader or the leader of the stationary party, and not always in a safe but frequently in the chief's desk. There is no special room for the processing of secret geological materials. The leader of the group

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himself receives and transmits secret mail, and is personally responsible for all breaches of the regulations covering the keeping of secret documents.

In such geological groups, security-cleared and uncleared employees sit in the same rooms during the processing of geological materials.

In view of the shortage of draughtsmen and the haste in completing reports (there is always haste in the USSR), it is the private practice of draughtsmen to take drafting work home. Breaches of security regulations in such groups are of significantly greater frequency than in geological parties, since the strictly secret materials in the possession of the leader of the party are usually only those he can actually stow in his field pouch (he tries to take only the most necessary ones), while in the groups there is a much larger quantity of secret materials and normal conditions for their safe-keeping frequently do not exist.

The work tempo (although everything is planned beforehand, the beginning of operations is always delayed, and therefore the lost time will have to be made up), the special manner of financing the geological parties, (the financing is determined on the basis of measurement of work activities), the shortages of necessary amounts of working space and equipment, and so forth, encourage the breaching of security regulations.

#### 9. The Contingent of Security-Cleared Specialists

In the fifth section -- "The Work of the Secret Sections" -- we described the general manner for the clearing of specialists, and here we shall concentrate on the clearance of specialists in relation to their speciality.

All employees of the Special Section and the Geological Archives Section are permanently inducted into the security system. Besides the Chief of the Geological Branch, the following must be permanently

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required to be cleared if they are not carrying out some special secret operation in the field, as for example, a topographer.

Each leader of a party (whether or not he has access to secret work) receives a letter of authorization from the chief of the geological branch for the conduct of work, in which, among other things, it is noted that "the leader of the party had the right to receive and transmit all types of correspondence, including secret correspondence." This, of course, does not mean that everybody is cleared for secret work. It does not constitute a clearance for secret work, but only grants the right to receive and transmit secret mail in exceptional circumstances.

The case may also arise when the parent organization wishes to communicate something to the leader of the party that the other members of the party must not know, and it therefore writes to him, in such a case, through secret channels. For example, the Special Section of the Geological Administration has discovered that a certain employee of the N\_\_\_\_\_skaya Geological Party is <sup>an</sup> "alien element". In such a case, a letter to that effect is transmitted to the leader of the party through secret channels, so that the employee may be removed from the project, etc.

From the foregoing we see that the execution of secret geological operations is carried out not only by security-cleared specialists, but there is really no need to screen all the workers, since, in the field, all the secret material is concentrated in the leader of the party only, and in fact secret materials only appear when the field work is completed and the leader begins to assemble the geological report.

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10. Supplemental Regulations Concerning the Taking of Photographs in Connection with Geological Activities in Frontier and Security Regions

Frequently in connection with geological operations photo-apparatus is employed as an aid. It is of course clear that a better method of geological documentation cannot be devised. But the use of photographic equipment under Soviet conditions requires the greatest prudence and a knowledge not only of geology but of the basic photography regulations for all amateurs.

These regulations are published in several reference books for amateur photographers. There one reads that it is categorically forbidden to photograph railway bridges and stations, harbors, airdromes, arsenals, military installations, factories and plants, government buildings, parades, court-martials, and to make any landscape photos in the region of land and water frontiers. This regulation concerns everyone and, of course, must not be broken.

But how must the geologists act if they must take photographs for scientific targets in security target areas or in areas whose territories are subject to security?

In those cases, when the geologist must undertake such photography, he must secure permission from the NKVD (MVD). What the geologist plans to photograph he must enter in a separate list, which he gives to the MVD administration, and having proved that it is actually necessary for scientific targets, he receives permission. If the targets in the region to be photographed are very important, then the survey will be conducted in the presence of an authorized MVD agent, but usually the person himself will make the photographs. The geologist does not receive any sort of written permission; permission is given him orally, sometimes with such advice as the following: "But, look now, photograph nothing else since we will know all the same." The breach of photographic

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regulations is regarded as espionage with all the consequences attached to this.

To take photos in frontier regions, it is necessary to secure permission in the same manner from the Frontier Guard Administration.

To take photographs in territories where there are classified structures or previously completed targets, it is necessary to secure the permission of the MVD, through the Special Section of the administration of the security-classified target.

Having taken the photographs, according to regulations, the geologist develops and prints them himself.

Having made use of the negatives, he must turn them over to the Special Section or the Geological Archives Section of his own organization for filing in a photo-index. The use of such negatives for one's personal purposes is strictly forbidden.

To engage in photography is not always and everywhere safe, not only for amateur purposes but also for strictly scientific operations. Geologists, therefore, refuse very frequently to use such a method of geological documentation, in order to avoid unnecessary difficulties involved in requests for permission and the possibility of unpleasantness because of ignorance and inexperience.

#### 11. The Manner of Processing Secret Geological Materials

The geological field work is concluded. The leader of the party, having collected all the secret material, transmits it to the Special Section of the Geological Branch through the MVD field-liaison man.

Having returned from field operations, the leader of the party goes to the office for the processing of field materials and the assembly of geological reports.

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In the room, especially selected for the secret processing of geological materials, the leader of the party receives a work place for himself and his assistants. Such a room is equipped in the manner of the rooms of the Special Section or the Geological Archives Section. On the doors of these rooms is posted the notice: "No Entrance" Naturally, entrance into these rooms is permitted only to those, who are working in them, and to the Chief of the Geological Branch, the Chief of the Special Sector [Spetssektor], the Chief engineer, and the Chief of the Geological Archives Section.

Drafting work is executed by security-cleared draughtsmen, and the re-printing of geological materials, by security-cleared machine operators. It is forbidden to take home any kind of classified geological materials.

Upon the conclusion of the assembly of the geological report, it is <sup>stamped</sup> "Secret" on every page. This stamp <sup>appears also</sup> on each draft. The number of printings of the reports is placed at the end of the text of the report. To the entire material a detailed description is added -- the number of pages, the number of appendices in the form of tables, diagrams etc., and the number of photographs and draft plans. All rough-drafts are also carefully transcribed and stitched together. In this form they are transmitted for safe-keeping to the Geological Archives Section.

All secret maps are returned to the Special Section, and on the receipt of the leader of the party is stamped "Returned", but his receipt is not destroyed but is attached to his record, kept in the Special Section.

The report is reproduced in quadruplicate on the machine, of which two copies remain in the Archives Section of the given Geological Branch and two are forwarded to the Central Geological Archives.

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The leaders of parties are absolutely forbidden to share the results of their work in classified problems with other party leaders.

In those cases when work is undertaken for outside organizations (by contract), the report is reproduced in quintuplicate, since one of the copies is transmitted to the client. The authors of the reports (the leaders of the parties) do not have the right to take a copy of the report for themselves if the work is classified secret.

In the years before the war, permission was reluctantly given to take author's copies in the area of non-secret operations.

#### 12. The Proving of Secret Geological Reports

Each geological report (secret and non-secret) contains the following chapters:

1. Introduction. Here are indicated the reasons which motivated the given geological operations.
2. The geology, stratigraphy, and geo-morphology of the region included in the survey.
3. A short history of prior geological operations
4. Geology - survey operations and the results of the particular operations
5. The assay of the deposit
6. The chemical and technological character of the resources.
7. Estimate of the reserves of useful minerals
8. Topographic operations
9. The mining and economic conditions of the deposit
10. An enclosure concerning the value of the deposit, the conditions governing its exploitation, concentration etc.

The report is signed by its author, the geological engineer and the leader of the party.

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Since the Soviet government does not credit the signature of only one geological engineer, it is customary for such reports to be sent for confirmation to a reserves commission for corroboration, especially if they are classified.

First, the report is reviewed by one or two geological specialists, who examine every page of the report and formulate their conclusion, in agreement or disagreement with the conclusions of the author, with his work methods, the laboratory conclusions, etc.

When the critique is finished, the report is transmitted to the commission on reserves for examination for geological-survey operations or is examined in the State Qualifications Commission (Gosudarstvennaya Kvalifikatsionnaya Komissiya) for hydro-geological and engineering-geological operations.

The chairman of the commission is always the chief of the Geological Branch, and, in his absence, the chief engineer. The scientific secretary is an engineer of the Geological Branch, usually from the Geological Archives Section. All the participants in the committee and the reviewers must be cleared for security.

The leader of the party makes a speech<sup>and</sup> the reviewers come forward as opponents. The decision of the commission takes the form of an open counting of hands. The number of members on the commission is always an odd number. All the protocols [minutes] are kept secret in the Geological Archives Section. The protocols are attached to the report, since without it they have no value. On the protocol is stamped "Secret". Such a geological report is considered valuable and the government may, on the basis of its conclusions, allocate additional funds: either for a detailed survey or the construction of an enterprise. Without the protocol of the Reserves Commission the State Bank cannot expend a single kopek.

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If the author of the report does not agree with the conclusions of the Reserves Commission, he can attach his separate opinion to the protocol. Each specialist tries to protect himself, in any event, and therefore they frequently have recourse to the separate opinion.

We shall not pause here to consider how the specialists usually try to protect themselves in this matter, but we shall note only that the Soviet leadership sees in almost every specialist a "wrecker" or an espionage agent, and that this leads to great caution on the part of the individual specialists in their scientific-technical conclusions.

13. Supplemental Security Regulations for Geological Operations in Special Construction Projects and Frontier Regions

Earlier we noted that the leader of the party, on arrival at the scene of operations, was required to go to the local government center and register his operation. In the matter of operations in frontier regions, he is also required to go to the Frontier Guard Administration and communicate in written form his arrival for the purpose of executing authorized operations. He must indicate the initial and terminal dates of the work and indicate by family-name all those persons who have accompanied him. He must immediately advise the border guard of the movement of personnel (the arrival of new employees, or the departure of old ones).

Upon termination of work, he must also notify the Frontier Guard Administration in writing of the conclusion of the operations.

The Chief of the Special Sector [Spetssektor] of the Geological Branch also informs the Frontier Guard Administration of the names of the leader of the party and of all his employees. In this way the Frontier Guard Administration is assured of the authenticity of the persons who have come to carry out geological operations in the frontier area.

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Some frontier areas are totally sealed as regards security, and the Frontier Guard Administration notifies the party leader accordingly, forbidding him and his party to enter them. If, however, it is essential that the leader of the party examine these areas, the Frontier Guard Administration (local) does not itself give permission but directs an inquiry to its parent organization. Occasionally, much time is spent in correspondence and waiting for permission from the parent organization. It frequently happens that the higher organization may refuse permission for the visit of such areas. This, of course, upsets the work plan of the leader of the party.

None of the personnel of the geological party has the right to visit frontier areas outside the limits of the area being examined in the course of geological operations. No photographs of any kind may be taken in a frontier region without special permission.

All the employees of the geological party come under constant undercover scrutiny by the members of Frontier Guard Administration, and even local inhabitants, recruited by the Frontier Guard.

The Soviet frontier is sealed and under constant supervision. Every new-comer to the frontier area will be known as such immediately. The local populace and the troops of the Frontier Guard are notified that geologists will be working in such and such an area. In a little time they will know all of them personally. Whoever does not conform to the work regulations in frontier areas, is placed under arrest in order to clarify his status and the reason for his appearance in the border region.

Geologists, who are working in a frontier area are not required to be cleared for security since they may execute non secret operations, but, naturally, they select the most thoroughly checked specialists for work in such areas.

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In connection with geological work on special construction (military and defense targets) the entire personnel of the geological party is security-screened although it may be temporary, with the exception of those persons who because of the nature of their work will not visit the structural site. These may be the bookkeeper of the party, the secretary, etc. Security screening is conducted by the Special Section of such a construction project. The Special Section of the Geological Branch forwards all the necessary forms on the employees of the geological party to the Special Section of the Special construction project, which carries the process further through the MVD.

After the screening, the Special Section of the Special construction project issues to each person screened a special permit giving right of entrance to the construction site where geological work must be done.

At the termination of work, all permits must be turned back to the Special Section of the special construction project. Responsibility in this matter rests with the leader of the party.

All geological reports concerning operations connected with special construction projects and frontier regions are classified secret.

14. The Declassification of Geological Materials in Connection with Speeches and the Press

Every year a great quantity of secret geological materials is accumulated, which is stored in special places of custody. The contents of these materials are known only to a very small group of specialists, and the expanding knowledge of the geological structure of the country requires ever new conclusions, generalisations, estimates, etc.

Naturally, classified geological materials contain not only practical conclusions, but essentially scientific data, which is probably known to all persons connected with geology. In this case,

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they have recourse to the declassification of geological materials, so that they may be used in the press and in connection with speeches at congresses, conferences, etc. This is done most simply with reports of geological operations. Frequently an entire report, excluding the geological maps, contains no secret material and, therefore, in order that such work may be released for general use, they resort to the declassification of the geological maps.

They remove the contour lines and minimize the situation details; in this form the map no longer contains anything secret. The map is published in this form and the entire report goes on sale in the book stores.

Report on geological survey operations are subject to a more thorough processing before they are sent to the press. The declassification of such reports is carried out <sup>with a view toward preventing</sup> ~~the~~ <sup>ing</sup> a specialist reading such a report from calculating the reserves of a deposit and the yield of metal from the ore. In consequence, the following are removed from these reports: the chapter on the estimate of reserves, the topographic survey chapter, the results of the chemical and chemo-technological tests, <sup>and</sup> the chart of the reserve calculations, and the contour lines are removed from the plan of the deposit. The report is processed for publication as a whole, and only after these things have been done, is it sent to the press.

Reports on hydro-geological and geological engineering research are either subjected to a very thorough processing or, if they cast light on military construction and defense targets, simply do not appear on the book market; they remain accessible only to a narrow group of specialists, who use them in work on special scientific problems.

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The same considerations apply to speeches at meetings and conferences of a scientific nature.

15. The Responsibility for the Loss of Secret Documents and the Divulging of Secret Geological Data.

The loss of classified geological documents or the divulging of their contents is considered the greatest state crime, with all the ensuing consequences and application of the most severe penalties.

The guilt of persons, allowing this to happen, is further increased depending on the moral and political status of the person undergoing inquiry, his social origin, the moral and political status of his relatives and closest friends, the existence of correspondence with foreigners, administrative penalties, convictions, service in the White Army, residence on territories occupied by the Whites and now by the Germans, etc., etc.

In such cases, a committee of inquiry <sup>"raises the matter",</sup> ~~is formed~~ as they say, and brings to light from the secret archives all data which discredits the person.

The MVD always has this data in sufficient quantities since not one of the specialists, either through his own doing or through his relatives, is not "tainted", i.e., <sup>is</sup> not completely "pure" in the eyes of the Soviet authorities.

Thanks to this, many specialists try to stay as far away as possible from classified work, on any pretext, and if they are not allowed to refuse, these operations are undertaken with reluctance. The Soviet regime never forgives anyone anything, and if it trusts anyone it is only for a time. The day comes when the specialist bears the heaviest responsibility for the most trivial mistake or carelessness, not only for himself personally, but also for the sins of all his relatives and friends, since these are visited upon him. Therefore, to lose classified geological documents or to

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divulge their contents is tantamount to suicide. Everyone knows this and everyone tries to meet the requirements, but, of course, as in every activity, here also mistakes happen; however, in the Soviet regime there are no mistakes, and therefore not a single specialist may make a mistake, let alone lose a secret document (numerous documents which from the point of view of logic contain no secret matter carry the stamp "Secret"). And once this happens to him, it indicates evil intentions, and therefore he is responsible -- responsible for everything.

16. The Manner of Using Secret Geological Materials of Other Organizations

Besides the Main Geological Service, located in the Ministry of Geology USSR, as we noted earlier, other ministries have geological organizations, which also have classified geological materials, also concentrated in the Geological Archives Sections of these organizations.

The secret Geological Archives of the Ministry of Geology USSR, as well as the secret archives of the geological organizations of other ministries may be used by various specialists having the right of access to them in accordance with the established procedure.

This procedure is as follows:

Let us assume that the geological engineer, "X", working in the Ministry of Ferrous Metallurgy, must familiarise himself with geological materials kept in the Central Geological Archives. In this case, he writes a report to the Chief of his organization, stating that it is necessary for him to familiarise himself with such and such materials. The Chief engineer adds his endorsement, and the chief of the organization attaches a recommendation for the chief of the Special Sector [Spetssektor] requesting the latter to prepare

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a letter on behalf of Engineer "X" for the Central Archives Section. The chief of the Special Sector prepares a letter, in which he notes that Engineer "X" is being sent over, with permission to familiarise himself with such and such materials. The letter states that according to such and such a letter from the NKVD (MVD), Engineer "X" has been permitted to do secret work. In the upper right-hand corner of the letter is placed the stamp, "SECRET". The letter is placed in an envelope, the envelope is sealed and stitched with thread, and a wax-seal is applied. The letter is given to Engineer "X". With this letter (it is not recommended that one lose it, although there is nothing secret in it), Engineer "X" is sent to the Central Geological Archives Section. The chief of the Special Sector acquaints himself with the contents of the letter and sends Engineer "X" to the chief of the Central Archives Section, who turns over to Engineer "X", the material which is specified in the letter. Engineer "X" familiarises himself with the geological material, making the necessary extracts, copies of the drawings, etc. At the conclusion of the work, he hands over all this material to the chief of the Central Archives Section, who transmits it via the Special Section to the Special Section of the organization which wrote on behalf of Engineer "X". Engineer "X" has no right to take anything with him personally. If he must work more than one day, then he must bring again the above-indicated letter.

In this manner, one Special Section transmits classified materials to another Special Section. Although Engineer "X" has access to secret work, there is a field-liaison man of the NKVD (MVD) for the transmission of secret materials, who must be employed in all such cases.

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17. The Secret Geological Service in Wartime

Already in the First World War, geologists were employed for the solution of various geological problems posed by the military command. The experience of the First World War showed that the attention given to geological data in the conduct of military operations frequently determines the latter's success. In the war of 1914-1918, for the first time there appeared on the front geological specialists -- in very small numbers, however.

The British were the first to summon geologists to the front, in May 1915, for the purpose of locating water sources. Captain King, the geologist, was called from London and led a small group of geologists. In the Spring of 1916, the British geologists were already directing mine operations.

The Americans, transferring their army to the Western front in 1917, brought in a group of geologists numbering five men, under the direction of Colonel Brooks. This group was continually enlarged, and in 1918 numbered 18 men.

Geologists were also used by the Russian army in securing water supplies for the armies.

An especially large scale, in the employment of geologists, was attained by the German army. German military geologists were combined in groups and task-forces, working in cooperation with topographic task-forces. In 1917 the German army had 27 geological groups, and the number of geologists reached two-hundred. In 1916 a Geological Bureau was organized <sup>and</sup> attached to the General Staff of the German army in Berlin, which served the army in all matters relating to geology. This bureau was the highest military-geological organ, directing the work of the geological groups on the front in the investigation of water-supply sources, the conduct of mine operations, etc.

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In this war, the number of geologists employed, in their specialty, for military requirements, increased significantly; and in Soviet Russia it reached a grandiose figure. Geologists were utilized by the staff of military engineers of the Red Army in and out of uniform. They were civilian geologists, who were not called into the army but conducted operations under the staff of military engineers, and, for that reason were exempt from military service.

A long time prior to the war, lists of specialists were prepared by the Staff of the Red Army. These specialists were not to be called into the army in wartime, but were to be employed in their civilian specialty, for the fulfillment of military purposes.

Among such specialists, enjoying exemptions (deferments from service in the Red Army) were numerous geological specialists. Therefore, as a rule, hydro-geological engineers enjoyed exemptions, but survey geologists were exempted according to their choice. Those who were not exempted were placed in field engineer units, in technical command posts.

In this war, a great number of geologists were utilized for the needs of the Red Army through their mobilisation into active army service and through their enlistment, in their civilian capacity, for tasks of the army engineers' staff.

We shall consider only the work of the civilian geologists, who worked for the needs of the front. First of all, geologists were employed in the construction of defense lines, carried on by the Main Administration of Defensive Works NKVD, which had Rayon Administrations of Defense Works.

Geological, hydro-geological and geological-engineering studies were made by the geologists in areas designated for defense installations. The tasks of the geological task-forces included

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the provision <sup>of</sup> entire construction areas with local construction materials (stone, sand, and gravel), whose supply bases were to be located at the shortest possible distance from the construction sites of the defense targets, such as trenches, shelters, emplacements for light and heavy artillery, emplacements for anti-aircraft artillery, observation posts, command posts, etc.

The geological archives (secret and non-secret) of the local geological organizations were utilized by the geologists in the fulfillment of these tasks; supplemental geological-survey operations were undertaken; specimens of structural materials were analyzed in the laboratories.

The work was performed at a rapid tempo and with simplified methods, with one end in view: the provision, under war-time conditions, of quantities of construction materials sufficient for the entire area of construction, which was carried on simultaneously with the prospecting activities.

The tasks of the geological engineering task-forces included the study of soils in the entire construction area, with the object of gauging their support capacities and angles of natural slope, for an estimate of the amount of concreting necessary for gun emplacements; the tasks included also the determination of the system of trench fortification, the determination of slide areas and the manner of their arrangement during the explosion of enemy shells.

Hydro-geological work included the provision of drinking and industrial water to all defense construction areas and the investigation of the ground-water conditions in order to determine the depth of foundations, etc.

At the end, a detailed map of the defense construction area was assembled, with all the geological, hydro-geological and geological-engineering data. The maps were classified and the stamp "Top Secret" placed on them.

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Civilian geologists were also used in connection with the construction of field airdromes.

In Kerch', for example, geologists<sup>S</sup> were employed for the investigation of water-supply sources for the armies disposed on the Kerch' peninsula, which were preparing for a counter-attack (this military operation, prepared at great length, concluded with the total rout of three Soviet armies, a cavalry corps, and a corps of marines). A great quantity of man-power and technical equipment was required in a short time for the investigation of water-supply sources. The military geologists of the staff of army engineers on the Crimean front were not able to carry through this task themselves and, therefore, local geologists were summoned for the solution of this problem.

Geologists had been assigned to the Kerch' front by the Moscow trust, "Spetsgeo", and their number was increased by geologists of the Azov-Chernomorskiy [Black Sea] Kray. In addition, reinforcements were sent to the drilling operations.

Similar operations, for example, were planned in the besieged city of Sevastopol', but nowhere was the work completed, since the Germans prevented it.

In addition to the above, geologists, at the request of the staff of military engineers<sup>S</sup>, assembled various types of maps on the basis of maps made for the use of the Soviet armies, that is, on the basis of one-verst topographic maps. The maps bore the following designations: hydro-geological, geological-engineering and roadability maps.

Geological engineering maps were required to contain information on the characteristics of the soils, as foundation for military construction, and their physical-mechanical composition, to indicate ~~concealed~~ concealed valleys, ravines, to fix the location of all possible kinds of caves, etc.

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The hydro-geological maps were required to indicate the level of standing ground-water, its variations, the direction and velocity of the under-ground streams, their seasonal fluctuations, and dried localities flooded by rain, or the overflow of rivers. These maps had to indicate all irrigation projects, and the areas flooded as a result of the destruction of dams, the depth of snow-cover, seasonal meteorological data, etc., etc.

Roadability maps were required to show all railroads, highways, dirt roads, country roads, and all paths. On the maps was indicated the traffic capacity of all possible roads, and also the possibility of passage for light and heavy tanks, automobiles, cavalry, as well as the possibility of passage by fighting units.

Many other operations were fulfilled by geologists in response to the needs of the army.

It is natural, that for the execution of these top-secret operations, requiring a great number of geologists, the personnel was picked by the NKVD itself, since much of the work was carried out under its supervision.

Geologists who had a court record and had been convicted under the 58th article [of the Criminal Code] were not given access to these operations, but, in the far rear, these geologists were assigned to work of military significance.

In this war a great number of geologists were summoned by the Soviet Army commands and the Committee of Defense to work on the construction of defense lines and other special assignments.

#### Conclusion

We have considered questions of security in the Geological Service of the Soviet Union in peace and war, treating these questions in general terms but fully enough for a general understanding of this question.

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From what has been presented one may gain a sufficiently clear notion of the type of control (overt and covert) to which every engineer-geologist is subject when he carries out secret geological operations.

The system of security of geological operations was so expanded in breadth and depth that one must assume that soon all geological work -- with few exceptions -- conducted on the territories of the Soviet Union, will be classified secret.

Preparations for new military encounters is forcing the Soviet leadership, on the basis of the experience of the last war, to plan the location of heavy industry in regions remote from the borders of the Soviet Union, to develop new bases of mineral resources there, and to take great care to make all this secret.

Post-war geological literature is very poor in detailed geological accounts of mineral deposits opened up during the last ten years. This indicates that questions of security in the geological service have assumed an even greater importance, striking into all areas of the geological service.

Geology, making its way into all the fields of production, acquires especial significance not only in ~~war~~<sup>peace</sup> time, but in the event of hostilities, having become the foundation of the industrial potential of the country and its capacity for defense.

Geologists, in order that they may work better and more selflessly, are placed in the category of specialists who are better paid, are favored by the Soviet regime with all possible encouragement in the form of rewards and special titles. But the increased importance of geologists leads to an increased distrust of them, and, therefore, they are deliberately placed in a position where one may not know what another is doing, and thereby the secrecy of geological work is rendered even greater.

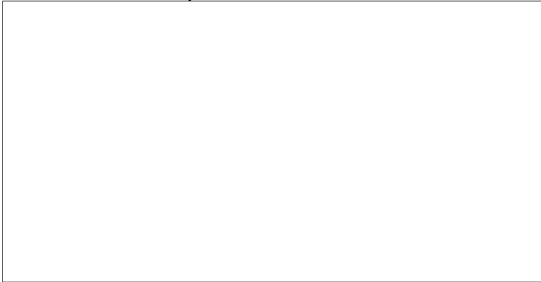
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In this manner is attained not only external but internal security. But no matter how carefully the Soviet government may try to make everything secret, and, through the press, to confuse the picture of the true state of mineral raw-supply reserves in the Soviet Union, we are nevertheless able to form a clear enough idea of these reserves, but this is not the subject of the present essay.

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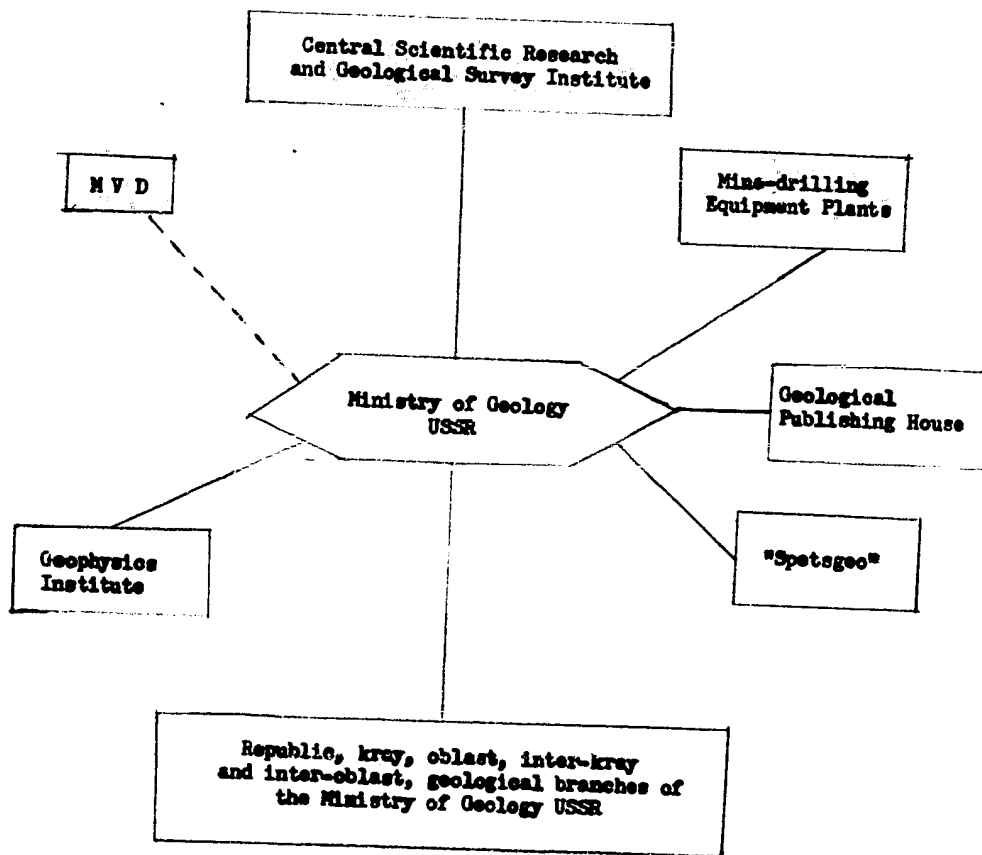


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Appendix I

Organizational Chart of the Total System of the  
Ministry of Geology of the USSR

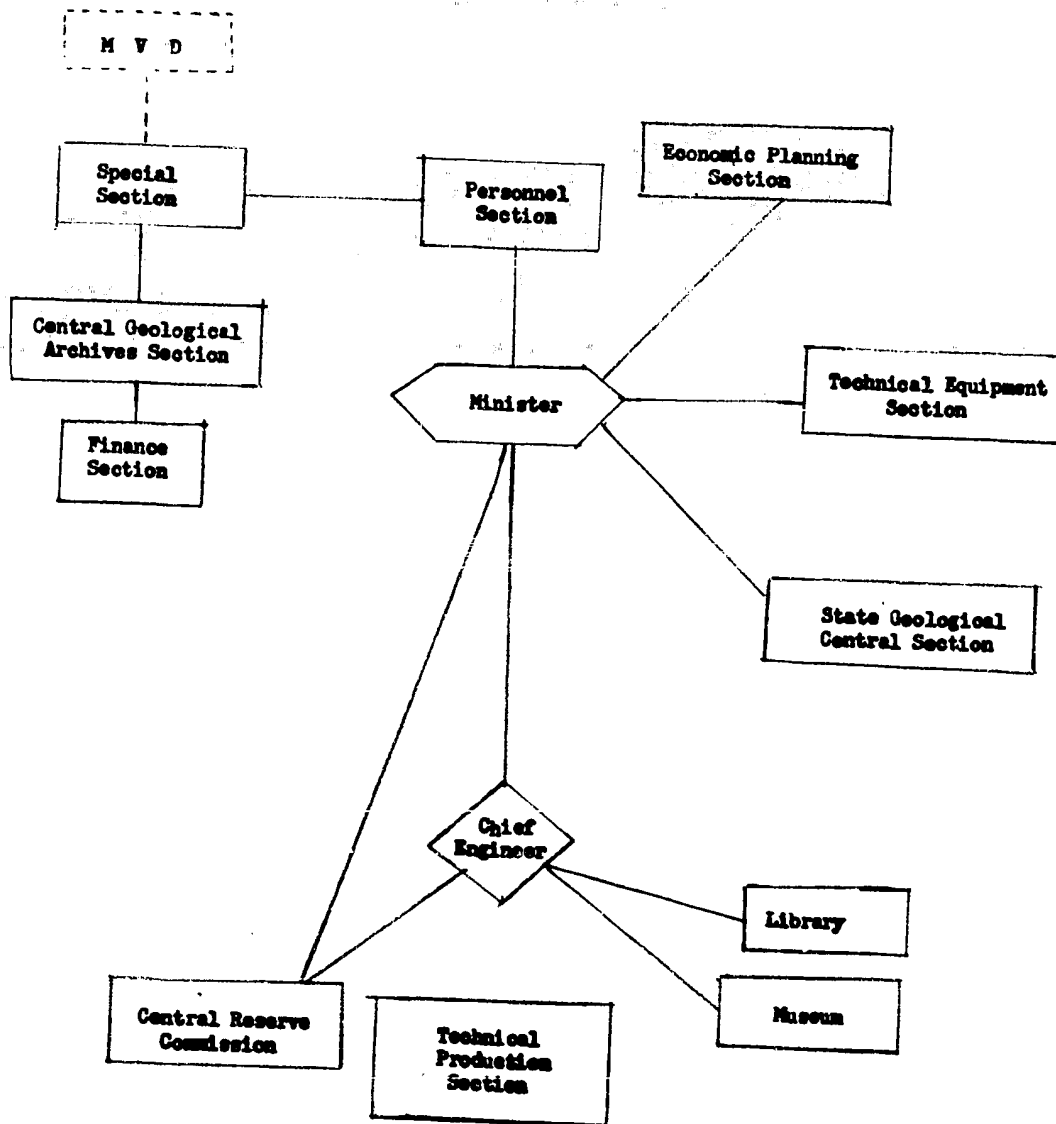


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Appendix 2

Chart of the Internal Structure of the  
Ministry of Geology, USSR

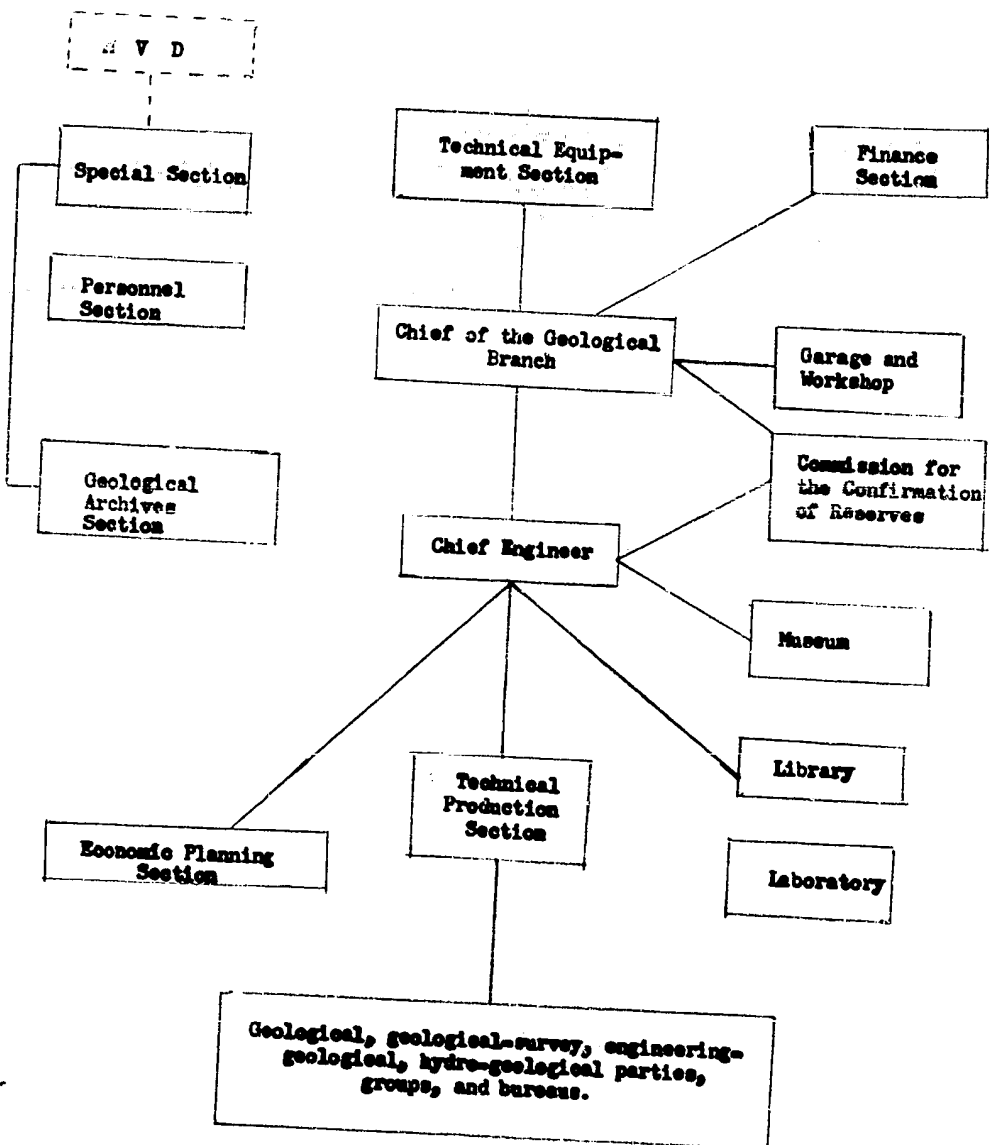


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Appendix 3

Organisational Chart of a Branch of  
the Ministry of Geology USSR

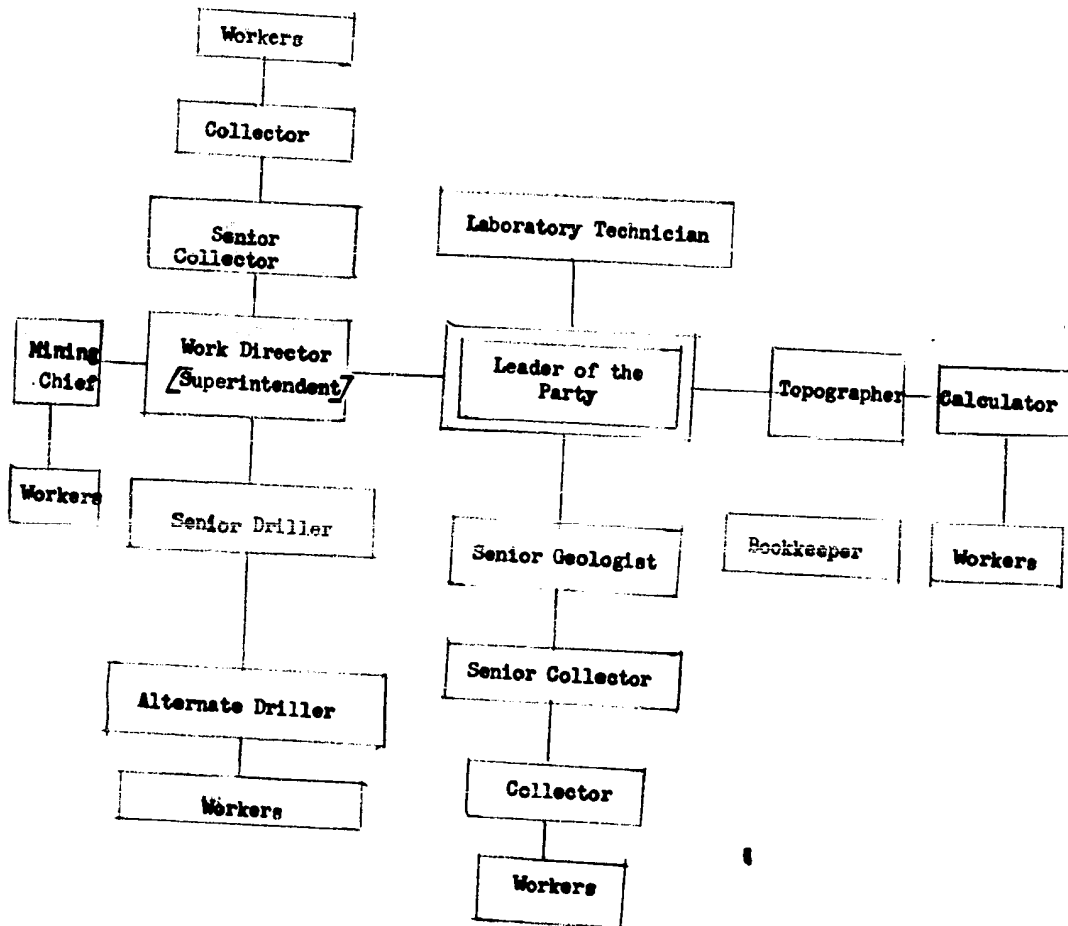


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Appendix 4

Organizational Chart of a Geological Party



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