TOP SECRET

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CIA/RR Project 6-51: Contribution to NIE-33

THE EUROPEAN SATELLITE POWER COMPLEX

PART I
INDIVIDUAL SATELLITE COUNTRIES:
ECONOMIC STRENGTHS AND WEAKNESSES

CZECHOSLOVAKIA

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CONTENTS

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Summary and Conclusions.

The economic organization of Czechoslovakia, particularly in industry, is far-advanced toward the Soviet type, and economic policy is directed from Moscow. The USSR plans to transform Czechoslovakia's essentially light industry into a heavy industrial complex, which will be integrated with Polish industry and coal resources to form a "second Ruhr," the nucleus for the industrialization of the Bloc. In view of the inability of the Soviet Bloc to supply the necessary capital equipment, as well as such raw materials as wool, cotton, rubber, and tin, it is doubtful that such a conversion can be carried out at the rate scheduled under the Five Year Plan (1949-53).

The shortage of nonagricultural labor is another important factor limiting the ability of the Soviets to carry out their plans for converting Czechoslovakia into the "machine shop" of the Bloc. Although the level of technical skill of Czechoslovak labor is generally high by Eastern European standards, the expulsion of 3 million Germans, most of them skilled workers, from the western part of the country after World War II was a serious loss. Furthermore, there is little reserve manpower available in agriculture except in the relatively backward region of Slovakia, where industrial development is being particularly emphasized.

The standard of living in Czechoslovakia is still the highest among the Soviet Bloc countries, but shortages of consumer goods have resulted in rationing and high prices, which, because the people have in the past been accustomed to standards comparable to those of Western Europe, have resulted in low public morale. Levels of living are not expected to rise appreciably by 1953.

The vital importance to the Soviet Bloc of Czechoslovakia as a source of industrial equipment is reflected in the rising value of trade between Czechoslovakia and the Bloc countries. Information on foreign trade shows that Czechoslovak processing facilities, the best in the Bloc, are being used extensively for the account of the USSR and constitute the greatest exploitable asset, next to the facilities of East Germany, gained by the USSR in the postwar extension of Soviet hegemony. Czechoslovak foreign trade policy, as formulated by the Kremlin, is to strengthen economic ties with the Bloc and to reduce trade with the West, but the composition of Czechoslovak foreign trade reflects a continued, though declining, reliance on the West. The most

important commodities secured from non-Bloc countries are iron ore, cotton, wool, other textile fibers, specialized industrial items, and nonferrous metals and products. In 1950, approximately one-quarter of the value of Czechoslovak trade was with the USSR, one-quarter with the European Satellites, one-quarter with Western Europe, and one-quarter with the rest of the world.

Czechoslovakia has a highly developed iron and steel industry with the largest output of any of the Satellites. Although the country has large reserves of metallurgical coking coal of adequate quality and of low-grade iron ore, the industry is largely dependent on imports for high-grade iron ore, iron and steel scrap, and most of the ferroalloys. Procurement of ferroalloys is one of the most serious problems confronting the industry, and failure to obtain a regular and adequate supply has been a principal factor in the marked deterioration in the quality of Czechoslovak steel products. Insufficient amounts of manganese and tungsten are mined domestically. All other ferroalloying metals are obtained entirely from abroad.

The Five Year Plan calls for an increase in raw steel production of from 2.7 million metric tons in 1949 to 3.5 million in 1953. To accomplish these goals, existing plant facilities will have to be modernized and expanded, new mills built, modern installations and equipment procured, and production methods and plant management improved. These problems would be greatly aggravated by the necessity of extensive conversion of facilities were the availability of high-grade Swedish ores to be sharply reduced. In any event, the industry is faced with a critical scrap shortage, and it is unlikely under existing conditions that annual production targets will be met in any year of the Plan.

Czechoslovakia is almost completely dependent on imports for nonmetallic minerals, as well as nonferrous metals. With the exception of antimony, mercury, and graphite, of which there are exportable surpluses, the domestic supply is meager. There is no bauxite or tin ore and only small quantities of copper, lead, and zinc ore, all of which are of low grade and too limited in quantity to permit self-sufficiency.

The supply of coal, which provides from 90 to 95 percent of the energy produced in Czechoslovakia, is adequate, and reserves are ample for an indefinite period. Some bituminous coal is imported, but an almost equal quantity of other types of coal and coke is exported. Proved reserves are estimated to be over 5 billion metric tons of bituminous and about 4 billion tons of brown coal and lignite. The bituminous coal is generally of high grade and compares very favorably with German and Polish Silesian coal. The brown coal is superior to German brown coal.

Domestic production of crude oil is unimportant, probably not greatly in excess of 50,000 metric tons a year, and known reserves amount to less than 500,000 tons. Approximately 200,000 metric tons of synthetic oil are produced annually from coal, leaving approximately 400,000 tons of petroleum requirements to be met by imports, mainly from Rumania and Austria and to some extent from the USSR and Hungary.

Nearly 85 percent of the electric power distributed over the extensive Czechoslovak grid is produced by thermal generating units. Coal is the principal source of energy. Coal reserves, most of which are brown coal with a relatively low heat content, are ample, but it is planned to increase greatly the exploitation of hydroelectric resources. Czechoslovakia is providing the generating machinery and equipment for a new electric power plant in Poland which will utilize Polish coal and will supply a large amount of electric power to Czechoslovakia.

The chemical industry is substantially self-supporting but must import sulphur and pyrites, as well as salt for alkali and chlorine production and phosphate rock and potash for fertilizers. In tonnage output and variety of production the industry ranks third after East Germany and Poland among the Satellites. It acts as a processing agent for raw materials shipped from the USSR or from the other Satellites. A large proportion of Czechoslovak production of finished chemical products, synthetic fuels, and consumer goods depending on chemical compounds for their manufacture are exported to the USSR to the detriment of the Czechoslovak economy. Nitrogen production is inadequate, and additional quantities must be imported, principally from Austria. Three-fourths of the domestic output of nitrogen is used in the production of nitrogenous fertilizers. The rubber fabricating industry is highly developed and is capable of meeting domestic requirements and providing a considerable quantity of a large variety of rubber products for export. Although production of carbon black and rubber chemicals has been started, the country is mainly dependent on imports for these products. These imports have been obtained, some clandestinely, from Western European countries and from the Soviet Bloc.

The engineering industry is the most important sector in the Czechoslovak economy, and it is the key element in Soviet plans for the industrialization of the Satellites. The main divisions of the industry include heavy machinery, aircraft, vehicles, and general machinery. In general, the industries producing capital goods are vulnerable with respect to raw materials, components, and specialized machinery, which in the past have come mainly from the West. Western export restrictions, even though loosely enforced, have impeded Czechoslovak production, inasmuch as the Czechs have been able to obtain from the Soviet Bloc only inferior metals, defective components, and almost no specialized machinery. Despite these obstacles, the trend is toward expansion of the industry and increasing conversion to war production.

Approximately 15 percent of total Soviet uranium availabilities is obtained from Czechoslovakia, which has deposits of low-grade uranium ore.

Czechoslovak transportation is not a factor seriously limiting the war potential of the Soviet Bloc. The rail network, which carries over 90 percent of all ton-kilometer traffic, is the most dense in Eastern Europe. It is more efficient than any other network in the Orbit area. Rolling stock availabilities are somewhat below present requirements, however, since a large part of domestic production of this equipment goes to the USSR and the Satellites. Furthermore, a strain is imposed on the main east-west line by the shift of traffic from

Western Europe to the Bloc countries. It is unlikely that the railroads will achieve the traffic increases planned, unless a greater percentage of the equipment produced is allocated to the Czechoslovak system.

The relatively advanced state of Czechoslovakia's economic development is indicated by the fact that only 17.6 percent of the national income is derived from agriculture. In accordance with Soviet aims to make Czechoslovakia a central supplier of Satellite requirements for industrial equipment, over 40 percent of national investment under the Five Year Plan is to be in industry in an effort to raise industrial production in 1953 to about 50 percent above the 1949 level. About 60 percent of Czechoslovak production of heavy machinery, including electrical equipment, precision machinery, aircraft, vehicles, and general machinery, and from 40 to 50 percent of tractor production is exported to the Bloc. In allocating the machinery output, priority is given to Bloc demands, often at the sacrifice of domestic requirements and to the detriment of the Czechoslovak economy.

As the most highly industrialized country in the Soviet Bloc, Czechoslovakia's vulnerability to Western economic warfare is clearly apparent in its considerable dependence on the West for certain industrial products and raw materials, the lack of which would seriously impede achievement of the Five Year Plan goals and reduce Czechoslovakia's contribution to the Soviet war potential. Of particular importance for the attainment of planned levels of production are Western bearings, industrial diamonds, sulphur, pyrites, tin, electrolytic copper, rubber, and especially Swedish high-grade iron ore. Measures that Czechoslovakia can take to compensate for Western economic warfare are limited. Some additional cotton, machine tools, and bearings might be obtained from other Bloc countries, and, at the cost of lowering living standards, some further shifts from the production of consumer goods to capital goods might be achieved.

Under Soviet direction, Czechoslovakia has considerably increased production in industries contributing to the economic-military potential of the Bloc and has curtailed production of consumer goods. No large-scale conversion to the direct production of war materials is apparent, but the Five Year Plan gives priorities for production and in the allocation of raw materials to (1) war materials production, mining, and heavy industry (particularly steel and rolling mills); (2) precision tool, vehicle, and tractor industries; and (3) light industry and optical instruments. *

* For a recapitulation of limitations, deficiencies, and requirements of economic intelligence with respect to Czechoslovakia, see Appendix A, p. 151. Footnote references in the text that follows are numbered consecutively in arabic numerals for each major subdivision. The footnotes themselves, together with references to other source material, are given in Appendix B, p. 160. Explanatory footnotes, indicated by asterisks (or, in tables, by lower-case letters), are given on the page in the text where the reference occurs.

I. Trends in the Structure of the Economy.

Summary

A high degree of governmental economic control has been achieved in Czechoslovakia. The nationalization of industry and services is nearly complete, and over 22 percent of the arable land in the country is under collective or cooperative management. About 80 percent of all retail firms are state-owned. Control is exercised primarily by the Czechoslovak government and secondarily by the Soviet Union, operating either indirectly through the national government or directly through Soviet representatives placed in selected governmental agencies.

The Central Planning Board is the highest planning authority in Czechoslovakia, and all decisions on planning are implemented through its operating agency, the State Planning Office. In addition, the State Planning Office supervises the Price Control Office, the State Statistical Office, and the Slovak Planning Office and checks on plan performance through the statistics collection services.

Labor unions have been converted into instruments of governmental control over labor. Taxes and financial mechanisms are available for directing the flow of economic activity and for checking up on possible diversions from the plan.

Several trends, however, indicate certain limitations or weaknesses in Soviet control over the Czechoslovak economy. Shortages of raw materials which cannot be filled by the Soviet Bloc greatly hinder the efforts of the USSR to reduce imports from the West and achieve maximum use of manpower and facilities within the Bloc. Efforts to expand the industrial labor force indicate that increased employment in heavy industry can be attained largely only by the transfer of labor from other industries. Reduced emphasis on collectivization in agriculture reflects the inability of the Communists to proceed at their original pace without disrupting and reducing agricultural production. Communist controls are in general consolidated and well-established, however, and are considered adequate for achieving Soviet objectives.

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1. Control of the Economy by the Government (including Direct Control by the USSR).

a. Economic Planning.

Economic planning in Czechoslovakia has both political and economic

objectives. The economic plan is formulated not merely to direct and control production and distribution but also to maintain and consolidate the power of the Communist Party. Economic plans not only give guidance and direction to economic activity but also embody control measures deemed necessary to accomplish various Communist political goals.

(1) Preparation of Plans.

Czechoslovak economic planning started with the Two Year Plan (1947-48), a series of production targets designed to raise output an average of 10 percent above 1937 levels. In these 2 years the government gained experience in planning and transformed the Czechoslovak economy from a generally free to a largely planned system.

The first Five Year Plan (1949-53) established far-reaching goals and set the stage for the introduction of control devices and mechanisms to assure fulfillment of the Plan. 1/ The base of the Five Year Plan was a statistical projection of operations, at maximum capacity and full employment, of all productive facilities. After the original statistical plan was developed, alterations were made in accordance with the demands of various policies and problems. For example, investment targets, which are the most easily changed, were revised to emphasize heavy industry at the expense of light industry, which formerly produced for export to the West. Industries to be reduced were either converted to other production or allowed to perish by cutting the maintenance allowance below the attrition rate. 2/ Agricultural production plans were changed to meet the planned requirements of other sectors of the economy. Examples of such revisions are the increases projected for industrial crops and for those crops which permit greater mechanization and integration of farms. 3/ Foreign trade plans were modified considerably for purely political reasons, as, for example, the stoppage of trade with Yugoslavia after Tito's defection and the changes made to counter Western export controls. 4/

The Five Year Plan took the form of laws which established targets for over-all production, investment, and other aggregate measures which then became the basis for the allocation of materials, labor, finance, and supplies. 5/ In addition to this general plan, an annual plan was made for 1949, for 1950, and for 1951. These annual plans are based on the Five Year Plan goals but include alterations of those goals to meet changing situations. Such revisions have been made to include increased Soviet demands for military equipment and heavy steel products, increased exports to the Satellites, and decreased exports to the West. 6/ In addition to the annual plans, there are quarterly plans or estimates which, in effect, constitute "bench marks" for checking progress or for making short-term adjustments.

The planning process begins with the transmission of Communist economic policy to the Central Planning Board, the highest planning policy board

of Czechoslovakia. All 15 members of the Board are Communist Party members, and they frequently travel to Moscow to discuss the economic problems of Czechoslovakia. 7/ This Board is composed of the Prime Minister, top officials of the State Planning Office, and a few others. 8/ The State Planning Office acts as the operating agency of the Central Planning Board and also supervises the Price Control Office, the State Statistical Office, and the Slovak Planning Office. The State Planning Office drafts plans for the Cabinet, checks on performance of approved plans through its statistics collection services, and conducts research on specific economic problems. In the performance of these duties it is given wide powers. All state and private economic agencies are obliged to cooperate with it and are subject to its instructions concerning planning techniques and methods, and all persons are required by law to supply promptly any information that it requests.

The State Planning Office has the following divisions:

Group I -- Cadre, Plan Control, Legal and Legislation, Material Balances, Investments, Labor Force and Social Services, and Commerce and Travel.

Group II -- Coordination, Financial Plan, Regional Plan, and Accounting.

Group III -- Heavy Industry, Light Industry, Construction, and Transportation.

Group IV -- Agriculture, Forestry, Food, Economic Cooperation, and Long-term Planning.

The Economic Cooperation Division in Group IV is probably the key to Soviet control of the planning organization at the working level. It is made up of the following nine sections: Coordination and Control, USSR, Poland, Southeast, Production, Foreign Trade Finance, Transportation, Scientific-Technical Cooperation, and Research and Politico-Economic Cooperation.

(2) Plan Control.

Plan fulfillment is controlled through a system of checks and counterchecks on the progress and direction of production. Financial control, for example, is exercised through banking, currency, and credit regulations. Production control is maintained through the allocation of resources, including raw materials, power, fuel, and labor. Further control is exercised through civilian rationing and other devices which limit the demand for goods. In addition, the government utilizes propaganda or psychological campaigns, various pressure tactics including "union" pressure, work brigades for special overtime work, "Stakhanovites," higher work norms, and police intimidation.

The Communist Party ultimately controls all phases of planned production and acts as the supreme economic authority, overseeing both governmental organization and various production units. Party committees are set up to assure control of governmental agencies. Party representatives are on all regional and district units of National Committees. The functions of local governments are performed by the regional and district units of the National Committees, and Party representatives are in all such units. Through these Party committees the Communists maintain control of factories or groups of factories. Production committees, trade union committees, social directors, and security officers effect control at the plant or shop levels. 9/ The Party organization appears adequate to oversee and control the complete economic process.

b. Administrative Control.

(1) Industry.

Administrative control of industry has undergone a number of drastic changes since the Communists came to power in Czechoslovakia. Party-controlled Shop Committees or Action Committees were the first units to assume control over industrial plants and shops. Experienced managers were turned out and replaced by persons whose qualifications consisted of their loyalty to the Party. The resulting production difficulties made the return of experienced technical personnel a common occurrence. The functions of Shop Committees were then cut back considerably, and control over technical management was given to cadres of social or security officers, who perform certain personnel functions and check on management.

In the process of socialization, various plants and nationalized factories were merged into enormous combines. 10/ Whole industries were brought under horizontal control through industrial bureaus of the three production Ministries -- Industry, Food, and Trade. More recently these Ministries were broken up into 677 separate directorates, which usually have corporate existence and operate like a corporation except that they are ultimately responsible to the appropriate Minister. In December 1950, in an attempt to eliminate the administrative confusion which had developed, these three Ministries were increased to four: Heavy Industry, Light Industry, Building Industry, and Food Processing Industry.

(2) Agriculture.

The Ministry of Agriculture is divided into 10 departments: Education and Advisory (Agricultural Schools), Vegetation, Animal Husbandry, Cooperatives, Mechanization, Farm Material and Labor, Pasture Lands, Research and Experimentation, National Land Fund, and Political. The farm population is most directly affected by the activities of the Cooperatives, Mechanization, and Political Departments. 11/ The Ministry of Agriculture, in addition to

formulating plans for agricultural production and requirements, has complete administrative and operative control over the National Farms and the State Tractor Stations. It also has top responsibility for the activities of the Czechoslovak State Forest National Corporation, which owns most of the forest area and administers the lumber industry. 12/

The Ministry of Agriculture apparently does not have field offices of its own but operates, in rural areas and in villages of less than 3,000 population, through agricultural sections of the local units of the National Committees, which constitute rural local government. These agricultural sections, on which the farmers are represented, bring the directives of the Ministry of Agriculture to the attention of both the private farmers and the cooperative farmers in the community. State farms are administered directly by the Ministry of Agriculture.

Personal control over farmers is effected through the government-sponsored Farmers Union, to which all farmers must belong and pay dues. The Union also organizes farmers into farm collectives.

All farm produce that leaves the farms must be delivered to an agency of the Ministry of Agriculture called the Central Agency for Handling Farm Products. This agency transacts all business relative to farm production, including the collection, storage, and distribution of farm products and the sale of seed, fertilizer, and tools to the farmers. 13/

(3) Services (Transportation, Communications, etc.).

The trends toward tighter control over economic services are similar to those in industry. The Ministry of Transportation, for example, has a Military Affairs Section which provides an important link in Soviet control over transportation in Czechoslovakia. 14/ It is reported that a military mission from Moscow is at work in this Ministry, and it is believed that this mission is effecting coordination not only between the Ministry of Transportation and the Ministry of National Defense of the Czechoslovak government but also with Moscow. 15/ The Ministry of Finance coordinates financial plans and budgets and, through the State Bank, manages the currency, controls foreign exchange, regulates investment, audits expenditures, and performs similar duties. 16/ The Ministry of Foreign Trade exercises direct control over all aspects of foreign trade. 17/

8. Factors Relating to the Effectiveness of Control.

a. Proportion of the Economy under Direct Government Control.

(1) Extent of Nationalization of Industry and Services.

The industrial sectors of the Czechoslovak economy have been

almost completely nationalized. In the appointment of plant managers, loyalty to the Party has been the primary consideration, and technical competence has been of secondary importance. 18/ The last sectors of industry to come under control have been the skilled artisans, especially those of the building industry.

Government control of economic services is also exercised through ownership. About 80 percent of all retail firms are state-owned. Remnants of private enterprise can still be found in such small service establishments as tailor and shoe repair shops and among certain professional people such as doctors, but even these relatively unimportant remnants are indirectly controlled by the government through the all-pervasive checks and pressures of the Communist Party. 19/

(2) Extent of Collectivization of Agriculture.

Collectivization of agriculture is progressing at a slow pace. 20/ At the beginning of 1951, cooperatives and state farms comprised about 22.3 percent of all arable land, and the number of cooperatives had increased to 3,279, representing a gain of about 10 percent in the year 1950. 21/ The Communists apparently wish to avoid a disruption in agricultural production at this time and for this reason have not attempted rapid collectivization.

b. Nongovernmental Organizations as Instruments of Economic Control.

Czechoslovak trade unions have been converted into semiofficial organs of the government and the Communist Party and are used as instruments for control of labor. The unions generally are organized on an industrial basis, and the shop committee usually is the key instrument of control. Shop committees administer social benefits, make assignments to vacation resorts, register vacancies in housing and recommend tenants, impose penalties on workers as disciplinary measures, and support efforts to increase production. They are able to manipulate the workers' jobs, pay, conditions of work, housing, and social benefits in order to force or otherwise "persuade" the workers to follow directives. 22/

Taxes are used in Czechoslovakia as another instrument of economic control. In order to prevent the accumulation of real estate, taxes on real estate are graduated from 5 percent of the first $4,500 valuation to 30 percent on a valuation over $400,000. The so-called turnover tax (a kind of sales tax) is used to help balance consumer purchasing power with the volume of consumer goods available and thereby to control inflation. Heavy taxes are levied on private farmers and private retailers as a means of "squeezing them out." 23/

3. Economic Strengths and Weaknesses Indicated by the Trends.

The changes which have occurred in Czechoslovakia since the beginning of the Five Year Plan have included (a) an emphasis on heavy industry, (b) the development of local sources of supply of raw materials, and (c) an integration of the economy with that of the USSR and the Soviet Bloc. 24/ These changes have brought more women into industry, shifted labor from rural areas to urban centers, and increased the number of children and young people in the labor force. 25/

Increased emphasis on the use of local raw materials reflects the difficulties the Czechs are having in obtaining imports of raw materials, even from the Satellites. 26/ The fact that trade with the East cannot supply certain requirements is a serious limitation upon the ability of the USSR to reduce Czechoslovakia's trade with the West. The uncertainty of supply of raw materials is a weakness of the Czechoslovak economy.

Planning techniques in Czechoslovakia have undergone considerable development since 1947, and planning now is much more thorough than it was in the early days of Communist domination. The planning procedure is integrated with the statistics collection offices, and the planning office, staffed with competent personnel, has been given powers broad enough to accomplish its mission. 27/

Economic weaknesses are displayed by the changing emphasis placed upon various aspects of control. The shortages of raw materials and the efforts to increase the labor force are indicative of the probable failure to achieve maximum production. Peasant resistance, with its threat of a reduction in food deliveries, has caused a deceleration, probably only temporary, of the collectivization drive. Soviet controls over the economy, however, are largely consolidated and well-established and should be considered adequate ultimately to achieve Soviet objectives. Soviet pressures, therefore, are likely to increase rather than diminish through 1952.

II. Capacity of Human Resources for Economic Development.

Summary

War and postwar upheavals reduced Czechoslovakia's manpower and left it poorly distributed. Total employment in 1949 was 5.1 million persons, or 600,000 below the level of 1946.

According to the Five Year Plan, industrial employment is to increase by 900,000 in the period 1949-53, rising from 30 percent of total employment in 1949 to 45 percent in 1953. This increase will come from a 250,000 natural increase in the population of working age; transfers of workers from agriculture, handicrafts, and commerce; and recruitment of women and youth. The planned additions represent almost the maximum, although further mechanization of agriculture is expected to create a surplus of labor which would be available to industry. The only other increase possible in labor output is that which can be achieved through overtime work. The Czechoslovak labor force is well-educated and highly skilled, and training programs to adapt these skills to key industries have been started.

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1. Size and Distribution of the Labor Force.

War losses and the deportations of 1944-47 reduced the population of Czechoslovakia by 2.4 million, 1/ causing not only an over-all labor shortage but also a severe maldistribution of workers by area and by industry. Some 3.4 million Germans, expelled from border provinces, were replaced by 1.9 million Czech citizens from other provinces. 2/ The first Two Year Plan (1947-48) was not successful in overcoming the labor shortage, because the state did not have complete control over the supply of labor. 3/ Even though the Czech labor force has been supplemented on occasion by workers from Rumania, Hungary, and the USSR, some 600,000 fewer workers were employed in 1949 than in 1946. There is, therefore, virtually no unemployment.

In 1949, total employment was about 5.1 million persons, composed of 2 million agricultural and 3.1 million nonagricultural workers. Czechoslovakia plans to add 600,000 workers to the nonagricultural sector between 1949 and 1953. Such an increase will necessitate a net reduction of 100,000 in the agricultural labor force, full utilization of the 250,000 natural increase in the population of working age, and an intensive recruitment of women.

Estimated Occupational Distribution of Labor Force
1949-53

Thousands

	1949	1950	1951	1952	1953
Agriculture	2,043 4/	2,127 5/	2,050 a/	2,000 a/	1,930 a/
Nonagricultural Workers and Employees					
Industry and Construction	1,536 7/	1,740 8/	2,053 9/	2,236 10/	2,419 10/
Handicrafts	631 11/	520 12/	406 b/	402 b/	398 b/
Transport and Communications 13/	322	326	330	334	338
Commerce, Public Employment	600 14/	583 c/	530 c/	530 c/	530 c/
Total, Nonagricultural	3,089 15/	3,169 d/	3,319 16/	3,502 e/	3,685 e/
Total	5,132	5,296	5,369	5,502	5,615

a/ Estimated on the basis of reduction planned to end of 1955, accelerated by 1 year. 6/
b/ Estimated on the basis of 1950 and decreases likely to result from absorption of artisans by industry and construction.
c/ Residual within nongricultural workers and employees.
d/ Estimated on the basis of increase to end of 1951, less increase in 1950.
e/ Interpolation between end of 1951 and end of 1953.

The state plans, within the nonagricultural labor force, to transfer some 300,000 workers from handicrafts and commerce to industry.

The number of women employed in industry increased from about 26 percent of total industrial employment in 1947 to 32 percent in 1951. 17/ Further increases are being promoted by a large expansion of facilities for day care of working mothers' children. Youths are forced into industry by limitations placed upon entrance to college, and others enter industry after completing advanced technical courses.

2. Level of Technical Training, Skill, and Efficiency.

Czechoslovakia, which has one of the highest literacy rates in Europe

and a long tradition of vocational training, is attempting to increase technical education. Enrollment in various educational institutions in 1948-49 was as follows: nursery, primary, and intermediate schools, 1,728,706; gymnasia, 70,440; colleges, 59,000; advanced specialized schools, 7,110; teachers' training schools, 3,445; agricultural schools, 11,000; technical schools, 213,545; industrial schools, 28,440; women's vocational schools, 21,815; and commercial schools, 26,157. 18/

In the immediate postwar period, efficiency was lowered by the loss of skilled German labor and the replacement of non-Communists in key industrial positions. This loss has been largely overcome by apprentice training, by the regimentation of workers, and by increases of work norms, and productivity in 1950 approximately equaled prewar levels. 19/

3. Expansibility and Adaptability of the Labor Force.

Czechoslovakia will encounter difficulty in attaining the increases in industrial manpower called for in the Five Year Plan. Without the rapid collectivization of agriculture, further expansion of the industrial labor force is not likely. The official work week is 48 hours, and although data are not available to indicate the amount of overtime now worked, the cancellation of holidays and the lengthening of the work week would add from 6 to 10 percent to the man-days of labor per year.

III. Living and Working Conditions.

Summary

The general living conditions of the Czechoslovak worker have improved over prewar levels, although periodic food and clothing shortages necessitate general rationing, and housing shortages have not been overcome, because industrial construction has been given priority. The status of the middle class, including professionals, traders, and independent farmers, has deteriorated under the Communist regime. Such social benefits as medical care, old age pensions, and paid vacations, which formerly were enjoyed only by the middle and higher income groups, have been extended to all workers and to peasants who have joined farm cooperatives. Full employment and the special privileges granted to workers have improved the economic position and the social status of labor.

Although the population is not subject to labor conscription, the obligation to work is generally accepted and enforced. Wages, hours of work, and general working conditions are determined by the government. The functions of trade unions have been limited chiefly to increasing output and productivity norms and conducting a variety of educational, propaganda, and social activities. The speed-up methods modeled on Soviet techniques are causing discontent among the industrial workers and frequently result in low productivity and failure to reach the planned goals of output. Recent efforts of high officials to restore morale among workers signify the government's awareness of the situation. Discriminatory measures intended to spur the collectivization drive have improved the living standards of workers on state and collective farms, whereas the position of the independent peasant has deteriorated.

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1. Living Conditions.

a. General.

Improvement in Czechoslovakia's standard of living since 1947 has been slow because of reconstruction needs, a bad harvest in 1947-48, and social upheavals following the Communist coup in 1948. A large part of the country's economic effort in 1949 and 1950 was concentrated on increasing the production of capital goods and military equipment at the expense of consumer goods. Shortages of consumer goods have led to tightened controls and high prices for the general public and to allowances or priorities for shock-workers ("Stakhanovites") and collective farmers.

b. Food.

The food supply in Czechoslovakia has been rapidly improving because of the successful harvests of 1948-49 and 1949-50, but deficiencies in bread grains have had to be covered by imports from the USSR. Flour, bread, milk, sugar, butter, eggs, and meat are rationed, but supplementary quantities of these products are available at high prices in the free markets. In 1949 and 1950, some staples were derationed, and their prices were reduced, in some cases from 10 to 35 percent, and in the case of bread, 25 percent. In December 1950, prices of bread and flour rose again, and on 1 March 1951 rationing of these items was reinstituted. Equalitarian rationing was abandoned in January 1949 in favor of a system which gave preference to workers over nonworkers and to high-producing over low-producing workers. 1/

Despite the rationing restrictions, the population receives sufficient food. Most urban workers obtain food at reasonable prices at least once a day from special canteens and lunchrooms at their places of employment. Children in urban areas whose parents are employed also are provided with lunches at nominal cost. Such luxury foods as poultry, pastry, sweets, and candied fruits, enjoyed in the prewar days not only by the propertied classes but also by many of the workers, are again available but at such exorbitant prices that only the higher-income classes of officials and "Stakhanovites" can afford them. Although the standard of living of these groups has risen above prewar levels, such capitalist elements as professional men, tradesmen, white collar workers, independent farmers, and priests are able to buy only bare necessities, for which they must pay high prices. Government claims, however, state that average food consumption per capita is higher than in prewar years. According to one such report, "In 1950 consumption of food and the other industrial products considerably exceeded prewar consumption. Whereas before the war working class families could not afford butter, its consumption has today become a matter of course and in 1950 rose from 3 kilograms to 4.85 kilograms per person." 2/ The same source compared free-market data and found meat sales 400 percent higher, butter sales 68 percent higher, sugar sales 76 percent higher, and egg sales almost 500 percent higher in December 1950 than in December 1949.

c. Clothing.

A limited quantity of essential clothing and shoes is obtainable at low prices in the rationed market and at high prices in the free market, established in January 1949. Even the purchases in the free market are restricted, however, and cover only the minimum needs of the population.

d. Other Consumer Goods.

Availability of consumer goods has increased since 1950. Basic items are moderately priced, but the prices of less essential goods are exorbitant.* All luxury items are of domestic origin, but most of the output has been designated for export. The workers, who have never used such articles, are now being promised them in the near future, provided they raise their production norms, but so far only a few "Stakhanovites" have been able to afford them.

e. Housing.

Although an extensive construction program has been inaugurated in Czechoslovakia, housing construction has been slow because of shortages in building materials and because of priorities given to industrial construction. The present difficulty of the housing industry, which has been under criticism whenever its output failed to meet planned targets, is a result of the shortages of manpower and lack of mechanization. 4/ Deliveries of construction machinery, expected from the USSR since 1948, have not materialized. The housing shortage is especially acute in industrial centers where priorities in housing accommodations are given to essential and influential persons. Rents have remained under effective control, and recent rumors of general rent increases apparently were not substantiated. 5/ Since industrial construction and cooperative housing have priority over private housing, shortages probably will continue through 1952.

f. Health.

Health services have been nationalized and are freely provided to the general population. Because of the wide coverage and the shortage of medical personnel, however, the quality of the service is low.

g. Social Welfare.

Such social services as recreation, child care, and old age pensions are being extended to the Czechoslovak population on a much wider scale then they were under the previous regime. Over 19 percent of total state expenditures in 1951 are allocated to social welfare and health services. 6/

*Czechs in 1950 purchased 12,700 refrigerators, 17,200 kitchen robots (an electric machine with many attachments which does various household jobs), 242,000 bicycles, 15,000 washing machines, 33,000 sewing machines, 29,300 vacuum cleaners, 15,000 electric ranges, and 214 radios. 3/

2. Working Conditions.

Wages, hours, social benefits, and general working conditions are regulated by the state. Industry has been standardized on an 8-hour day and a 48-hour week, but longer hours occasionally are worked to increase production. In many industries a three-shift system keeps the plants in continuous operation. Unions have no bargaining power over wages, hours, and other conditions of employment but have advisory power over working conditions in individual industries. Trade unions and their committees and Communist Party trustees are authorized to carry out certain improvements in sanitation and work loads in local plants and work shops and oversee the enforcement of regulations.

A speed-up system emulating the Soviet "Stakhanovite" method and Soviet techniques for maintenance of discipline have been widely introduced. Wage payments in most instances are based on piece work.* Production norms are currently being revised to increase productivity and efficiency, but detailed information on these revisions is not yet available. Wage incentives currently used in Czechoslovakia include loyalty bonuses for higher output, and special Sunday shifts and overtime work. These are now to be supplemented, according to the Czechoslovak press, by better utilization of normal working hours, better organization of work, better utilization of machinery, proper use of two and three shifts, better coordination in the supply of raw materials, prevention of hoarding, and alleviation of the manpower shortage.

Accident rates are high, and safety provisions, particularly in the mining and transport industries, are inadequate.

Not only industrial workers, farmers, and government employees but also professional men such as lawyers and doctors are subject to strict control measures in the practice of their occupations. Their activities must be in line with the Communist ideology and code of law, and those who do not comply are purged or placed in compulsory labor camps for "reeducation." The state determines the fees of professional men and assigns clients to them.

Independent artisans and traders have been almost eliminated or absorbed by state enterprises,8/ and their economic position has been reduced to that of industrial wage earners or lower.9/ Farm workers on state and collective farms enjoy a more favorable position than they enjoyed before the war, because of social, health, and pension benefits and shorter hours of work. Working conditions of the independent farmer, however, have deteriorated. Under government pressure for farm collectivization, he suffers from tax discrimination, heavy demands for deliveries, and a lack of essential social benefits.

* Data for various categories of workers are unavilable, but the average monthly wage of Czechoslovak workers in 1950, according to the government, was 4,340 crowns ($86.80), having increased from 3,600 crowns ($72.00) in 1945. 7/

IV. Foreign Trade and Finance.

Summary

Czechoslovakia is of key economic importance to the Soviet Bloc, largely because of its advanced development and extensive capacity in engineering and heavy industry. The Soviet Union itself accounts for approximately one-quarter of all Czechoslovak trade, approximately $200 million a year of both imports and exports. From 40 to 50 percent of Czechoslovak exports to the Soviet Union in 1949 and 1950 were finished industrial machine and metal products. On the other hand, Soviet exports to Czechoslovakia have been composed largely of raw materials, principally iron ore, cotton, and foodstuffs.

Czechoslovakia also contributes to the economic war potential of the Soviet Bloc by shipping heavy industrial equipment and supplies to the other European Satellites. The ability of Czechoslovakia to contribute transportation equipment and other industrial products has been a major factor in current efforts to make the European Satellites a self-sufficient industrial area. Again, Czechoslovakia imports from the other Satellites largely raw materials, the production of which does not require technical and industrial skills.

Trade with Western Europe decreased in 1950 from its postwar high in 1949 and undoubtedly will continue to decrease in 1951 and 1952. Trade with the other European Satellites is expected to increase, and trade with the Soviet Union probably will increase slightly. Imports from other areas of the world probably will remain at approximately present levels because certain basic raw materials which Czechoslovakia needs, such as jute, cotton, wool, and some nonferrous metals, are not available within the Bloc.

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1. Introduction.

Czechoslovakia's prewar foreign trade was the most diversified of that of any Eastern European country. In 1937, Germany, the leading trading partner, accounted for only 15.6 percent of imports and 13.7 percent of exports. Next in importance was the US, supplying 10.2 percent of imports and receiving 9.3 percent of exports. Major Western European countries accounted for most of the balance, but non-European commerce, principally with India, Turkey, South Africa, Egypt, and Australia, was considerable. Moreover, trade with other Eastern European countries was important, particularly that with Rumania, which accounted for 5.2 percent of total Czechoslovak foreign trade. Czechoslovak-Soviet trade was negligible, being only 1.4 percent of total imports and 0.8 percent of exports.

The composition of Czechoslovakia's foreign commerce in 1947 reflected a prosperous economy based on the processing of raw materials into light manfactures for export. Principal imports were agricultural products, fibers and yarns, and minerals, followed by machinery and fuels. Finished textiles, iron and steel manufactures, glassware, foodstuffs, machinery, and war materials were the major exports. Export surpluses were customary, and the absence of foreign economic domination allowed the Czechs much leeway in the conduct of foreign trade.

Relatively light war damage to Czechoslovakia's economic complex permitted a comparatively rapid comeback of foreign trade, and, before the Communist coup of February 1948, the Czechs were fairly successful in trading simultaneously with both the East and the West. The biggest handicaps, aside from supply and other difficulties common to all countries, were the loss of skilled workers in the glass, jewelry, and other trades and the traditional dependence on foreign transit facilities because of Czechoslovakia's inland geographic position. Business was carried on through numerous private traders and followed prewar patterns, except that agricultural imports were greater and exports smaller than formerly as a result of deficient harvests.

Since 1948, Communist policies have effected a complete reorientation of Czechoslovakia's international trade. Trade with the Bloc now receives priority, and exports to the West are tolerated only insofar as they are necessary to pay for essential purchases. The manufacture of light consumer goods is being deemphasized as Czechoslovakia becomes the main supplier of industrial equipment among the European Satellites. In addition, trade has been initiated with Communist China.

Czechoslovakia's foreign trade reached a postwar high in 1949. Total imports rose from $754.3 million in 1948 to $788 million in 1949, and exports from $753 million to $806.2 million, producing the first export surplus since 1946. The 1949 export target of $1,865 million, however, was missed by a considerable margin, mainly because of political difficulties with the West, implementation of Western export controls, and the declining quality of Czechoslovak exports. Total trade with Western Europe declined in 1950, combined imports and exports being $380 million as compared with $507 million in 1949, but the composition of trade continued to reflect some reliance on trade with non-Soviet Bloc countries. The most important commodities procured from non-Bloc sources are iron ore, cotton, wool, other textile fibers and yarns, specialized industrial items, and nonferrous metals and products.

The increasing importance of Czechoslovakia to the Bloc and its lessened reliance on the West are indicated by the trend of 1950 trade, approximately one-quarter of which was with the USSR, one-quarter with the other European Satellites, one-quarter with Western Europe, and one-quarter with the rest of the world.

2. Import Requirements.

a. Overt Trade.

Czechoslovakia's principal import requirements are coal, iron ore, textile raw materials, pyrites, chemicals and pharmaceuticals, certain specialized industrial items, nonferrous metals, petroleum products, rubber, and foodstuffs. Some of these are available within the Soviet Bloc, such as Polish coal, Soviet iron ore, East German chemicals and pharmaceuticals, East German and Soviet specialized industrial items, Polish and Bulgarian zinc and lead, Rumanian petroleum products, and Soviet and Balkan foodstuffs.

Certain commodities, however, must be procured outside the Bloc. High-grade iron ore is obtained from Sweden. Many of the textile raw materials, hemp, flax, jute, ramie, and wool are acquired of necessity from non-Bloc sources. Pyrites is imported from Yugoslavia, and some chemicals and pharmaceuticals are procured from Western Europe.* Certain types of bearings, industrial diamonds, abrasives, and specialized machinery are available in necessary quantities only in the industrial sectors of Western Europe, whereas tin is available only from Western-controlled sources. Electrolytic copper continually commands a high priority among Czechoslovak trading agents, and rubber must be procured from Malaya or Indonesia.

b. Clandestine Trade.**

Czechoslovakia is the most active of all Soviet Bloc countries in the field of clandestine trade. As a result of its traditionally active international commercial relations, Czechoslovakia has a wide network of trading agencies and a large group of trained personnel available for such activities. In spite of defections and the necessity of installing political "reliables," the Czech traders are still the most active and most successful of all Soviet Bloc agents in the procurement of critical materials.

Many commodities and channels are used. Copper is transshipped through Belgium, and bearings come from Italy through Switzerland and Austria. High-quality industrial goods from West Germany arrive through third countries or are smuggled across the border.

Czechoslovakia engages in another type of clandestine activity of direct benefit to the war potential of the Soviet Union. In addition to a continuation, on a reduced scale, of its traditional arms export trade, Czechoslovakia supplies arms to dissident groups (preferably Communist) throughout the world, thus furthering the aims of international Communism as well as providing hard currencies.

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* The term Western Europe includes all the OEEC countries and Spain.

** Clandestine operations are defined here as procurement of strategic materials in violation or circumvention of Western export controls.

3. Trade with Non-Soviet Bloc Countries.

Slightly less than half of Czechoslovakia's trade is with non-Soviet Bloc countries, and this trade is divided almost equally between Western Europe and the rest of the world.

a. Exports to Non-Soviet Bloc Countries.

(1) Western Europe.

Czechoslovak exports to Western Europe in 1949 were $265 million but decreased 22 percent in 1950 to approximately $206 million. Allowances for the price increases which took place in the latter half of 1950 accentuate this decline in terms of volume. In spite of this drop, Czechoslovakia accrued an export surplus of approximately $30 million, about $10 million more than its export surplus in 1949. The largest export quantities in 1950 went to West Germany, the UK, the Netherlands, Switzerland, Sweden, Austria, Italy, Turkey, France, and the Belgium-Luxembourg customs union.

(2) Other Areas.

Czechoslovak exports to other areas of the world are similar to those sent to Western Europe and include textiles, steel products, transportation equipment, industrial equipment and supplies, sugar, hops, and malt. In addition, arms are exported to these areas. In spite of the official Soviet Orbit blockade, Czechoslovakia still trades with Yugoslavia through Austrian and Swiss intermediaries. It appears that metallurgical coke is the principal, if not the sole, export from Czechoslovakia to Yugoslavia.

b. Imports from Non-Soviet Bloc Countries.

(1) Western Europe.

The largest single category of imports, by value, from Western Europe is machinery, particularly machine tools and their components. The second largest category is wool and other animal hairs, followed by iron and steel manufactures and chemicals and pharmaceuticals. In 1949 these four categories accounted for about 30 percent of total Czechoslovak imports from Western Europe. The importance of imports from Western Europe, however, is not apparent solely from general commodity groupings or total values. Industrial diamonds, electrolytic copper, tin, bearings, and certain specialized types of industrial machinery have a strategic importance beyond that reflected in the trade statistics.

The relative importance of Czechoslovakia's trading partners is the same in both imports and exports, but trade is not bilaterally balanced in all cases. For instance, although Czechoslovakia exported $24.6 million worth of goods to the UK in 1950, it imported only $13.9 million worth. In

trade with the Netherlands, an export surplus of $10 million was realized, and a similar situation existed in the case of West Germany.

Imports from Western Europe in 1950 declined more than 30 percent from 1949 levels. The importance of this reduction is not in the decreased total figures but in the categories in which the decline took place. Imports of chemicals and pharmaceuticals dropped noticeably, as did shipments of mineral fuels, minerals, and ores. These particular items are not generally available from other non-Bloc sources. It is noteworthy that similar drops did not take place in imports of metals or of wool and other animal hairs.

(2) Other Areas.

Czechoslovak imports from non-European countries consist almost exclusively of raw materials, such as cotton from Egypt, rubber and tin from Malaya and Indonesia, jute from Pakistan and India, and hides, leather, and quebracho from Argentina and Brazil. The particular raw materials which Czechoslovakia needs from these countries apparently cannot readily be supplied from Soviet Bloc sources in the near future. This trade will therefore probably continue at approximately its present level through 1952.

4. Trade with Soviet Bloc Countries.

Trade with Soviet Bloc countries constitutes a little more than half of total Czechoslovak trade. Approximately half of this is with the Soviet Union and the other half with the European Satellites. Trade with China is a small percentage of the total.

a. Trade with the USSR. 1/

(1) Exports to the USSR.

The most important exports from Czechoslovakia to the USSR are locomotives, light and heavy dump cars, and other railway equipment; electric motors; heavy machinery; other metal products; textiles; shoes; sugar; and malt.

Metalworking industries provided in 1949 about 25 percent of total Czechoslovak exports to the USSR, and textiles, shoes, sugar, and malt accounted for most of the balance. In 1950, however, as a result of changing emphasis on trade within the Bloc, it is probable that more than half of the total was composed of metal products. Textiles, shoes, sugar, and malt continued to provide most of the rest of Czechoslovak exports. The armament industry is producing weapons and components for the USSR, some of which are now being manufactured in conformance with standardized Soviet specifications.

(2) Imports from the USSR.

Czechoslovak imports from the USSR are composed primarily of foodstuffs, raw materials, and semifinished products. Capital equipment and finished industrial products account for probably less than 5 percent of the total. 2/ The primary commodities received from the USSR by Czechoslovakia are iron ore, manganese, copper, nickel, lead, wheat, rye, corn, and cotton. The low grade of the iron ore and the cotton, however, have occasioned some difficulties in Czechoslovak industry, reducing efficiency and, in the case of cotton, lowering the quality of products. The reintroduction of rationing of bread and bread flours in 1951 indicates that the wheat imported from the USSR probably was stockpiled.

b. Trade with Other Satellites.

Trade with other Soviet Bloc countries, except with East Germany, follows the general pattern of all Czechoslovak trade — the exchange of finished industrial products for semifinished goods, raw materials, and foodstuffs.

(1) Exports to Other Satellites.

Czechoslovak exports to Albania, excluding war materiel, are approximately $3 million a year, a little higher than provided in the trade agreements. 3/ The most important exports to Albania are textiles and trucks, which together account for about one-third of the total. These and other goods are sent primarily as direct support for the weak Albanian economy. Simultaneously with the signing of the 1949 trade agreement, Czechoslovakia extended a $2.7 million credit to Albania to be repaid in goods, starting in 1951. Czechoslovak exports to Bulgaria 4/ are between $10 and $15 million a year. Road materials, machinery (principally agricultural), instruments, chemicals, and hops represent about 75 percent of the total.

Czechoslovak exports to China 5/ appear to be designed primarily to support the Chinese war potential rather than to aid the industrial development of the country. Skoda machine guns, antitank guns, artillery, and ammunition were shipped to China in 1950 in exchange for soybeans, soybean products, and wool. In 1951, Czechoslovakia is committed to deliver 800 trucks, 120 buses, and 3,000 motorcycles to China, and it has been reported that the USSR is ordering from Czechoslovakia large quantities of railroad equipment for China.

Czechoslovak exports to East Germany 6/ were approximately $15 million in 1949 and $27 million in 1950. Because of the Berlin blockade and counterblockade and the problems of economic rehabilitation which followed the postwar plunder by the USSR, East Germany in 1948 and 1949 incurred a $2.9 million import surplus with Czechoslovakia. Czechoslovak exports to East Germany consist of foundry coke, tires, rolled metal products, textiles and

leather goods, and production equipment. In early 1951, East Germany ordered from Czechoslovakia two three-high rolling mills and one seamless tube rolling mill, valued at a total of $2.8 million.

Czechoslovak exports to Hungary 7/ are composed of timber and timber products, metallurgical coke, metal products, and chemicals. Exports to Poland 8/ include mining equipment, metal products, metallurgical coke, agricultural machinery, tires and tubes, technical equipment, radio receivers, footwear, and textiles. These exports in 1949 totaled approximately $45 million, and the Communists claim an increase of 25 percent in 1950.

Exports to Rumania, 9/ according to the 1950 trade agreement, were to consist of general industrial equipment, metal products, chemicals, and vehicles.

(2) Imports from Other Satellites.

The decrease in imports of certain commodities from Western Europe is being offset by production in or by procurement through other Bloc countries. Imports from East Germany 10/ are therefore of great and increasing importance to the successful reorientation of Czechoslovak trade. Machinery, semimanufactures, chemicals and pharmaceuticals, fine instruments, and optical equipment, all of high quality, are available from East Germany. As the industrial expansion of East Germany progresses, Czechoslovakia will be able to acquire many more of the goods which it now can obtain only from Western Europe. It is apparent that a large measure of success has already been achieved in this program.

Czechoslovak imports from Poland 11/ are of considerable importance to the economy. In 1950 the Poles agreed to deliver 3.9 million metric tons of coal, and this goal probably was met. Czechoslovakia has indigenous coal resources which are suited to the production of metallurgical coke but does not have sufficient coal for general industrial use. These imports, therefore, are of great importance to Czechoslovak industry. In addition, Poland exports to Czechoslovakia zinc, chemicals, agricultural products, and machinery. Czechoslovak imports from Poland in 1949 totaled $40 million, and the Communists claim that there was an increase of approximately 25 percent in 1950.

5. Trends -- Including Indications of Mobilization for War.

A continued increase in Czechoslovak trade with Soviet Bloc countries, a continued decrease in trade with Western European countries, and trade with other areas of the world at approximately present levels can be expected in 1951 and 1952. Increased exports of heavy industrial equipment and supplies will result from the Czechoslovak Five Year Plan (1949-53), but increased imports of industrial raw materials and supplies and specialized equipment will

be necessary to carry out this program. Czechoslovakia and East Germany will supply much of the industrial equipment needed in the effort to make the Soviet Bloc a self-sufficient industrial complex. Expansion of the armament and heavy machine building industries, which represent a direct Czechoslovak contribution to the economic potential for war of the Soviet Union, will continue.

V. Agriculture.

Summary

Agriculture in Czechoslovakia is conducted largely by peasant farmers engaged in the production of grain, livestock, and sugar. In the postwar period, grain production has fallen off, meat production has increased enough to provide a slight surplus in 1950, and sugar production has increased substantially, resulting in a sizable export surplus.

The cotton textile industry is heavily dependent on imports of raw materials from the USSR, which closely allocates the supply and distribution of textiles within the Bloc. The woolen textile industry depends on non-Bloc sources for 95 percent of its requirements. Czechoslovak industry has the capacity and skills to add materially to the textile production of the Soviet Bloc.

Collectivization of agriculture has made relatively little progress in Czechoslovakia and thus has had little effect on production.

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1. Grain.

a. Production.

Grain and grain products constitute the most important agricultural commodities of Czechoslovakia,* 60 percent of the arable land being planted to grain. Wheat and rye are used chiefly for human consumption, while coarse grains — corn (maize), barley, and oats — are used for livestock feeding. The prewar consumption of cereal products in Czechoslovakia constituted 41.9 percent of the caloric value of all foods consumed. This ratio was less than those in other Eastern European countries, however, but there was greater consumption of high protein foods in Czechoslovakia. Postwar trends indicate a lowering of the standard of living in respect to food, with less high protein food now available and more cereal grains consumed than in prewar years.

Production of grain in Czechoslovakia maintained a relatively stable average in prewar years, and the country was approximately 95 percent self-sufficient in food and feed requirements. Postwar planning has altered this position by decreasing cereal production and increasing coarse grain production, a policy which has increased the need for imports of food grains and grain products, chiefly from the USSR.

* Grain unless otherwise specified includes wheat, rye, barley, oats, corn (maize), and meslin, a minor grain.

Agricultural methods are much further advanced in Czechoslovakia than in the other Satellites. Planning, crop rotations, increased use of fertilizers, and other modern agricultural techniques enable the Czechs to obtain crop yields higher than in any other Bloc country. The most intensive cultivation and crops of the highest yields are found in Moravia and Bohemia. Slovakia is less important as a grain-producing area because of its geographical position and lower level of agricultural development.

Grain production in 1950 is estimated at 4.7 million metric tons as compared with a prewar (1935-39) average production of 5.7 million metric tons. The decrease results from planned reductions in the sown area of grains and smaller yields per hectare.

Latest Annual Estimates of Grain Production
1948-50

		Thousand Metric Tons
Year	Estimate	Probable Range of Variation of Estimate
1948	4,554	4,437 to 4,671
1949	5,122	4,990 to 5,253
1950	4,684	4,564 to 4,804

b. Probable Production.

Pressure has been brought to bear on the Czechoslovak Government by the USSR to increase wheat production at the expense of feed grains and forage crops, and slight increases in total grain production may result, as indicated below.

Estimated Grain Production
1951-52

		Thousand Metric Tons
Year	Estimate	Probable Range of Variation of Estimate
1951	4,763	4,641 to 4,885
1952	4,812	4,688 to 4,935

c. Domestic Requirements.

Because of population increases, domestic requirements of grain have been gradually rising in the past few years and will continue to rise through 1953.

Estimated Domestic Requirements of Grain
1948-53

Thousand Metric Tons

Year	Estimate	Probable Range of Variation of Estimate
1948-49	4,880	4,828 to 4,933
1949-50	5,179	5,118 to 5,240
1950-51	5,315	5,260 to 5,368
1951-52	5,384	5,319 to 5,449
1952-53	5,437	5,372 to 5,502

d. Surplus or Deficit.

Czechoslovakia has always had a grain deficit. Although before the war some grain was exported (wheat, barley, and oats), rye, corn (maize), and rice had to be imported. Net imports averaged 134,000 metric tons a year. Under the Communist regime, grain deficits have fluctuated from year to year with variations in production but, with the exception of the good crop year of 1949, have exceeded the prewar level as indicated below.

Estimated Deficit of Grain (Domestic Production)
1948-53

Thousand Metric Tons

Year	Estimate	Probable Range of Variation of Estimate
1948-49	326	262 to 391
1949-50	57	13 to 128
1950-51	631	564 to 696
1951-52	621	564 to 678
1952-53	625	567 to 684

e. Stockpiles.

Following the poor crop year of 1947, Czechoslovakia imported 940,000 metric tons of grain, which, together with domestic production, more than covered requirements, so that 105,000 metric tons were carried over on 31 July 1948 into the consumption year 1948-49. The total of this carry-over plus imports in 1948-49 is computed to have been 625,000 metric tons, of which 50,000 tons were reexported. The deficit in domestic production in 1948-49 was 326,000 tons, indicating a stockpile of 249,000 tons on 31 July 1949. Although 1949 was a good crop year, Czechoslovakia imported 550,000 metric tons, of which about 75,000 tons were reexported. The deficit in production in 1949-50 was only 57,000 tons, indicating an addition to stores of 418,000 tons and a stockpile on 31 July 1950 of 667,000 tons. The harvest of 1950 was poor, the deficit being 631,000 metric tons, and imports, chiefly from the USSR, were expected to reach 605,000 tons. Assuming reexports of not more than 60,000 metric tons, the stockpile on 31 July 1951 may be about 581,000 tons.

Estimated Stockpiles of Grain
1950-51

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
31 July 1950	667 a/	531 to 801
31 July 1951	581 b/	580 to 782

a/ Six weeks' supply.
b/ Five weeks' supply.

This stockpile of 581,000 metric tons will not cover the estimated deficit for the year 1951-52, and, unless there are substantial shipments of grain from the USSR or the other Satellites, Czechoslovakia will enter the year 1952-53 with only the usual turnover supplies until the new crop enters distribution channels. In this case, some 625,000 metric tons will have to be imported, or grain consumption will have to be substantially reduced.

f. Trends -- Including Indications of Mobilization for War.

The USSR is reported to have brought pressure on the Czechoslovak government to increase wheat acreage at the expense of feed grains and forage crops in order to relieve the need for bread-grain imports. There is no indication of mobilization for war in grain production.

2. Meat.

a. Production.

By 1948, meat production had dropped to 69 percent of the prewar level in Czechoslovakia. Importation of 30,000 metric tons in 1948-49 brought meat availability up to 73 percent of the prewar average, and these supplies, together with a postwar reduction of 14 percent in population, brought per capita availability in 1948-49 to 30 kilograms, or approximately equal to prewar levels.

Meat production in 1949-50 increased 7.3 percent over the output in 1948-49. If, as is assumed, the increase in production was accompanied by a 2.5-percent increase in per capita consumption, import requirements for this period were 19,000 metric tons.

In 1950-51, meat production is estimated to have increased to 411,000 metric tons, or 83 percent of the prewar level. It is assumed that per capita consumption increased 2 percent and the population increased 1.1 percent, indicating total requirements of 400,000 metric tons and a small surplus of 11,000 tons.*

Latest Annual Estimates of Meat Production
1948-50

	Thousand Metric Tons	
Year	Estimate	Probable Range of Variation of Estimate
1948	343	322 to 353
1949	368	346 to 379
1950	411	386 to 423

b. Probable Production.

Available information indicates that the USSR will not supply Czechoslovakia with feed grains to maintain its high potential for meat production. The USSR has, in fact, urged a reduction in acreages that are seeded to feed grains and forage crops. It is therefore anticipated that meat production will be reduced both in 1951-52 and 1952-53 by not less than 2 percent each year.

* Czechoslovakia in 1950-51 produced a surplus of meat for the first time in decades. Czechoslovak government reports on livestock numbers, however, indicate a meat surplus for 1950-51 that is unrealistic.

Estimated Meat Production
1951-52

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
1951	403	379 to 415
1952	395	371 to 407

c. Domestic Requirements.

In 1948-49, meat requirements, estimated on domestic production of 343,000 metric tons plus net imports of 30,000 tons, were 373,000 tons, or 30 kilograms per capita. In succeeding years the per capita availability of meat for consumption has been assumed to fluctuate slightly, in accordance with corresponding increases or decreases in production. It is estimated that reductions in per capita supply will offset population increases and leave total requirements in 1952-53 unchanged from the 1951-52 amount.

Estimated Domestic Requirements of Meat
1948-53

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
1948-49	373	352 to 383
1950-51	387	369 to 398
1951-52	400	381 to 411
1952-53	400	381 to 411

d. Stockpiles.

Czechoslovakia is normally a meat deficit country. There was a small surplus of from 6,000 to 12,000 metric tons in 1950-51, which is only a carry-over stock. Projected estimates for 1951-52 and 1952-53 indicate that Czechoslovakia's meat supply will be even less.

e. Surplus or Deficit.

Czechoslovakia had a slight meat surplus in 1950-51 and may be marginally self-sufficient in 1951-52. It is probable, however, that in 1952-53 the meat supply position will again become a deficit. It should be noted that, although Czechoslovakia consistently exports processed livestock products, the country has, with the exception of 1950-51, been a net importer of meat.

Estimated Surplus or Deficit of Meat (Domestic Production)
1948-53

Thousand Metric Tons

Year	Surplus	Deficit	Probable Range of Variation of Estimate
1948-49		30 a/	0
1949-50		19	19 to 23
1950-51	11		6 to 12
1951-52	3		2 to 4
1952-53		5	4 to 10

a/ Actual imports.

f. Trends -- Including Indications of Mobilization for War.

From 1948 to the beginning of 1950 there was an upward trend each year in numbers of livestock and in the meat production potential. In 1951 and 1952 the trend will be downward. There are no indications of mobilization for war in meat production and distribution.

3. Sugar.

a. Production.

Domestic sugar production in the prewar years provided Czechoslovakia with an export surplus and permitted a consumption level equal to that of the Western European countries. Production fluctuated in the period 1944-47 as a result of economic dislocations caused by the war and by a severe drought in 1947. It was not until 1950 that prewar production levels were regained, but in the interim period rationing apparently became permanent.

Latest Annual Estimates of Sugar Production (Raw Value)
1948-50

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
1948	634	570 to 640
1949	626	560 to 635
1950	700	630 to 750

b. Probable Production.

Considering projected aims and assuming normal agricultural conditions, future sugar production is estimated as follows:

Estimated Sugar Production (Raw Value)
1951-52

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
1951	754	670 to 800
1952	784	705 to 820

Production estimates for these years indicate an output above the prewar level.

c. Domestic Requirements.

Rationing of sugar has been in effect since the end of the war, and there are no indications of its impending removal in 1951. Estimates of requirements are based on a per capita norm ranging from 17 to 19 kilograms (raw value) and an additional 80,000 to 95,000 metric tons which are used industrially by the food, confectionery, and distilling industries.

Estimated Domestic Requirements of Sugar (Raw Value)
1948-53

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
1948-49	342	307 to 376
1949-50	348	313 to 382
1950-51	351	315 to 386
1951-52	355	319 to 390
1952-53	358	322 to 393

These estimates are based on the assumption that rationing will continue through 1952, thus preventing consumption at higher, prewar levels.

d. Stockpiles.

Stocks of sugar will probably increase, and it is estimated that a stockpile of 90,000 metric tons will be available by the end of the 1950-51 consumption year. This estimate assumes that 1 month's supply has been set aside each year since 1948. A similar proportional increase is expected in 1952.

Estimated Stockpiles of Sugar (Raw Value)
1950-51 and 1952-53

Year	Estimate	Thousand Metric Tons Probable Range of Variation of Estimate
1950-51	90	80 to 100
1952-53	150	135 to 165

e. Surplus or Deficit.

Czechoslovakia's present sugar surplus is a result of reduced consumption. If rationing continues at the present rate and production is increased, the available surplus by the end of 1952 will add measurably to the sugar stocks of the Soviet Bloc.

Estimated Surplus of Sugar (Domestic Production — Raw Value)
1951-52

Thousand Metric Tons

Year	Estimate	Probable Range of Variation of Estimate
1951	399	357 to 438
1952	426	383 to 468

In the consumption years 1948-49 and 1949-50, Czechoslovakia exported approximately 460,000 metric tons of sugar, of which 40 percent went to the Soviet Union. There is every indication that even larger supplies will be shipped to the USSR and the Satellites in 1951 and 1952.

f. Trends — Including Indications of Mobilization for War.

Trends of production and planning reveal the importance placed on self-sufficiency in sugar production by the Satellites and the USSR. Long-range planning may include a higher level of consumption, but for the present the primary aim is the accumulation of stocks that might be required in the event of war.

4. Cotton.

a. Production.

Czechoslovakia is a major producer of cotton textiles but does not grow cotton. All raw cotton needed for processing must be imported. From 1934 to 1938, Czechoslovakia annually imported an average of 83,000 metric tons of ginned cotton, 60 percent of it from the US, and exported 22,390 metric tons of yarn and finished cotton textile products. In the postwar period, US imports have steadily declined, and greater reliance has been placed on the USSR. By 1949, US imports represented only 20 percent of the total volume, dropping to less than 2 percent in 1950, whereas the USSR supplied 45 percent in 1949 and 55 percent in 1950. The effect of decreased US supplies in the postwar years has been apparent in the failure of the Czechoslovak cotton textile industry to attain prewar production levels and in the corresponding decline in the volume of textile exports.

b. Domestic Requirements.

Per capita consumption of cotton textiles is much higher in Czechoslovakia than in other Soviet Bloc countries because of the advanced productive capacities of the country and the greater availability of imported raw materials.

Estimated Domestic Requirements in Terms of Ginned Cotton
1948-53

Metric Tons

Year	Estimate	Probable Range of Variation of Estimate
1948-49 a/	35,412	31,000 to 39,000
1949-50 a/	47,774	41,000 to 52,000
1950-51 b/	49,705	44,000 to 54,000
1951-52 b/	50,003	45,000 to 55,000
1952-53 b/	50,560	45,500 to 55,500

a/ Based on reported per capita consumption.
b/ Projections adjusted for population changes only.

c. Stockpiles.

Under present arrangements Czechoslovakia has little opportunity to accumulate stockpiles of ginned cotton or textile fabrics. Domestic consumption uses 75 percent of the present volume of imports, and the surplus of processed material is either exported under existing trade commitments or shipped to the USSR under established processing agreements.

In view of the present world shortage of cotton and the expected heavy demand by other nations in the next 12 months, the possibility of building up stocks is remote.

d. Trends — Including Indications of Mobilization for War.

The Five Year Plan limits Czechoslovak textile production in favor of heavy industrial production, although the textile industry currently is producing at much less than capacity. Domestic requirements can be met by working a single 10-hour shift. If raw materials were available, Czechoslovakia's output at full-capacity operations could contribute materially to the textile requirements of the USSR for mobilization.

5. Wool.

a. Production.

Wool production in Czechoslovakia is small, and present estimates indicate that the total annual wool clip does not supply more than 5 percent of

domestic requirements. Postwar efforts have been made to increase the numbers of the domestic herds, and a moderate measure of improvement has been noted in 1950 estimates. The results, however, do not add significantly to total domestic supplies.

Latest Annual Estimates of Wool Production (Clean Basis)
1948-50

Metric Tons

Year	Estimate	Probable Range of Variation of Estimate
1948	581	520 to 630
1949	611	540 to 660
1950	633	560 to 680

b. Probable Production.

The 1950 estimate probably represents the postwar peak in production. Soviet pressure on the Czechoslovak government to decrease acreages of feed and forage crops in favor of expansion of wheat acreage probably will reduce livestock numbers. If the marginal lands in the Sudeten area now used for sheep grazing are returned to crop production, the number of sheep will be further reduced. The reduction in wool production probably will not be less than 2 percent in each of the years 1951 and 1952.

Estimated Wool Production
1951-52

Metric Tons

Year	Estimate	Probable Range of Variation of Estimate
1951	620	550 to 670
1952	608	540 to 660

c. Domestic Requirements.

Domestic requirements of wool from 1948 to 1950 averaged 10,357 metric tons a year. Computed on a per capita basis, this figure is much higher than averages of other Soviet Bloc countries. It is assumed for the projection of

future requirements that no further increases will be possible. Estimates are adjusted for population changes only.

Estimated Domestic Requirements of Wool
1948-52

Metric Tons

Year	Estimate	Probable Range of Variation of Estimates
1948	10,290	9,200 to 11,300
1949	10,364	9,300 to 11,400
1950	10,418	9,400 to 11,500
1951	10,516	9,500 to 11,600
1952	10,633	9,600 to 11,700

Present facilities are capable of processing domestic requirements of woolen yarn by working a single 10-hour shift. A deficiency of combing equipment for waste yarns, however, necessitates imports of wool tops in addition to grease and scoured wool.

d. Stockpiles.

There is no evidence of stockpiling of wool. Although a credit agreement for the purchase of wool was made with the UK in 1949, the quantity of wool supplied by the UK and the British Dominions since that time has not risen appreciably over 1948 levels.

e. Surplus or Deficit.

With requirements rising and domestic production falling, Czechoslovakia is expected to have increasing deficits of wool. The estimated deficits for 1951 and 1952 are about 10,000 metric tons each. Since 95 percent of requirements must be met with imported supplies, Czechoslovakia is highly vulnerable to the effects of a strictly enforced embargo on wool.

f. Trends — Including Indications of Mobilization for War.

According to the Five Year Plan, production of textiles in Czechoslovakia is to be reduced in favor of heavy industry. This action has been partially motivated by the world shortage of textile raw materials, which has aggravated the difficulties of obtaining supplies from outside the Soviet Bloc.

There are indications of a close connection with the Soviet Union in processing agreements through which the Czechoslovak textile mills are being utilized to the advantage of the USSR. It is impossible to judge the extent to which this arrangement has contributed to Soviet military stocks, but if raw materials were supplied in volume and the textile industry were to operate on a 24-hour basis, a sizable contribution could quickly be made to the Soviet war potential.

6. Collectivization.

The Czechoslovak government has succeeded, as of 1 March 1951, in organizing about 3,300 so-called "unified farmers' cooperatives," in which tillage is carried on cooperatively while the title to the land remains in the hands of individual households. About 4,000 other farmer organizations purchase and use farm machinery cooperatively. Farmer resistance indicates that the government probably will not attempt to establish collective farms of the Soviet kolkhoz type for some years, although plans provide for the eventual socialization of agriculture.

VI. Industrial Capacity and Levels of Production.

A. Ferrous Metals.

Summary

The Czechoslovak iron and steel industry is highly developed, and production is larger than in any other Satellite country. Although the country has large reserves of metallurgical coking coal of satisfactory quality and of a low-grade iron ore, the iron and steel industry is dependent largely upon imports for high-grade iron ore, iron and steel scrap, and most of the ferro-alloys. The new economic plan announced in 1948 emphasized the development of heavy industry in Czechoslovakia.

Ferrous Metals Production Targets
1949-53

Thousand Metric Tons

Commodity	1949	1950	1951	1952	1953
Metallurgical Coke a/	2,087	2,426	2,248	2,520	2,860
Iron Ore (30-35% Fe)	1,355	1,370	1,360	1,370	1,380
Manganese Ore	176	183	204	245	265
Pig Iron	1,865	1,890	1,905	2,360	2,725
Raw Steel	2,650	2,680	2,750	3,160	3,550
Rolled Products	1,900	1,920	1,960	2,270	2,550

a/ For domestic industry only; exports excluded.

To accomplish these goals, large sums of money have been budgeted for investment in the iron and steel industry. New coke ovens to be constructed at Kuncice are to have an annual capacity of 570,000 metric tons, and others at an unnamed foundry are to have a capacity of 420,000 tons. Exploration for new and richer deposits of iron ore has begun, further exploitation of existing mines is under way, attempts are being made to procure modern mining equipment, and modern methods of mining are being introduced.

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1. Production.

Production is estimated as follows:

Estimated Production of Ferrous Metals
1948-50

	Thousand Metric Tons		
	1948	1949	1950
Metallurgical Coke a/	2,390	2,833	3,000
Iron Ore (30-35% Fe)	1,427	1,475	1,500
Manganese	90	120-150	170
Pig Iron	1,660	1,750	1,900
Raw Steel	2,455	2,580	2,600
Rolled Products	1,838	1,940	1,950

a/ Based on estimate of 1.04 metric tons of coke per 1 metric ton of pig iron.

Raw steel production has failed to meet planned targets, and it is believed that production of special quality steels in 1950 was approximately 15 percent below the Plan goal.

2. Estimated Possible Production and Capacity.

The capacity of the Czechoslovak iron and steel industry in 1952 cannot be estimated, but production is estimated as follows:

Estimated Production of Ferrous Metals
1952

	Thousand Metric Tons	
	Estimate	1952 Plan Target
Metallurgical Coke	3,100	N.A.
Iron Ore (30-35% Fe)	1,500	1,370
Manganese Ore a/	200	245
Pig Iron	2,000	2,360
Raw Steel	2,800	3,160
Rolled Products	2,100	2,270

a/ High-grade manganese ore; manganese metal content, 50 percent.

3. Possible Requirements.

Input requirements for the iron and steel industry are estimated as follows:

Estimated Domestic Requirements of Ferrous Metals
1949-50

Metric Tons

	1949	1950
Metallurgical Coke	1,850,000	2,050,000
Iron Ore	3,800,000	4,000,000
Iron and Steel Scrap	1,400,000	1,600,000
Ferroalloy Metals a/		
Manganese	100,000	107,500
Chromium	N.A.	N.A.
Molybdenum	995	1,112
Tungsten	60	66
Vanadium	75	77
Nickel	1,400	1,500
Pig Iron	N.A.	N.A.
Raw Steel	N.A.	N.A.
Rolled Products	N.A.	N.A.

a/ In terms of metal content.

In negotiating the 1949 Swedish-Czechoslovak trade agreement, Sweden refused to accede to Czechoslovak demands for 1.3 million metric tons of ore but finally agreed to ship 885,000 tons of ore during the period of the agreement. To compensate for the reduction in imports from Sweden and for loss of 80,000 tons of ore which Yugoslavia, before the Tito-Cominform break, had agreed to deliver, the USSR agreed to send Czechoslovakia 1.2 million metric tons of iron ore, a considerable increase over the 400,000 tons shipped in 1948. The USSR thus, for the first time in history, has become Czechoslovakia's chief source of iron ore imports. In 1950, Czechoslovakia received 1.3 million tons of Soviet ore and 920,000 tons of high-grade Swedish ore. Swedish shipments for 1951 have been set at 750,000 tons.

4. Stockpiles.

There are no stockpiles of raw materials or of iron and steel products in Czechoslovakia.

5. Surplus or Deficit.

Although the iron and steel industry of Czechoslovakia is heavily dependent upon imports of raw materials, the production of semifinished and finished steel mill products represents an important contribution to the industrial potential of the Soviet Bloc. A portion of this output is exported, chiefly to other Satellite countries.

6. Internal Limitations.

Throughout the Czechoslovak iron and steel industry there is a chronic shortage of labor and of managerial and technical personnel. Absenteeism runs

high, equipment is worn and obsolescent, and modern production methods are urgently needed.

Over a long period of years until 1949, Sweden was Czechoslovakia's principal source of high-grade iron ore. Czechoslovak blast furnaces originally were designed and constructed to use the high-grade Swedish ores in mixture with the low-grade ores available domestically and procured from other foreign sources, and the use of a high proportion of Soviet ore now presents a serious problem to the Czechoslovak Ministry of Heavy Industry. This ore must be sintered, or agglomerated, before it can be used in the blast furnaces, and, to accomplish this, more sintering equipment must be constructed. Furthermore, the blast furnaces will have to be rebuilt in order to make the necessary changes in furnace linings and to permit the introduction of the larger amounts of oxygen required in processing the larger proportion of Soviet iron ore. The Czechoslovak iron and steel industry is unable to make the increased investments required for reconstruction and expansion or to disrupt production long enough to make such conversions. As a result, pig iron production has not met planned targets.

The procurement of iron and steel scrap also is a serious problem, since scrap is in short supply not only in the Bloc but throughout the world. If the USSR desires to maintain a flow of steel products from Czechoslovakia, some provision will have to be made to supply sufficient quantities of scrap for the Czechoslovak open-hearth furnaces.

Some of the equipment needed to modernize and expand facilities and to increase production, such as blast furnaces and sintering equipment, can be constructed in Czechoslovakia, but most of the needed installations must be procured abroad. Western export controls make it unlikely that much equipment can be procured in the West. The USSR is the only possible source of such aid among the Bloc countries, and it is doubtful that sufficient aid will be forthcoming from this quarter to help materially in rehabilitating and expanding the Czechoslovak iron and steel industry.

7. Trends--Including Indications of Mobilization for War.

Actual production will continue to fall short of targets for the remaining years of the Five Year Plan.

Summary

With the exception of antimony, Czechoslovak production of nonferrous metals from indigenous ores is relatively unimportant, and domestic requirements are filled largely by imports and by domestic secondary metal and scrap.

Estimated Requirements, Production, and Deficits of Nonferrous Metals
1950-52

Metric Tons

	1950	1951	1952
Copper			
Requirements	53,500	59,700	65,300
Production	8,000	9,600	10,100
Deficit	45,500	50,100	55,200
Lead			
Requirements	22,000	22,000	22,000
Production	6,500	6,500	7,000
Deficit	15,500	15,500	15,000
Zinc			
Requirements	21,300	23,700	26,300
Production	2,500	3,000	4,000
Deficit	18,800	20,700	22,300
Aluminum			
Requirements	20,000	22,000	25,000
Production	4,000	4,000	4,500
Deficit	16,000	18,000	20,500

Domestic copper production is chiefly from scrap, and imports are obtained from Western Europe. Lead is produced from both ores and scrap, and foreign supply sources include Bulgaria and Rumania. Scrap metal is the sole domestic source of zinc, and the bulk of Czechoslovak requirements are obtained from Poland, which supplies 13,000 metric tons a year; from the USSR; and from Western sources. Aluminum is obtained through scrap recovery and through imports from the Soviet Bloc.

Czechoslovakia will continue to rely heavily on the Bloc for copper, lead, zinc, and aluminum. It depends largely on overseas sources for its tin requirements. Czechoslovakia's production of antimony is well in excess of domestic requirements and is a significant contribution to the Soviet Bloc.

1. Copper.

a. Production.

Production of copper from domestic ores in Czechoslovakia is from 55 to 75 metric tons a year. 1/ Other sources of copper are scrap and possibly pyrites imported from Spain, which is used principally for its sulphur and iron content but may contain from 0.5 to 1 percent copper. Total production is estimated as follows 1/:

Estimated Copper Production
1947-50

Metric Tons

	1947	1948	1949 a/	1950 a/
Electrolytic	500	600	600	600
Smelter (From Scrap)	N.A.	7,400	7,400	7,400
Total	N.A.	8,000	8,000	8,000

a/ Planned.

b. Estimated Possible Production and Capacity.

The annual production of electrolytic copper is expected to remain at 600 metric tons in 1951 and 1952. The output of smelter copper from scrap, however, is estimated at 9,000 tons in 1951 and 9,500 tons in 1952, raising total output to 9,600 tons in 1951 and 10,100 tons in 1952. 2/ The 1952 capacity of electrolytic copper facilities is estimated at 600 metric tons, of smelters at from 1,000 to 1,500 tons, 3/ and of secondary smelters (scrap) at possibly 10,000 tons.

c. Domestic Requirements.

Copper production from domestic mines provides only about 0.1 percent of Czechoslovak requirements, which are estimated as follows 4/:

Estimated Copper Requirements
1948-52

Metric Tons

1948	1949	1950	1951	1952
49,035	50,422	53,478	59,680	65,310

It is reported that Eastern Europe can supply about 17,000 tons, leaving the following amounts to be imported from non-Bloc sources:

Estimated Copper Import Requirements from Non-Bloc Sources
1948-52

Metric Tons				
1948	1949	1950	1951	1952
32,035	33,422	36,478	42,680	48,310

d. Stockpiles.

Stocks of copper for industrial use are estimated at 19,830 metric tons as of 31 December 1948 and 26,260 tons as of 31 December 1949. 5/

e. Surplus or Deficit. 6/

Czechoslovakia's copper deficit is estimated in terms of requirements less domestic production from ores and scrap:

Estimated Copper Deficit
1950-52

	Metric Tons		
	1950	1951	1952
Requirements	53,478	59,680	65,310
Production	8,000	9,600	10,100
Deficit	45,478	50,080	55,210

f. Internal Limitations.

Since Czechoslovakia has almost no copper ores and very limited smelting and refining facilities for processing imported ores and blister copper, it must rely heavily on imports for its copper supply.

g. Trends--Including Indications of Mobilization for War.

Czechoslovakia is attempting to expand munitions production and to contribute to the industrialization program of the Bloc, 7/ which will increase requirements of copper. In particular, the engineering industry is expected to supply equipment for Soviet electrification projects. Moreover, domestic production goals have been raised in a recent revision of the Five Year Plan. 8/ To fill these growing demands, the copper industry will have to intensify its efforts to maintain and increase copper imports.

2. Lead and Zinc.

a. Production.

Czechoslovakia obtains small amounts of lead from scrap and from domestic ores. Zinc production is confined to scrap recovery, and all of the zinc concentrates are exported for smelting. 1/ Production is estimated as follows:

Estimated Lead and Zinc Production
1949-50

Metric Tons

	1949 2/	1950
Lead		
From Scrap	2,925	3,000
From Ores	3,500	3,500
Total	6,425	6,500
Zinc	2,505	2,500

b. Estimated Possible Production and Capacity.

Production of lead and zinc in 1951 and 1952 are estimated as follows:

Estimated Lead and Zinc Production
1951-52

Metric Tons

	1951	1952
Lead		
From Scrap	3,000	3,000
From Ores	3,500	4,000
Total	6,500	7,000
Zinc	3,000	4,000

The annual capacity of primary lead smelters is estimated at from 6,000 to 7,000 metric tons of refined lead. No information is available on the capacity of secondary lead smelters. Czechoslovakia's primary zinc smelters, with an annual capacity of 23,000 metric tons, were reported shut down in 1948. 3/ No information is available on the capacity of secondary smelters.

c. Domestic Requirements.

Requirements for lead and zinc are estimated as follows:

Estimated Lead and Zinc Requirements
1948-52

Metric Tons

	1948	1949	1950	1951	1952
Lead 4/	18,600	22,000	22,000	22,000	22,000
Zinc 5/	18,800	20,100	21,300	23,700	26,300

d. Stockpiles.

As of 31 December 1949, lead stocks were reported at 20,518 metric tons and zinc stocks at 8,141 tons. 6/

e. Surplus or Deficit.

Estimated deficits indicated below do not take into consideration stocks as of 1 January 1950 but represent only the difference between estimated requirements and domestic production.

Estimated Lead and Zinc Deficits
1950-52

	1950	1951	1952
	Metric Tons		
Lead	15,500	15,500	15,000
Zinc	18,800	20,700	22,300

In the case of zinc, Poland is to supply 13,000 tons a year. 7/ Bulgaria and Rumania ship lead concentrates to Czechoslovakia but not in quantities sufficient to make up the deficit. 8/

f. Internal Limitations.

Czechoslovakia has only limited reserves of low-grade lead and zinc ores, and mining operations are handicapped by the narrowness of the veins, which prohibits large-scale operations. The Pribram mine and the Banska Stiavnica mine are the only known domestic sources. Reserves of the Pribram mine, which produces about three-quarters of the total output of primary lead, are estimated at approximately 1 million metric tons of ore containing about 2.2 percent lead and 1.1 percent zinc. Mining operations are from 1,200 to 1,500 meters deep, and production is about 500 tons of ore a day. Ore reserves of the Banska Stiavnica mine are unknown, and the ore yield is about 1.3 percent lead and less than 0.5 percent zinc. 9/

g. Trends--Including Indications of Mobilization for War.

Expansion of the lead-zinc mines is unlikely.

3. Aluminum.

a. Production.

Production of aluminum in Czechoslovakia in 1950 is estimated at 4,000 metric tons, 1/ all of which is secondary production from aluminum scrap.

b. Estimated Possible Production and Capacity.

Domestic production is not expected to increase greatly in 1951 and 1952, being estimated at about 4,000 and 4,500 metric tons, respectively. Capacity production is estimated at 5,000 tons in 1951 and 6,000 tons in 1952.

c. Domestic Requirements.

Domestic requirements are estimated at 20,000 metric tons in 1950, 22,000 tons in 1951, and 25,000 tons in 1952.

d. Stockpiles.

Aluminum stocks as of 1 January 1950 are estimated at 10,000 metric tons. 1/

e. Surplus or Deficit.

The total aluminum supply available in 1950 was 31,000 metric tons, comprising 10,000 tons of stocks, 4,000 tons of production, and 17,000 tons of imports. Consumption is estimated at 20,000 tons, indicating a surplus of 11,000 tons. The surplus in 1951 is estimated at 12,500 tons and in 1952 at 14,000 tons.

f. Internal Limitations.

Since there are no deposits of bauxite in Czechoslovakia, primary aluminum production depends entirely on imports of raw material. Secondary production is limited by the quantity of aluminum scrap available within the country and through imports. An adequate supply of technical personnel and mechanical equipment is believed to be available.

g. Trends—Including Indications of Mobilization for War.

The increasing demands for imports of aluminum by Czechoslovakia are presumptive evidence of expanding requirements for aluminum, which, it is believed, are primarily for military production.

4. Antimony.

a. Production.

Czechoslovak production of antimony normally is sufficient to meet domestic requirements. The Cucma mine in southern Slovakia was the largest prewar producer, accounting for two-thirds of the country's production, which totaled about 800 metric tons in 1938. The balance of the 1938 output was obtained as a by-product from the lead-zinc mine at Pribram. In response to German wartime demands, production was increased and in 1942 was estimated at over 3,000 metric tons. Postwar production is estimated as follows:

Estimated Antimony Production
1947-50

			Metric Tons
1947 1/	1948 1/	1949	1950 2/
1,434	1,600	1,800	2,000

b. Estimated Possible Production and Capacity.

A new antimony mine was reported in December 1949 at Lovinobana, located between the towns of Lucenec and Zvolen in Slovakia. In view of the upward trend in production since 1947, possible production from new mines, and the wartime increases achieved under the Germans, production is estimated at 2,300 metric tons in 1951 and 2,600 tons in 1952.

c. Domestic Requirements.

Czechoslovak production of antimony meets domestic requirements and provides a surplus for export or stocks. There is little doubt that requirements are greater today than before the war because of increased industrial activity and possible preparations for war. Estimated domestic requirements are 1,200 metric tons in 1950, 1,300 tons in 1951, and 1,400 tons in 1952.

d. Stockpiles.

Antimony stocks cannot be estimated from available information, but it is believed that a part of the annual surplus is reserved for stockpiling and the balance is shipped to other members of the Soviet Bloc.

e. Surplus or Deficit.

Based on the estimates of production and domestic requirements, surpluses in 1950-52 are projected as follows:

Estimated Antimony Surplus
1950-52

	Metric Tons		
	1950	1951	1952
Production	2,000	2,300	2,600
Requirements	1,200	1,300	1,400
Surplus	800	1,000	1,200

f. Internal Limitations.

The available supply of antimony is believed to be sufficient for current needs, although definite figures on ore reserves are lacking. Since Czechoslovakia is a progressive, industrialized country, the availability of technical personnel and facilities for the manufacture of mining and

processing equipment should be adequate. The possible disaffection of labor is a potential limiting factor.

g. Trends--Including Indications of Mobilization for War.

The production of antimony is increasing. Although there are no data available on increases in plant capacities, the development and exploitation of any new mines would require additional concentrating facilities.

5. Tin.

The production of tin in Czechoslovakia is negligible. A tin mine is reported to have been opened in Cinobana, Slovakia, 1/ but information regarding its development and exploitation is lacking.

Imports and consumption for 1948-50 are estimated as follows:

Estimated Tin Imports and Consumption
1948-50

	1948	1949	1950
			Long Tons
Imports 2/			
Netherlands	805	1,030	796
Belgium	93	0	0
UK	0	0	165
Malaya	0	0	25
Total	898	1,030	986
Consumption 3/	1,610	1,030	1,000

C. Coal.

Summary

Coal is the source of over 90 percent of the energy consumed in Czechoslovakia. Coal production in 1950 was reported to have been 18.5 million metric tons of bituminous coal and 27.5 million tons of brown coal and lignite. The bituminous mines failed to meet their output quota by 2.1 percent, although brown coal mines exceeded their goal by 1.4 percent.

Objectives for 1951 call for the output of bituminous coal to increase 6.5 percent and brown coal 7.5 percent over 1950 levels. It is believed that bituminous mines will be able to produce only about 19.2 million metric tons, but that brown coal output probably will be approximately 29.5 million tons, or close to the new Plan goal. It is doubtful if production in 1952 will exceed 20 million tons of bituminous and 31 million tons of brown coal.

The coal industry has had to contend with serious postwar labor problems. Shortages of manpower have resulted in the widespread use of forced labor and apprentices, who are unskilled and inefficient. Dissatisfaction of the miners with wages, working conditions, and increased production quotas has been manifested in sporadic sit-down strikes, slowdowns, and high rates of absenteeism.

Czechoslovakia is a net importer of solid fuels. In 1950, imports probably amounted to about 3.9 million metric tons of bituminous coal. Poland had agreed to furnish this quantity, which is 350,000 tons less than Czechoslovakia had requested. Imports may rise in 1951 and 1952, unless output should increase more than is believed likely or unless exports should decrease. Exports in 1950 are estimated to have been approximately 707,000 metric tons of bituminous coal, 1.4 million tons of brown coal, and over 1.2 million tons of coke. Possibly as much as two-thirds of the export tonnage went to non-Soviet Bloc countries.

It is estimated that coal requirements in 1950 were nearly 49.8 million metric tons and probably will rise to about 56 million tons in 1952. According to the 1949 Plan, bituminous supplies were to be distributed as follows: mining, 13.1 percent; metallurgy (probably all for metallurgical coke), 17.4 percent; other coke, 24.7 percent; transportation, 12.3 percent; electric power plants, 5.8 percent; briquette plants, 1.7 percent; other industry, 17.9 percent; and domestic heating, 7.1 percent. Brown coal and brown coal coke were to be allocated as follows: mining, 7 percent;

electric power plants, 11.8 percent; synthetic fuel products (Stalin Works), 17.0 percent; transportation, 11.1 percent; briquette plants, 2.5 percent; other industry, 31.7 percent; and domestic heating, 18.9 percent.

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1. Production.

Czechoslovakia produces bituminous coal, much of which is of the coking type, but the major part of total coal output is brown coal and low-grade lignite. Production is estimated as follows:

Latest Annual Estimates of Coal Production
1948-50

	Thousand Metric Tons		
Year	Bituminous Coal	Brown Coal and Lignite	Total
1948	17,746	23,589	41,335
1949	17,043	26,527	43,507
1950	18,456	27,506	45,962

The original goal for 1950 was exceeded by 4 percent for bituminous production and by 4.4 percent for brown coal and lignite, but the bituminous mines failed by 2.1 percent to meet their revised goal, although the brown coal mines exceeded their higher goal by 1.4 percent.

Bituminous coal is produced in five districts in Czechoslovakia. Of greatest importance is the Ostrava-Karvinna field, which is the southeastern extremity of the Upper Silesian coal basin. This field contains the best coal found in Czechoslovakia and yields coke of outstanding quality, and, as a result, an extensive coke industry has developed in that area. The 1950 target for the Ostrava-Karvinna district was 15 million tons, which, if attained, would have represented about 81.3 percent of the total bituminous output (the actual figure was closer to 80 percent). The Kladno (Central Bohemian) district produces from 10 to 11 percent of the bituminous tonnage, and the balance comes from Plsen, Trutnov, and Rosice.

The 1948 quotas for each district are given in the following table. Since the total coincides exactly with the production reported for the year,

it is probable that the output from each district did not vary much from the targets.

Planned Bituminous Coal Production by Districts
1948

District	Thousand Metric Tons Production	Percent of Total
Ostrava-Karvinna	13,710	77.26
Kladno (Central Bohemian)	2,000	11.27
Plzen (West Bohemian)	920	5.18
Trutnov (East Bohemian)	610	3.44
Rosice (South Moravian)	506	2.85
Total	17,746	100.00

The principal brown coal deposits are found on the Ore Mountains fault stretching along the northwestern boundary of Bohemia. In this district, two brown coal basins have been formed, the Most and the Sokolov. The Most basin is in size and output the largest coal basin in Czechoslovakia. It extends for 60 kilometers, from Labem almost to Kadan, and is about 12 kilometers wide at its center, which is in the vicinity of Most. One seam is up to 40 meters thick and is exploited both by deep mines and strip mining. The Most district accounts for more than 70 percent of Czechoslovakia's total brown coal and lignite production, and 53 mines in this area were worked in 1948. Three large open-cast mines were being developed in the same year with a combined capacity expected to reach 8 million tons.

Second in importance is the Sokolov brown coal basin, located southwest of the Most district. The Sokolov basin extends for 30 kilometers, from Karlovy Vary to Cheb, and has a maximum width of 8 kilometers. There were 26 mines operating in the area in 1948, of which 7 were open-cast operations, and the quota for this district represented 20.7 percent of the 1948 planned output.

The remainder of the production is scattered and consists of low-grade lignite, with the notable exception of a few fairly large brown coal mines in Slovakia in the vicinities of Handlova and Novaky.

The 1948 Plan called for the following production by districts:

Planned Brown Coal and Lignite Production by Districts
1948

Thousand Metric Tons

District	Production	Percent of Total
Most	17,145	71.74
Sokolov (Formerly Falknov)	4,950	20.70
Slovakia Districts	924	3.87
Lignite in Bohemia	344	1.44
Lignite in Moravia	537	2.25
Total	23,900	100.00

2. Estimated Possible Production and Capacity.

The original Five Year Plan established the following objectives for the production of coal and coke:

Planned Coal Production
1949-53

Thousand Metric Tons

	1949	1950	1951	1952	1953	1953 as % of 1948
Bituminous Coal	17,750	17,900	18,050	18,650	20,800	117.2
Brown Coal	25,800	27,250	29,000	30,600	32,200	134.7
Mining Coke	3,350	3,550	3,550	3,550	3,550	146.6
Metallurgical Coke	1,480	1,490	1,600	2,015	2,470	172.2
Gas Coke	423	396	428	446	460	150.3
Brown Coal Coke	1,298	1,410	1,457	1,504	1,551	192.2

The targets for coal and coke production were revised in 1949 and 1950. The goals for 1951 have been raised 6.5 percent for bituminous coal and 7.5 percent for brown coal. These increases are probably based on actual production in 1950, making the indicated targets about 19.7 million metric tons of bituminous coal and 29.6 million tons of brown coal, a total increase of around 3.3 million tons in 1951. Considering the recalcitrant attitude of a large segment of the labor force and the pressure exerted on

the workers in 1950 to reach the planned levels of output, it is very doubtful that the estimated goal for bituminous mining will be achieved, although the prospects for brown coal mining are better.

Coal production in 1951 and 1952 is estimated as follows:

Estimated Coal Production
1951-52

	Thousand Metric Tons	
	1951	1952
Bituminous	19,200	20,000
Brown	29,500	31,000
Total	48,700	51,000

On the basis of coke production data for the second quarter of 1949, it is believed that the Plan goals of 7 million metric tons in 1951 and 7.5 million tons in 1952 represent reasonably close approximations of the tonnages of coke that will be produced in those years. Total coke production in 1949 was reported to have been 6.59 million tons, as compared with a Plan target of 6.55 million tons.

3. Domestic Requirements.

It is estimated that coal requirements in 1950 were about 49.8 million metric tons and will probably be about 56 million tons in 1952. Approximately 47.8 million metric tons of coal and brown coal coke were allocated to the domestic economy in the 1949 Plan, but actual distribution is estimated to have been about 365,000 tons less than this figure. The planned distribution of 20.8 million metric tons of bituminous coal was as follows: mining, 13.1 percent; metallurgy (probably all for metallurgical coke), 17.4 percent; other coke, 24.7 percent; transportation, 12.3 percent; electric power plants, 5.8 percent; briquette plants, 1.7 percent; other industry, 17.9 percent; and domestic heating, 7.1 percent. The distribution of 27.1 million metric tons of brown coal and brown coal coke was to be as follows: mining, 7.0 percent; electric power plants, 11.8 percent; synthetic fuel products (Stalin Works), 17.0 percent; transportation, 11.1 percent; briquette plants, 2.5 percent; other industry, 31.7 percent; and domestic heating, 18.9 percent.

The following tables show the planned allocations of bituminous and brown coal for 1949 and estimates of requirements for the period 1949-52.

Estimated Czechoslovak Availability and Requirements of Bituminous Coal 1949-52

Thousand Metric Tons

	1949 Plan	1949	1950	1951	1952
Availability					
Production	17,750.0	17,043	18,456	19,200	20,000
Stocks (as of 1 Jan)	291.0	291	268	400	450
Production (Briquettes and for Drying)	372.0	372	400	400	400
Savings from Consumption	581.5	500	0	0	0
Imports	2,800.0	3,461	3,850	4,000	4,250
Subtotal	21,794.5	21,667	22,974	24,000	25,100
Exports	636.0	771	707	650	600
Stocks (as of 31 Dec)	391.5	268	400	450	500
Total Availability	20,767.0	20,628	21,867	22,900	24,000
Requirements a/					
Mining	2,729	2,620	2,850	2,920	3,000
Electric Power Plants	1,202	1,202	1,300	1,400	1,500
Gasworks	570	570	567	580	600
Iron, Metals	435	435	460	500	550
Metallurgy	3,608	3,608	3,700	4,000	4,400
Coke	5,135	5,135	5,550	5,600	5,650
Chemical Industry	245	245	260	270	270
Other Industries	2,450	2,450	2,600	2,800	3,000
Railroads	2,532	2,532	2,650	2,850	3,000
Water Transport, Urban Railroads	29	29	30	30	30
Briquettes	352	352	400	400	400
Domestic Heating	1,480	1,450	1,500	1,550	1,600
Total Requirements	20,767	20,628	21,867	22,900	24,000

a/ Includes hard coal briquettes.

Estimated Czechoslovak Availability and Requirements of Brown Coal and Brown Coal Coke 1949-52

Thousand Metric Tons

	1949 Plan	1949	1950	1951	1952
Availability					
Production	26,500.0	26,526	27,506	29,500	31,000
Stocks (as of 1 Jan)	492.0	492	400	415	700
Production (Briquettes and for Drying)	413.0	413	425	450	500
Brown Coal Coke	1,326.0	1,300	1,410	1,460	1,500
Zaluzi Coal	26.0	26	25	25	25
Imports	20.0	20	0	0	0
Subtotal	28,777.0	28,777	29,766	31,850	33,725
Exports	1,220.0	1,527	1,476	1,000	800
Stocks (as of 31 Dec)	480.5	400	415	700	925
Total Availability	27,076.5	26,850	27,875	30,150	32,000
Requirements					
Mining	1,888.5	1,890	1,925	2,100	2,225
Electric Power Plants	3,209.0	3,210	3,350	3,700	4,000
Gasworks	19.0	19	20	25	30
Iron, Metals	975.0	975	1,025	1,200	1,350
Metallurgy	485.0	485	525	600	650
Chemical Industry (Stalin Works)	4,621.0a/	4,621	4,800	5,200	5,450
Other Chemical Industries	1,350.0	1,350	1,400	1,550	1,700
Other Industries	5,717.0	5,717	5,850	6,250	6,600
Railroads	2,958.0	2,958	3,100	3,350	3,600
Water Transport, Urban Railroads	55.0	55	55	60	65
Briquettes	673.0	670	700	750	800
Domestic Heating	5,126.0	4,900	5,125	5,365	5,530
Total Requirements	27,076.5	26,850	27,875	30,150	32,000

a/ Includes 554,000 metric tons of brown coal coke.

4. Stockpiles.

At the close of 1948, stocks consisted of about 291,000 metric tons of bituminous coal and 492,000 tons of brown coal and brown coal coke, or less than one week's requirements. A slight decline in stocks of brown coal and brown coal coke was anticipated by the end of 1949. It was planned to increase reserves of bituminous coal by 100,000 tons, but this goal probably was not realized. Coal stocks are believed to be low, and there is little likelihood that they will increase significantly through 1952.

5. Surpluses or Deficits.

Available trade data show that Czechoslovakia was a net importer of solid fuels in 1949 and 1950. In 1949, Poland supplied 3.5 million metric tons of bituminous coal and agreed to furnish 3.9 million tons in 1950 in response to Czechoslovakia's request for 4.2 million tons.

Exports in 1950 are estimated at approximately 707,000 metric tons of bituminous coal, 1.4 million tons of brown coal, 1.2 million tons of hard coal coke, and 61,000 tons of brown coal coke. Of the total estimated exports of 3.4 million metric tons, about 67 percent went to non-Bloc countries.

The following tables furnish statistics on imports and exports of coal and coke in 1948-50. Czechoslovakia stopped reporting its trade in these fuels after August 1949, and it therefore has been necessary to rely on import data supplied by various European countries and on trade agreements with countries in the Soviet Bloc in making these computations. Figures for 1949 and 1950 should therefore be regarded only as approximations.

Estimated Coal Imports (Czechoslovakia)
1948-50

Metric Tons

Type	Source	1948	1949	1950
Bituminous	Poland	2,121,886 a/	3,460,900 a/	3,850,000 b/
Brown	Hungary	20,150 a/	c/	c/
Coke	Poland	3,878 a/	c/	d/

a/ Reported.
b/ Trade agreement.
c/ Small, if any.
d/ Probably none.

SECRET

Estimated Exports of Bituminous Coal (Czechoslovakia)
1948-50

Metric Tons

Destination	1948	1949	1950
Non-Bloc Countries			
Austria	337,215	383,800	250,000
Finland	20	0	2,100
France	20	0	0
West Germany	26,312	40,900	50,000
Italy	187,731	220,148	225,000
Switzerland	29,732	88,900	120,000
Yugoslavia	150	0	0
Subtotal	581,180	733,748	647,100
Bloc Countries			
Hungary	14,582	44,100	60,000
Poland	109	0	0
Subtotal	14,691	44,100	60,000
Total	595,871	777,848	707,100

SECRET

Estimated Exports of Brown Coal (Czechoslovakia)
1948-50

Destination	1948	1949	1950
			Metric Tons
Non-Bloc Countries			
Austria	367,204	419,300	375,000
West Germany	865,447	1,006,100	1,000,000
Switzerland	1,291	500	300
Yugoslavia	182	0	0
Subtotal	1,234,124	1,425,900	1,375,300
Bloc Countries			
East Germany	4,404	6,000	a/
Total	1,238,528	1,431,900	1,375,300

a/ Small, if any.

Estimated Exports of Hard Coal Coke (Czechoslovakia)
1948-50

Metric Tons

Destination	1948	1949	1950
Non-Bloc Countries			
Austria	139,356	67,000	105,000
Denmark	40	0	0
Finland	0	0	100
France	46,917	74,000	700
West Germany	79,100	0	0
Italy	5,536	0	0
Switzerland	116,008	45,700	60,000
Trieste	1,315	0	0
Yugoslavia	272,292	0	0
Subtotal	660,564	186,700	165,800
Bloc Countries			
Bulgaria	2,000	2,500	3,000
East Germany	25,000	400,000	480,000 a/
Hungary	257,673	325,000	244,00
Poland	105,934	208,700	150,000
Rumania	45,482	100,000	150,000
Subtotal	436,089	1,036,200	1,027,000
Other			
Palestine	700	0	0
Total	1,097,353	1,222,900	1,192,800

a/ Foundry coke only. Plan figure.

Estimated Exports of Brown Coal Coke (Czechoslovakia)
1948-50

Destination	1948	1949	1950
			Metric Tons
Austria	4,828	28,300	11,000
France	34,100	72,300	
West Germany	52,203	40,400	50,000
Total	91,131	141,000	61,000

6. Internal Limitations.

The Czechoslovak coal industry has had a serious manpower problem. The postwar deportation of thousands of Sudeten Germans created a scarcity of miners and resulted in heavy dependence upon forced laborers and young apprentices, who are unskilled and inefficient. Worker dissatisfaction with wages, working conditions, and increased production quotas has been manifested in sporadic sit-down strikes, slow-downs, and high rates of absenteeism. Miners are largely opposed to mechanization because they feel that they derive little benefit from it.

Some of the coal mines are well-equipped with modern machinery, much of which has been imported from the US and the UK. The need for more machinery and equipment and particularly for spare parts, however, is considerable. Open-cast operations require all sizes of excavating shovels and a large number of bulldozers, items which are in short supply in Czechoslovakia.

The majority of the shaft mines in the important Ostrava district have been using compressed air equipment, and conversion to electrification in the larger mines has been greatly delayed by lack of electric cables and other necessary equipment. Underground operations in other districts are generally less mechanized than in the Ostrava mines, partly because of natural conditions. The overlying rock strata are very weak in the Kladno and Most districts, and the coals are extremely susceptible of spontaneous combustion. These conditions, which also occur in some other districts, render mining abnormally hazardous and reduce the possibilities of utilizing more efficient types of electrical machinery.

7. Trends--Including Indications of Mobilization for War.

7. Trends—Including Indications of Mobilization for War.

Coal is the source of from 90 percent to 95 percent of all energy used in Czechoslovakia. Higher annual production goals reflect the rising industrial requirements for fuel. Postwar output gains have been due, to a large extent, to the installation of modern machinery obtained from the West. Cessation of these deliveries would force Czechoslovakia to rely on the Soviet Bloc for machinery and equipment and would reduce the possibility that coal production would attain planned goals.

D. Petroleum.

Summary

The production of crude oil in Czechoslovakia in 1950 was about 50,000 metric tons a year, which covered less than 10 percent of annual domestic requirements of 700,000 tons. The remainder of the requirements were met by synthetic fuels produced in the Stalin Works at Most, the refining of imported crude oil and masut (residual fuel oil), and the importation of petroleum products.

Output of the five operating crude oil refineries in 1950, 1951, and 1952 is estimated at about 215,000, 230,000, and 255,000 metric tons, respectively. To this should be added about 350,000, 380,000 and 400,000 tons of synthetic fuels in the same years, respectively, from the Most refinery. In addition to the crude oil and residual fuel oil imported from Austria and Rumania for refining, estimated at 200,000 metric tons in 1950 and 250,000 tons in 1952, Czechoslovakia receives about 300,000 tons of motor gasoline and gas and diesel oil from Rumania, Austria, Hungary, and East Germany.

There is considerable evidence that stocks have been and are being built up. Military and reserve depots are kept full at all times. In 1950 alone, Czechoslovak petroleum production furnished a possible surplus of 150,000 metric tons for stockpiling.

Czechoslovak crude oil reserves are small and of inferior quality. Large deposits of brown coal, however, provide adequate raw material for a synthetic fuels industry. The most important establishment of the Czechoslovak petroleum industry is the Stalin Works, the synthetic fuels plant at Most. Fifty percent of annual petroleum requirements are met by the output of this plant, which is the sole Czechoslovak producer of aviation gasoline. From 1950 to 1952, output of 95/130-octane gasoline is expected to rise from 30,000 to 50,000 metric tons.

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1. Production and Estimated Possible Production and Capacity.

Czechoslovakia's production of crude oil has never been large. The oil produced is a heavy nonparaffinous type containing little gasoline and kerosene. 1/ By far the most important producing area is along the Moravian-Slovakian border near Austria, in the vicinity of Gbely and Hodonin. In this area there are four fields in operation, at Breclav, Gbely, Stephanov, and Lab. Total crude oil output in 1950 was about 50,000 metric tons. Extensive exploration is being carried on, but results have been discouraging, 2/ and output probably will remain at the same level in 1951 and 1952.

In 1936, Czechoslovakia had 13 refineries with a maximum annual capacity of about 900,000 metric tons. 3/ Only five of these, with a total annual capacity of 440,000 tons, were in operation in 1948. Individual capacities are estimated as follows:

Estimated Refinery Capacity

Metric Tons A Year

Name	Location	Distillation	Thermal Cracking	Total
Apollo 4/	Bratislava	80,000	50,000	130,000
Fanto 5/	Pardubice	80,000	0	80,000
State Refinery 6/	Dubova	80,000	0	80,000
Vacuum 7/	Kolin	90,000	0	90,000
Privoz 8/	Moravska Ostrava	60,000	0	60,000
Total		390,000	50,000	440,000

The refinery at Bratislava is being expanded to a capacity of 200,000 metric tons a year, and it has also been reported that the Pardubice refinery is in the process of expansion.

The refinery output from both domestic and imported crude oil and mazut is estimated as follows 9/:

Estimated Refinery Production
1950-52

Thousand Metric Tons

Product	1950	1951	1952
Gasoline	7	8	9
Kerosene	9	10	12
Diesel and Other Distillates	38	39	43
Fuel Oil	26	30	35
Lubricants	86	91	99
Asphalt	30	32	35
Paraffin	4	4	4
Others	15	16	18
Total	215	230	255

More than half of the total output of refined products comes from the Stalin Works, at Most, built by the Germans in World War II to produce synthetic fuel

from brown coal by the Bergius process. This plant was designed to have a capacity of 1 million metric tons of liquid fuels a year, but the maximum output obtained was only 682,000 tons. 10/ The Stalin Works were badly damaged in the war but have been partially restored, and with further restoration output probably will continue to rise as estimated below 11/:

Estimated Production of Synthetic Fuels
1950-52

Thousand Metric Tons

Product	1950	1951	1952
Aviation Gasoline a/	30	40	50
Motor Gasoline	167	175	175
Kerosene	33	35	35
Diesel and Other Distillates	120	130	140
Total	350	380	400

a/ The aviation gasoline produced is high-octane, probably grade 95/130. 12/

2. Domestic Requirements.

Domestic petroleum requirements totaled 700,000 metric tons in 1950. About 55 percent of this was met by refining domestic crude and by the output of the Lost synthetic refinery, with imports of crude oil and refined products supplying the remainder. Approximately 580,000 tons were used for civilian purposes as follows 13/:

Estimated Civilian Petroleum Requirements
1950

Thousand Metric Tons

Consumer	Aviation Gasoline	Motor Gasoline	Gas Oil and Diesel and Fuel Oil	Kerosene	Lubricants	Total
Air Transport	13	0	0	0	0	13
Motor Transport	0	222	99	0	15	336
Rail Transport	0	24	25	0	1	50
Industry	0	31	11	2	8	52
Construction	0	5	6	1	2	12
Agriculture	0	10	65	18	5	98
Other	0	1	0	15	1	17
Total	13	291	206	36	32	578

Total requirements, civilian and military, in 1950 for the principal petroleum products are as follows:

Estimated Total Petroleum Requirements
1950

Thousand Metric Tons

Product	Civilian	Military	Total
Aviation Gasoline	13	6	19
Motor Gasoline	291	70	361
Gas Oil and Diesel and Fuel Oil	206	35	241
Kerosene	56	0	56
Lubricants	32	12	44
Total	578	123	701

It is probable that little change in total consumption will be registered in 1951 and 1952, since civilian allocations could be cut to supply any increase in military requirements.

3. Stockpiles.

Czechoslovakia maintains stocks of petroleum products. The amount in storage is not known, but it may be large, since the available petroleum, including imports, has for several years more than covered requirements. The rationing of motor gasoline is a further indication of stockpiling. Storage capacity of about 350,000 metric tons, earmarked for military supplies and reserves, is reportedly kept full. Stockpiling in drums also has been reported.

4. Surplus or Deficit.

Fifty-five percent of Czechoslovakia's requirements in 1950 were supplied from domestic raw materials, and it is estimated that in 1952 domestic supplies will fill 65 percent of requirements. Estimates of crude oil and mazut supplied by Rumania and Austria are as follows:

Estimated Imports of Crude Oil and Mazut
1950-52

Thousand Metric Tons

Product	1950	1951	1952
Crude Oil	75	85	100
Mazut	125	135	150
Total	200	220	250

In addition, an estimated 300,000 metric tons of petroleum products, principally gasoline, gas oil, and diesel oil, were received from Rumania, Austria, Hungary, and East Germany in 1950. 14/ Small quantities of some products probably are exported, but the amounts and destinations are unknown. Domestic production plus net imports may have furnished Czechoslovakia with a surplus of as much as 150,000 metric tons in 1950.

5. Internal Limitations.

The principal limitations on the petroleum industry are the scarcity and inferior quality of Czechoslovak crude oil. Some difficulty has been experienced in obtaining equipment to rebuild the refineries, especially the Stalin Works at Most. Inability to obtain replacement equipment for this installation from the original manufacturer in Ludwigshafen, West Germany (French Zone), has hampered reconstruction.

6. Trends--Including Indications of Mobilization for War.

Lacking adequate crude oil supplies, Czechoslovakia has concentrated on rebuilding its refining industry. Increasing amounts of crude oil and mazut are being imported for processing. It is hoped that production of synthetic gasoline at the Most refinery can be increased to provide a surplus for export to the other Bloc countries. 15/

E. Electric Power.

Summary

The electric power industry in Czechoslovakia is of primary importance to the Soviet Bloc, as Czechoslovakia is one of the major industrial nations among the European Satellites. Not only is the national economy of Czechoslovakia itself based largely on industrial production, but the Soviet Bloc depends heavily on Czechoslovakia for many types of manufactured goods.

The electric power industry in Czechoslovakia is well-established, and, with the exception of a relatively few very small plants, it is completely nationalized. Damage to the electric plants in World War II was relatively light except in the vicinity of the Skoda Works. Plants, transmission lines, and substations are in good condition.

Production of electricity has increased each year since the war, and the goals established by the current Five Year Plan are being slightly exceeded, with every prospect that this condition will continue for the duration of the Plan. Since it may be assumed that these goals were based on anticipated requirements, domestic needs for electric power probably are being satisfied. The Czechoslovak electric power industry is vulnerable to Western economic warfare only to the extent that it would be deprived of replacement parts and equipment for expansion. It can be expected that the USSR would make every effort to assist the development of the electric power industry in Czechoslovakia by supplying raw material shortages.

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1. Economic Importance of the Industry.

Because of Czechoslovakia's high level of industrialization, electric power is basic to the economy, particularly in Bohemia and Moravia-Silesia. The chemical, metallurgical, and heavy equipment industries, which contribute to Czechoslovakia's position as one of the most important manufacturing and processing nations among the European Satellites, are large consumers of electric power. The success or failure of the Five Year Plan (1949-53), which seeks to increase industrial production by 57 percent from 1948 to 1953, depends in large measure upon the output of the electric power industry.

2. Present and Prewar Trends and Developments.

In 1949, Czechoslovakia led all the Satellites except East Germany in the production of electricity,1/ and it is likely that this position will be maintained through 1952. Plan goals call for an output in 1953 of 11.5 billion

kilowatt-hours, 68 percent above 1944 output.

3. Internal Limitations.

a. Energy Resources.

Most electric power in Czechoslovakia is produced in thermal plants. Resources of bituminous and brown coals for power production are ample and are sufficiently distributed to reduce transportation problems to a minimum. Although the brown coal varies in moisture and ash content, its availability and relative cheapness make it entirely suitable for steam-making purposes. Petroleum resources are inadequate to meet the industry's small requirements. There is some electricity production from diesel plants, but the total capacity is small, and the production is insignificant in the total output.

The potential water power resources are estimated at 1.2 million kilowatts at mean river flow. In 1945 the installed hydroelectric capacity was 259,000 kilowatts.2/ The amount of hydroelectric capacity added since 1945 is not known, but there is no evidence that any of the proposed large developments, with the possible exception of the 25,000-kilowatt station at Stechovice, has been completed. It is estimated that hydroelectric capacity is not more than 300,000 kilowatts, or about 25 percent of the usable potential. Even though the current Five Year Plan contemplates the building of 16 hydroelectric stations on the Vltava, Vah, and Nitra rivers, all of them will be small and will serve in most cases as supplementary energy sources in systems dependent on thermal plants.

b. Electricity Generating Plants.

It is estimated that, at the end of 1950, Czechoslovakia's total installed electricity generating capacity was between 2.8 million and 3.1 million kilowatts.* This estimate is based on official figures, 3/ which stated that capacity in 1947 was 2,497,822 kilowatts. It is estimated that net yearly additions since then have been from 100,000 to 200,000 kilowatts.

Virtually complete nationalization of the electric power industry between 1945 and 1948 gave the government control not only of the public utility central stations but also of the electric power plants of individual factories, which have a greater total capacity than the central stations. Although most of the larger factory plants were tied in to local systems or

*Equal to about one-seventh of Soviet capacity

transmission networks, the trend for at least the past 10 years has been toward the building of larger and more efficient central stations to supply power only to industry. The largest of these industrial power plants are in the mining industry, and in 1947 these installations constituted nearly one-fifth of the total national capacity. 4/

The great bulk of electric power generating capacity is located in the highly industrialized provinces of Bohemia and Moravia-Silesia, which together account for nearly 90 percent of the total. The remainder of the plants are widely scattered throughout Slovakia. Construction of hydroelectric plants in Slovakia is still in the planning stage.

Generating capacity appears to be adequate to meet demand, but it is questionable whether this balance can be maintained. The physical condition of the plants may be poor, as official reports 5/ indicate that in 1947 more than 25 percent of the installed generator capacity was not "useful." Since most of the defective generators were steam-driven, it is probable that boilers and other steam accessories were lacking or in such condition as to prevent their maximum use. This deficiency may possibly become a serious drawback to the production of electric power.

c. Transmission Systems.

High-tension transmission networks are well-developed in Bohemia and Moravia but sparse in Slovakia. The compactness of Bohemia-Moravia, which has a maximum width and length of about 150 and 250 miles, respectively, lends itself readily to an integrated transmission network. There is no evidence that integration has been completed, but 110,000-volt transmission lines radiate from nearly all of the principal cities and larger generating stations. 6/ Some evidence exists that there are interconnections among the networks centering around Prague, Pilsen, Moravska Ostrava, and Brno, but it is not known whether such lines are of sufficient capacity to permit the networks materially to assist each other at times of peak demand or in an operating emergency.

The most important network, that centering in Prague, includes two main lines, one running northwest to the large thermal plant at Erevenice and the other running east through Paradubice and across the Polish border to the plants in the Walbrzych area. Power is interchanged between Czechoslovakia and Poland over this line, but the amount is not known.

The coal mining area around Moravska Ostrava also is an important electric power center, with one line running southwest to Prerov and another running southeast through Zilina. The Zilina line provides a link with the existing and proposed hydroelectric stations on the Vah River and probably will eventually connect with Bratislava, the Slovakian capital.

High-tension systems in Slovakia are few, the principal ones being the line from Ruzomberok to the thermal plant at Krompachy and the line from Dubnica to the brown coal fields near Handlova. Neither the type of construction of the transmission lines in Slovakia nor their present condition is known, but, since war damage in the area was comparatively light, it is probable that they are in good condition.

4. Production.

Except for the disruptions caused by World War II, electricity production in Czechoslovakia has shown significant increases annually for the past 15 years. It is believed that the production estimates for 1951-53 represent the minimum that will be attained.

Estimated Production of Electric Power
1937 and 1944-53

Year	Production	Planned Production	Index (1937 = 100)
	Billion Kilowatt Hours		
1937	4.11 7/		100
1944	6.87 7/		167
1945	4.45 7/		108
1946	5.62 7/		137
1947	6.71 7/		163
1948	7.51 8/		183
1949	8.30 9/	8.20	202
1950	9.17 10/	8.94	224
1951	10.08	9.72	244
1952	11.09	10.50	270
1953	12.20	11.50	298

Included in these production figures are exports and imports of power to and from neighboring countries, principally Austria and Poland. Czechoslovakia's interchange with Austria is designed to take advantage of Austrian hydroelectric power generation in periods of good stream flow, whereas Poland provides thermal power from the Walbrzych area to supplement production in the Prague area. The amounts exported and imported are not known, but the net result is a small import balance to Czechoslovakia which was less than 1 percent of total production in 1949 11/ and is planned to be less than 3 percent of total production even after the completion of the joint Polish-Czechoslovak thermal plant at Dwory, Poland, near the Czechoslovak border. This 150,000-kilowatt plant, now under construction, will be an important contributor to electric supply in the border area. In the joint venture, Czechoslovakia is supplying the machinery and equipment, and Poland is supplying the site and the coal, with both nations sharing the output.

Information on the relative proportions of hydroelectric and thermal-electric power output is fragmentary, but hydroelectric power production has been reported to be 12.8 percent of total production in 1944, 16.2 percent in 1945, and 14.0 percent in 1946. 12/

5. Consumption.

Electricity is available to a greater proportion of the population in Czechoslovakia than in any of the other Satellites. In 1938, only 60 percent of the communes (smallest territorial unit) had electric service, but 83 percent were supplied in 1949. 13/ This domestic availability, together with heavy industrial use, gives Czechoslovakia the highest per capita consumption in the Bloc. In 1949, per capita use was about 175 percent of that in the USSR, but only 28 percent of that in the US.

The use of electricity in Czechoslovakia follows the pattern familiar throughout the Soviet Bloc, with industry accounting for about two-thirds of the total. Industrial consumption and line losses leave only about 20 percent of the output for other purposes. References to allocations under the current Five Year Plan indicate the following pattern of distribution: 14/

Pattern of Use of Electricity
1949, 1951

	Percent of Total	
Consumer	1949	1951
Industry	64.2	64.5
Power Stations	6.5	6.5
Transportation a/	2.7	2.5
Other	17.3	17.6
Transmission and Other Losses	9.3	8.9
Total	100.0	100.0

a/ Probably includes urban electric railroads, as well as electrified railroads and their shops.

Government allocations under the current Five Year Plan for the principal classes of industry are as follows 15/:

Allocation of Electricity to Industry
1949, 1953

Industry	Percent of Total Industry		Percent of Increase
	1949	1953	1953 over 1949
Chemicals	20.2	19.2	30.0
Mining	18.7	15.4	12.5
Metallurgy	13.8	16.5	62.5
Metals	9.7	14.3	102.0
Ceramics	6.8	7.0	41.0
Paper and Printing	6.5	5.6	17.0
Textiles	6.4	5.5	18.5
Food	4.8	4.0	16.0
Other a/	13.1	12.5	32.0
Total	100.0	100.0	37.5

a/ Including 6.5 percent used in power stations.

Although all industries will increase their electricity consumption, the greatest emphasis is on the metallurgical and metal fabricating industries.

Civilian requirements for electric power can be arbitrarily set by the government through restrictions on quantity and hours of use by the civilian economy, thus making available greater amounts to the military in time of war. Such restrictions would mean inconvenience but not severe hardship to civilian consumers.

6. Input Requirements.

Manpower requirements in the Czechoslovak electric industry are small, and in 1949 less than 1 percent of the national labor force was engaged in the production of electricity and manufactured gas. 16/ Even though the removal of the Sudeten Germans meant a considerable loss of electrical technicians, sufficient skilled manpower remains to meet the needs of the industry. Fuel supplies are ample, and undeveloped water power is adequate for many years to come.

The requirements of the electric power industry for replacement equipment and spare parts are not known, but there is ample evidence that Czechoslovakia is in a favorable position in this regard. It is the leading manufacturer of electrical equipment among the Satellites, and, although the equipment industry must import iron, copper, other nonferrous metals, and rubber, supplies have been sufficient to meet needs.

Czechoslovakia has a long-standing reputation for engineering ability and a large number of modern manufacturing facilities. The Skoda Works, which has its principal plant at Pilsen, is one of the largest manufacturers of heavy industrial and electrical equipment in Europe. The plant was heavily damaged in World War II but has been largely restored. Other important manufacturers are the Gottwald Works at Brno and the Gustav Kliment Works at Chomutov. These and other plants produce steam and water turbines, boilers, condensers, generators, motors, heavy-duty electrical switchgears, cables, and instruments.

7. Vulnerability.

Czechoslovakia's electric power industry is considerably less vulnerable economically than those of the other Satellites because of its indigenous primary energy resources, its highly developed manufacturing facilities, and its trained manpower. The denial of electric power now imported from Austria and Poland would cause some disruption but would not permanently reduce the required supply. Sufficient information is not available to evaluate accurately the effect on the electric power industry of the denial of certain raw materials needed in the production of electrical equipment.

F. Chemicals.

Summary

About three-fourths of Czechoslovakia's production of synthetic ammonia is utilized in the production of nitrogenous fertilizers. Domestic production is apparently inadequate to meet minimum agricultural fertilizer requirements, and continuing imports, principally from Austria, are necessary. Even after the completion of two new ammonia plants, the production of nitrogen fertilizers will fill only 35 percent of the estimated requirements for 1955.

Synthetic ammonia as such would not be stockpiled, as it requires heavy pressure-type containers. There is no indication that ammonium nitrate is being stockpiled.

The production of nitrate fertilizers, far from being reduced in favor of an increased output of nitric acid and ammonium nitrate for military production, is continually increasing. Nitric acid facilities at Moravska Ostrava were expanded after 1948, but it is presumed that most of the increased production was immediately allocated to raise the output of fertilizers. Of the two new ammonia plants at Most and Martinov, apparently only the Martinov plant is to produce nitric acid and nitrates, and less than one-half of its ultimate capacity will be available by 1953.

Czechoslovakia produces no native sulphur and is totally dependent upon imports for its requirements of about 30,000 metric tons a year. The domestic production of pyrites currently supplies only about 12 percent of annual requirements of about 350,000 tons, but increased output should furnish about 30 percent of the larger requirements expected in 1952. Non-Bloc sources provided the bulk of sulphur imports in 1949 and of pyrites imports in 1950. Planned imports for 1952 from non-Bloc sources are not likely to be obtained, because of the existing world sulphur shortage and of the increasing diversion of pyrites to Western Europe as the world shortage of pyrites becomes more acute.

It is not expected that the increasing pyrites output of Albania, Bulgaria, and Rumania can fill the Czechoslovak deficit. Czechoslovakia exports to the USSR many strategic products, the manufacture of which is dependent on sulphur or pyrites. These exports include explosives, rayon tire cord, rubber chemicals, rubber products, and many steel products. Thus Czechoslovakia's ability to make economic contributions to the Soviet potential for war will be reduced if sulphur and pyrites supplies are not maintained. In the event of war, however, high-strength or contact sulphuric acid could be diverted from fertilizer manufacture to explosives.

Czechoslovakia possesses a highly developed rubber manufacturing industry which is capable of meeting domestic requirements and of exporting considerable quantities of a large variety of rubber products.

Production of neoprene-type synthetic rubber has been reported at the Bata plant in Ostrokovice near Zlin/Gottwaldov, but because of technical difficulties and lack of sufficient raw materials, the plant is producing only about 1 metric ton a day. Domestic production of reclaimed rubber is estimated at 6,900 metric tons in 1950. Imports of natural rubber, which have increased from 13,000 tons in 1937 to 28,000 tons in 1950, are obtained through Western countries as well as from Southeast Asia. Other imports in 1950 included 8,000 metric tons of synthetic rubber, chiefly from East Germany and the USSR, and almost 3,000 tons of rubber.

Shortages of carbon black and rubber chemicals have been severe in the Soviet Bloc. Although production of certain types of these products has been started in Czechoslovakia, the country must depend mainly on imports. Since the war, quantities of these materials have been obtained, some by clandestine means, from Western countries, with the remainder coming from the Soviet Bloc. Czechoslovakia is the leading Satellite producer of rubber goods, and the country may be expected to receive top priority in the allocation of such raw materials as carbon black and rubber chemicals obtained by the Bloc.

A coordinated effort by the USSR and the Satellite countries to increase tire production has been made, and special emphasis recently has been placed on the increased production of tire cord. Some success has been attained by the Soviet Bloc in procuring equipment and raw materials for tire production from Western sources, and the expansion of existing facilities and the addition of new plants have enabled the industry to progress substantially since the end of the war. Development of the tire industry has been hampered, however, by a lack of equipment for producing heavy-duty tires. Failure to obtain this equipment from the US has made it necessary to consolidate certain facilities and to obtain equipment from other sources, thereby delaying the over-all expansion planned for the Soviet Bloc.

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1. Synthetic Ammonia.

a. Production.

The construction at Moravska Ostrava of a third large absorption plant to increase nitric acid production was planned in 1948 and probably has been completed. It is believed that during the war Moravska Ostrava, which had an estimated annual capacity of 42,000 metric tons (100 percent acid basis), shipped most of its nitric production to "Explosia," the explosives plant at Semtin. Present Moravska Ostrava production capacities are estimated at 50,000 metric tons of nitric acid (100 percent acid basis) and 35,000 tons of ammonium nitrate a year. Czechoslovakia's production of synthetic ammonia, in terms of nitrogen content, is estimated as follows:

Estimated Production of Synthetic Ammonia
1948 - 50

Metric Tons (Nitrogen Content)

Year	Production
1948	22,300
1949	25,500
1950	28,200

b. Estimated Possible Production and Capacity.

Present synthetic ammonia capacity is estimated at 35,800 metric tons (N) a year. Possible production and capacity are estimated as follows:

Estimated Production and Capacity of Synthetic Ammonia
1951 - 52

Metric Tons (Nitrogen Content)

Year	Production	Capacity
1951	31,500	36,300
1952	33,400	37,300

Only a slight production increase over 1950 is anticipated in 1951 and 1952. It has been reported that the Stalin Works at Most will begin production of synthetic ammonia in 1951. Annual capacity ultimately is to be 150,000 metric tons (N), but by the end of 1952, production will be only 50 metric tons (N) a day, equivalent to 15,000 metric tons (N) a year. Apparently no nitric acid will be made at Most, and nearly all of the ammonia produced will be converted into ammonium sulphate fertilizer.

c. Domestic Requirements.

An estimated three-fourths of Czechoslovakia's synthetic ammonia production is used to produce nitrogenous fertilizers. The planned minimum nitrogen fertilizer requirements for 1948 through 1952, as fertilizer and as nitrogen, are as follows:

Minimum Nitrogen Fertilizer Requirements a/
1948 - 52

Metric Tons

Year	As Fertilizer	As Nitrogen (17.5%)
1948	159,600	28,000
1949	168,500	29,681
1950	172,000	30,692
1951	226,000	39,595
1952	234,000	41,191

a/ These figures are based on planned total requirements and on the planned minimum of 20 kilograms of nitrogen for a hectare of agricultural land.

When a comparison is made between the production of fertilizers (in terms of nitrogen content) and the estimated production of ammonia, a discrepancy is immediately apparent. This is principally due to the fact that nitrogen fertilizer production also will include those nitrogenous fertilizers which are not derived from synthetic ammonia, such as calcium cyanamide from calcium carbide and ammonium sulphate made as a by-product from coke. In Czechoslovakia this increment is not great, because cyanamide production is small in relation to the whole, this fertilizer being produced at only one plant. The production of by-product ammonium sulphate likewise is small.

Requirements for synthetic ammonia as such are small. It is used principally for refrigeration and in an aqueous solution by the ammonia-soda (soda ash) producing plants, while the bulk of the remainder is used to produce nitric acid and nitrates. Some of the nitric acid is furnished to the explosives manufacturing plants, and it also is used in the production of fertilizers, various nitrated chemicals, and dye intermediates.

Czechoslovakia is beginning to produce urea from ammonia. Previously the country imported about 40 million crowns worth of this commodity a year, saving 70 percent of the cost in dollars. Urea is used to produce glues for wood, as a raw material for synthetic lacquers, and by the textile and plastics industries. Perhaps about 200 metric tons (N) a year of synthetic ammonia are consumed in its production at present.

d. Stockpiles.

Neither synthetic ammonia nor nitric acid is likely to be stockpiled as such. The stockpiling of ammonium nitrate would be feasible, but there is no indication that this commodity has been or will be stockpiled in the near future.

e. Surplus or Deficit.

Estimates of synthetic ammonia deficits, based on a general study of imports and exports of nitrogen products in 1948 and 1949, are 6,000 metric tons (N) in 1951 and 4,000 tons (N) in 1952. Significant amounts of nitrogen were imported in 1950 and 1951, when 25,000 metric tons and 30,000 tons, respectively, of calcium ammonium nitrate fertilizer were received from Austria. It is estimated that 20 kilograms of nitrogen are required per hectare of agricultural land but that only 7 kilograms will be available in 1955.

f. Internal Limitations.

There are no raw material shortages limiting the production of synthetic ammonia in Czechoslovakia. Difficulties existed for some time after the war in preparing iron oxide catalysts, supplied from France in prewar years. The use of the domestic catalyst has resulted in less efficient operations. Because of the poor quality of the catalyst, only from 80 to 90 percent of the gas mixture was processed into ammonia at the Moravska Ostrava plant. Although vigorous efforts presumably have been made, it is not known whether the Czechoslovak plants have developed satisfactory catalysts.

The production of nitric acid requires equipment made of stainless steel alloys and the use of a fine platinum-rhodium wire gauze as a catalyst. The replacement of these items is likely to prove difficult. The USSR is reported to have removed for its own use about 18 of the gauze catalysts, formerly kept in a bank deposit vault for the Moravska Ostrava plant.

g. Trends—Including Indications of Mobilization for War.

There have been no reports of reduced production of nitrogen fertilizers in favor of increased output of nitric acid and ammonium nitrate to satisfy the requirements of a war economy.

Two new synthetic ammonia plants are believed under construction in 1951. The Stalin Works at Most was scheduled under the Five Year Plan to have a capacity of 15,000 metric tons (N) a year by 1952. No nitric acid is to be made at Most. The Martinov plant, now under construction at Hlucin, near Moravska Ostrava, is expected to be the largest synthetic ammonia producer in Czechoslovakia and to have an ultimate annual capacity of 28,800 metric tons (N) by the end of 1955. The production plan for 1953 calls for 11,000 tons (N).

Products to be made include synthetic ammonia, ammonium sulphate, sodium nitrate, urea, and nitric acid. By 1955, annual nitric acid capacity is expected to be about 52,000 metric tons (100 percent acid basis). The output in 1955 is to be divided as follows: Ministry of Defense, 50 percent; Ministry of Agriculture, 42 percent; and urea production, 8 percent. The progress of construction is unknown.

2. Calcium Carbide.

Calcium carbide production in Czechoslovakia is small, being estimated in 1950 at approximately 68,000 metric tons. The bulk of the output comes from two plants, each with an annual capacity of 30,000 metric tons. There is little likelihood that production will be increased in 1951 and 1952. About half of the product will be used for calcium cyanamide and the balance largely for metalworking, organic synthesis of rubber, and plastic. There are abundant supplies of raw materials. All indications are that production is sufficient for the country's requirements.

3. Chlorine.

Czechoslovakia, the second largest producer of chlorine among the Satellite nations, produced an estimated 46,500 metric tons in 1950 in five small plants. The major portion of the production is used to make synthetic hydrochloric acid, consumed in various fields of the chemical industry, while the balance is largely used for the bleaching of sulphite pulp. The country has excess capacity, and there is little likelihood of additional facilities being installed in 1951 and 1952.

4. Coke Chemicals.

The Stalin Works at Most, completed by the Germans in 1943, is one of the most important chemical plants in the Soviet Bloc, and the bulk of its products are of military value. It was designed to produce synthetic gasoline from the brown coals found in large quantities in the area. By-products of this process include large quantities of benzol, toluol, naphthalene, wood preservatives, and a special product called pyrocatechol which has potential use as an important ingredient in rocket fuels. The Stalin Works is by far the largest producer of catechol in the world. All catechol output is exported to the USSR, and production at the rate of 3,000 metric tons a year is sufficient to provide fuel for a large number of rockets.

The dyestuffs industry in Czechoslovakia is expanding, and by-products from the Stalin Works will be essential for this industry. At the present time, some benzol has been offered for sale through Polish ports to the US.

5. Sulphuric Acid.

Sulphuric acid, one of the most important chemicals in any industrial nation, is produced in substantial quantities in Czechoslovakia. The estimated production in 1950 of 258,000 metric tons is approximately one-half of capacity. The shortage of pyrites supplies, nearly half of which are obtained from non-Orbit countries, is the reason for the comparatively low production.

About one-half of the production is used in the manufacture of fertilizers. About 30,000 metric tons is used in processing steel, and approximately the same amount is used in the production of rayon. Recent reports show that limited quantities of sulphuric acid have been imported from Italy and East Germany.

6. Sulphur and Pyrites.

a. Production.

No native sulphur is produced in Czechoslovakia, and the output of by-product sulphur is believed to be negligible.

Small quantities of pyrites are produced from deposits in the Chvaletice area. Production in 1950 was 40,000 metric tons, and planned production in 1951 is 100,000 tons. 1/ Some forced labor has been reported in the mines. 2/

b. Estimated Possible Production and Capacity.

Production of pyrites in 1952 may reach 150,000 metric tons.

c. Domestic Requirements.

(1) Sulphur.

Requirements of sulphur for industries which cannot use pyrites are estimated to have been about 28,000 metric tons in 1950, principally for rayon production but also for agriculture and the manufacture of paper and rubber. Sulphur requirements for 1951 and 1952 will depend largely on the level at which the rayon industry operates. The industry operated at 65 percent of capacity in 1949. 3/ Assuming reasonably full operation of the consuming industries, the 1952 sulphur requirements will be from 30,000 to 35,000 metric tons.

(2) Pyrites.

Total requirements for pyrites in 1950 have been reported to be from 300,000 to 310,000 metric tons, 4/ and in 1951, from 380,000 to 400,000 tons. Of the 1951 requirements, between 290,000 and 300,000 tons are for the chemical industry and from 90,000 to 100,000 tons are for the pulp, cellulose, and rayon industries. 5/ Requirements for 1952 are estimated to be from 430,000 to 450,00 metric tons. 6/

d. Stockpiles.

Because of the difficulties encountered in importing sulphur and pyrites, it is unlikely that stockpiles of either of these materials have been accumulated or will be by 1952. In February 1951, stocks of pyrites were reportedly sufficient for 3½ months' requirements, a normal supply for industries consuming mineral raw materials.

e. Surplus or Deficit.

(1) Sulphur.

It is estimated that the sulphur deficit of about 31,000 metric tons in 1949 will increase to from 35,000 to 40,000 tons in 1952. Except for a small output of by-product sulphur, Czechoslovakia is entirely dependent upon imports. Imports of sulphur in 1949 were as follows 7/:

Estimated Sulphur Imports
1949

Metric Tons

Source	Imports
Italy	12,873
Portugal	12,430
USSR	5,354
East Germany	1,000
Total	31,657

Exports of sulphur from East Germany to Czechoslovakia in 1950 were 4,334 metric tons. 8/ In addition to the sulphur to be provided by the USSR under the 1949 trade agreement, the Soviets also were to provide 5,000 metric tons of sulphuric acid, 500 tons of carbon bisulphide, 100 tons of sodium sulphate, and 300 tons of sodium hydrosulphite, 9/ all of which would require about 1,865 tons of elemental sulphur or 4,150 tons of pyrites (45 percent sulphur content).

Reports persist that Czechoslovakia is attempting to procure sulphur from the US and Italy in circumvention of export controls. Spain and Cyprus, former sources of pyrites, have discontinued shipments to Czechoslovakia but have been approached to resume them. 10/

(2) Pyrites.

Czechoslovakia imported 285,000 metric tons of pyrites, 95 percent of its requirements, in 1950. 11/ Imports will supply from 60 to 62 percent of requirements in 1951, according to estimates based on planned imports of from 235,000 to 250,000 tons and planned production of 100,000 tons, but it is likely that, even with increased domestic production, 70 percent of requirements will have to be filled by imports in 1952. Imports of pyrites in 1950 and planned imports for 1951 are as follows:

Pyrites Imports and Planned Imports
1950 - 51

Metric Tons

Sources	1950 12/	1951 (Planned) 13/
Soviet Bloc		
Bulgaria	60,000	40,000
Rumania	0	40,000
Subtotal	60,000	80,000
Non-Soviet Bloc		
Yugoslavia	150,000	60,000 to 70,000
Greece and Cyprus	50,000	40,000
Norway	13,000	10,000
Sweden	7,000	10,000
West Germany	0	15,000 to 20,000
Italy	5,000	20,000
Subtotal	225,000	155,000 to 170,000
Total	285,000	235,000 to 250,000

The imports planned for 1951 probably will not be obtained. Greece has given notice that shipments will be discontinued, Sweden has already sold its output elsewhere, and expected shipments from Norway, Cyprus, and Italy are not likely to be completely fulfilled. Thus Czechoslovakia may receive about 75,000 tons less than its expected supply of pyrites in 1951. No estimate of the deficit for 1952 can be made, because of the uncertainty of performance of foreign sources of supply.

The possibility of importing pyrites from the Giesche mines in Polish Upper Silesia, as was done under the German occupation, is being considered. 14/

f. Internal limitations.

(1) Availability of Raw Materials.

No information is available regarding the extent of the newly discovered pyrites deposits in Czechoslovakia. The mining operation will reportedly yield 200,000 metric tons a year when in full operation, 15/ or about half of future pyrites requirements.

Additional equipment required for further exploitation of the pyrites deposits can probably be manufactured in Czechoslovakia, but the industrial competition for steel may be a limiting factor.

(2) Shortages of Raw Materials.

Since 1948, serious shortages of pyrites have hampered Czechoslovak industry, affecting the production of sulphuric acid, rubber, textiles, paper, and fertilizer. The shortages in sulphur and pyrites have been caused by Western export controls and by increasing world demand. Czechoslovakia will find it increasingly difficult, if not impossible, to procure these raw materials from non-Orbit areas in the future, and the economy will be seriously hampered unless additional pyrites can be obtained from Albania, Bulgaria, and Rumania.

g. Trends--Including Indications of Mobilization for War.

Exploitation of the pyrites deposits in the Chvaletice area has been given high priority, 16/ and a substantial increase in production may be expected. Because the sulphur shortage is more acute, it can be expected that those industries which now consume sulphur but which could use pyrites by changing equipment will do so. The transition, however, will be gradual because of the expense involved and the large quantities of steel required.

Many of the strategic end-products which use sulphur or pyrites as primary raw materials are exported to the USSR. Failure of Czechoslovakia to secure sufficient raw materials will result in the reduction of these exports, since there is no substitute for sulphur in its several forms.

7. Rubber.

a. Production.

Small quantities of neoprene-type synthetic rubber are now reportedly produced in Czechoslovakia, but lack of technical equipment keeps production at a low level. The Bata plant in Ostrokovice near Zlin/Gottwaldov reportedly

started production at the beginning of World War II and produced about 3,000 metric tons in 1942. 1/ Most of the plant was destroyed in the war, and production has reportedly declined to about 1 ton a day because of a lack of equipment. 2/ Reclaimed rubber production is estimated at 6,000 metric tons in 1949 and 6,900 tons in 1950.

Production of rubber goods has steadily increased since the end of the war and the output of major types of goods is reported as follows:

Production of Rubber Goods
1948 - 50

Commodity	Units	1948 3/	1949 4/	1950 a/
Tires	Units	4,467,800	10,370,000	12,000,000
Automobile, Truck and Tractor	Units	703,000	900,000	1,250,000
Bicycle and Motorcycle	Units	3,765,000	9,330,000	10,750,000
Rubber Footwear	Pairs	25,527,700	27,400,000	29,200,000
Conveyor Belts	Square Meters	136,800	150,000	160,000

a/ Estimated.

b. Estimated Possible Production and Capacity.

No data are available on increases planned in synthetic rubber production. The Czechoslovak government reportedly has ordered the Moravian distilleries and the vinegar factories in Brno to plan for the production of synthetic rubber from alcohol. For this purpose, a large factory, to be known as "Betanolka," reportedly was under construction in Rajec, near Blansko, and would be placed under military control. 5/

Great increases in the production of rubber manufactured goods, particularly of tires and tubes, are planned in 1951-54. Czechoslovakia leads the Satellites in the production of major categories of rubber goods. The expansion of existing facilities and the addition of new plants have enabled the industry to surpass yearly planned production, and production in 1951 may approach the totals originally planned for 1952 as follows 6/:

Estimated Production of Rubber Goods
1951

Commodity	Unit	Production
Automobile, Truck, and Tractor Tires	Units	1,300,000
Rubber Footwear	Pairs	29,700,000
Conveyor Belts	Square Meters	180,000

If additional equipment and an adequate supply of raw materials are available, a considerable increase in production of rubber goods, particularly tires and tubes, can be expected.

c. Domestic Requirements

Requirements planned for the first 4 years of the current Five Year Plan (1949-53) are reported as follows 7/:

Planned Rubber Requirements
1949-52

Metric Tons

	1949	1950	1951	1952
Natural Rubber	30,160	32,248	33,750	37,800
Synthetic Rubber	7,200	7,722	8,050	9,400
Reclaimed Rubber	9,000	9,500	10,100	10,700
Total	46,360	49,470	51,900	57,900
Carbon Black	8,026	8,618	8,947	10,461
Other Chemicals	53,166	57,494	61,920	73,812

From this expected supply of raw materials, production of rubber goods was planned as follows 8/:

Planned Production of Rubber Goods
1949-52

Product	Unit	1949	1950	1951	1952
Tires					
Automobile	Units	428,000	600,000	650,000	650,000
Truck and Tractor	Units	400,000	450,000	600,000	650,000
Bicycle	Units	4,750,000	4,850,000	5,250,000	5,250,000
Motorcycle	Units	290,000	290,000	360,000	360,000
Total, Tires	Units	5,868,000	6,190,000	6,860,000	6,910,000
Rubber Footwear	Pairs	25,600,000	27,460,000	29,280,000	29,760,000
Conveyor Belts	Square Meters	120,000	120,000	160,000	180,000
Other	Metric Tons	67,997	71,509	72,600	85,295

Later Plans for individual years indicate that changes were made in both planned quantities of raw materials and output of rubber goods, with major emphasis given to production of tires and tubes. 9/ Requirements for rubber imports may be expected to increase in the next few years to meet expansion plans of the industry.

Czechoslovakia's motor park, estimated at about 180,000 vehicles in 1950, would require from 720,000 to 800,000 tires a year. Although production of tires is believed adequate to supply these requirements, the diversion of tires to the USSR and to other Satellite countries may leave insufficient quantities for domestic consumption.

d. Stockpiles.

There is no indication of any stockpiling of rubber or rubber goods. The small reserve stocks maintained before the war were completely exhausted by the Germans during the occupation, and the rubber industry has since operated on a hand-to-mouth basis. 10/ Stocks of raw materials for the rubber industry are usually maintained at about a 3-months' supply. At the end of 1948, Czechoslovakia reportedly had 3,810 metric tons of natural rubber (including latex) and 1,099 tons of synthetic rubber, 11/ which would constitute only a normal carry-over of material.

e. Surplus or Deficit.

Natural and synthetic rubber supplied 81 percent of the requirements of the industry in 1949. These imports, estimated at 13,000 metric tons of natural rubber and 4,000 tons of reclaimed rubber in 1937, 12/ have reportedly increased since the end of World War II as follows:

Rubber Imports
1948 - 50

Metric Tons

	1948	1949	1950
Natural Rubber	23,535 13/	27,500 14/	28,000 14/
Synthetic Rubber	1,538 13/	8,000 a/	8,000 15/
Reclaimed Rubber	2,621 16/	3,000 a/	3,000 a/
Total	27,694 16/	38,500	39,000

a/ Estimated.

Czechoslovakia exports considerable quantities of all types of rubber products to the Western countries and to the Soviet Bloc.* It is the major producer among the Satellites of a wide variety of rubber goods and reportedly must supply the USSR with finished rubber goods in exchange for the raw materials required by the rubber industry, being allowed to sell only a portion of the finished goods in Czechoslovakia to cover manufacturing costs. Recent reports have indicated that Czechoslovakia is "dumping" quantities of rubber goods in Western countries to obtain foreign currency. 18/

The production of tires is considered more than adequate to meet domestic requirements, except possibly for certain types and sizes for heavy vehicles. A considerable portion of the tire production is reported to go to the USSR and other Satellite countries. Some types and sizes of rubber tires have been imported from countries outside the Soviet Orbit. 19/

Domestic supplies of carbon black and rubber chemicals are inadequate, and requirements of these materials are filled mainly by imports.

* Importers of Czechoslovak rubber goods include Benelux, Sweden, the UK, the USSR, Switzerland, Austria, Yugoslavakia, Venezuela, and Iraq. 17/

f. Internal Limitations.

Czechoslovakia obtains natural rubber from Southeast Asia and from the reexport and transit trade of the UK, Netherlands, Belgium, and West Germany. Synthetic rubber is obtained from East Germany and the USSR. Attempts were made to procure neoprene-type synthetic rubber from the US in 1950. 20/ Some reclaimed rubber is produced in Czechoslovakia, and additional supplies are imported largely from East Germany.

Carbon black supplies are imported, although attempts have recently been made to produce this commodity in Czechoslovakia. A large unit for the production of carbon, reported under construction at Marianske Hory (Marienbad), was not included in the Five Year Plan but was said to have been added later as an urgent, top-priority project. 21/ The shortage of carbon black has necessitated procurement by devious methods, including imports via Switzerland and Belgium and smuggling from West Germany and Holland. 22/ East Germany, Rumania, and Hungary have supplied additional quantities. 23/

It was reported in late 1949 that accelerators, softeners, and other necessary chemicals could be supplied domestically, with the exception of some special ultra-accelerators and carbon black. 24/ The production of some rubber chemicals was begun after the imposition of restrictions on supplies from the West. Imports have come from East Germany and other countries, in addition to large quantities reportedly obtained by clandestine means through Switzerland and other Western countries. 25/ Several plants reportedly were closed in early 1949 as a result of shortages of rubber chemicals, especially trimene base, and attempts were made to procure these chemicals from various sources. 26/ Late in 1949 it was stated that Czechoslovakia had sufficient quantities of certain types of rubber accelerators, which had been supplied by a Swiss firm. 27/ The Soviet Bloc, however, probably will continue to be short of certain rubber chemicals and carbon black for the next few years, although production of these vital raw materials has been initiated in several Satellite countries and may be expected to increase.

Czechoslovakia manufactures tire cord, and Italy and France have also supplied quantities of rayon filament and tire cord under trade agreements. 28/ It is reported that the USSR intends to coordinate all Soviet Bloc rayon producing facilities for the production of tire cord. Rayon plants throughout the Bloc are to exchange technical information and increase production without regard to cost or efficiency. The erection of a special factory for the production of cord fabric at Welka-nad-Velickow was planned. Czechoslovakia attempted to procure from the US some large spinnerettes for the production of high-tenacity tire cord but was refused. Reports indicate that the desired equipment may subsequently have been obtained by Poland from the UK. 29/

The lack of specialized equipment has caused shortages of certain types and sizes of heavy-duty tires. Most of the existing equipment is believed to

be designed for the production of automobile tires. 30/ Special efforts probably will be devoted to provide sufficient equipment for tire production. A new tire plant was to be opened in January 1950 in Slovakia with equipment ordered from the US, but the denial of export licenses for the machinery made it necessary to piece out facilities for the plant from other plants in the country. Some equipment may have been obtained in other countries. 31/

g. Trends--Including Indications of Mobilization for War.

Major emphasis in the rubber industry in Czechoslovakia, as in Poland, has been placed upon tire production. Soviet instructions reportedly have been issued that, since Czechoslovakia has the most advanced rubber industry in the Soviet Bloc countries, the manufacture of all rubber products in the Satellite countries is to be concentrated there. 32/ The coordinated effort of the Soviet Bloc to increase tire production and the recent emphasis on obtaining tire cord facilities also point to the major role that Czechoslovakia is expected to play in the rubber fabricating field. 33/

After similar action in the USSR, Czechoslovakia in the early postwar period undertook to move frontier industries toward the interior of the country. Several rubber fabricating plants were moved into Slovakia, now the center of the industry. Factories were placed on a wartime basis, and increased shifts and special security measures were added. 34/ Production has been initiated of certain items of possible military use, including rubber gas tanks for airplanes, gas masks, life jackets, rubber dinghies, and equipment for small submarines. 35/

G. Engineering Industry.

Summary

The Czechoslovak engineering industry is the largest among the Satellites. It produces a substantial volume of a wide range of machinery and equipment, which meets domestic requirements, except for certain specialised items, and provides a surplus, equal to about 50 percent of total output, a large proportion of which is exported to other members of the Soviet Bloc. The industry in 1947 employed 442,060 people, and it is planned that by 1953 employment will be 634,410, or about 26 percent of a total labor force in industry and construction of 2,419,000 workers.

The main sectors of the Czechoslovak engineering industry include heavy machinery, precision machinery, aircraft and vehicles, and general machinery. Approximately 80 percent of the capacity of Skoda, the major producing unit of the engineering industry, is centered in the installations at Pilsen. The factories of the Skoda combine produce complete electric power stations, complete equipment for industrial plants (including chemical factories, paper mills, refineries, pumping stations, rolling mills, distilleries, sugar factories, etc.), vehicles, steel structures, construction machinery, individual units of machine tools, automatic machines, presses, and numerous other types of equipment. It is reported that from 60 to 70 percent of production of these items is exported. Moreover, Skoda is one of the chief armament producers in Europe.

Production of the engineering industry in the early postwar years increased greatly over prewar levels, and, under the Five Year Plan, output is scheduled to rise at an even more rapid rate. Production surpasses domestic requirements, creating a large surplus which amounts to about 50 percent of the total output. All of the surplus is exported. The following table of production of selected commodities shows actual and planned production.

Production of Selected Engineering Products
1937, 1948, 1951-53

Units

	1937	1948	1951 a/	1952 a/	1953 (Planned)
Machine Tools	5,496	11,814	16,000	17,500	19,900
Electric Motors	81,600	448,000	N. A.	N. A.	890,000
Tractors	204	9,098	19,000	20,000	20,000
Agricultural Machinery	N. A.	298,468	N. A.	N. A.	N. A.
Automobiles	12,634	19,217	N. A.	N. A.	40,000
Trucks	3,615	5,974	N. A.	N. A.	15,000
Locomotives	75	306	430	450	480
Freight Cars	N. A.	5,148	8,000	8,000	N. A.
Bearings	N. A.	720,000 960,000	5,500,000	6,500,000	N. A.

a/ Estimated.

The output of the shipbuilding industry is estimated at 4,000 gross tons in both 1951 and 1952. Munitions production in 1949 is estimated at 300 pieces of artillery of over 75-millimeter caliber, 100,000 units of small arms, 1 million artillery and mortar shells, and 200 million rounds of small arms ammunition.

Planned increases by value for various segments of the engineering industry are shown below:

Production of Engineering Industry
1947-48, 1953

Million Crowns*

Sector	1947	1948 (Planned)	1953 (Planned)
Heavy Machinery	8,205	9,105	22,291
Electrical Equipment	5,974	8,952	18,336
Aircraft and Vehicles	6,808	8,662	15,140
Precision Machinery	5,090	6,988	13,718
Metal Industry	34,669	43,869	85,266

Attainment of Plan goals depends upon more work shifts, imports of heavy machine tools, the expansion of existing machinery production facilities, the rationalization of production, and the availability of trained personnel.

A significant feature of the Five Year Plan for the engineering industry is the dependence upon Western imports, which are scheduled to rise. Imports of machinery and equipment, particularly of special types which either cannot be procured or are in short supply in the Soviet Bloc, are greatly needed. Strict enforcement of Western embargoes on exports of critical items to Soviet Bloc countries would render Czechoslovakia unable to meet its import goals and would seriously hamper the fulfillment of production plans.

The technological level of the engineering industry, while high, has dropped as a result of the purge of experienced factory managers and the decline in employee morale which followed the Communist coup. The expulsion of the Sudeten Germans, many of whom were skilled workers, also has hampered production. Moreover, the quality of output has declined because of lack of high-grade raw materials, high-alloy steel, electrolytic copper, and machinery components such as bearings, fuel injection pumps, and special machine tools. Despite these shortcomings, the engineering industry continues to expand. Increasing conversion to war production has doubtless detracted from the production of nonmilitary machinery and equipment.

* The official exchange rate of the Czech crown is 50 crowns to 1 US dollar. For foreign trade purposes, this figure is fairly accurate, as prices are usually computed at world prices and converted at the official rate. For internal purposes, the true value of the Czech crown, although probably closer to the official rate than any other monetary unit in the Bloc, is still too high. No accurate conversion factor is presently available.

1. Machine Tools.

a. Production.

The production of machine tools in Czechoslovakia is far greater than that of any other Soviet Bloc country except the USSR, and Czechoslovakia is the main source of supply for Satellite requirements of machine tools. Production is estimated as follows:

Estimated Production of Machine Tools
1937, 1946-53

Units

	1937	1946	1947	1948	1949	1950	1951	1952	1953
Produced	5,496	6,770	9,711	11,814	14,300	15,000	16,000	17,500	
Planned				12,500	24,765	24,000		22,000	19,900

Lathes, milling machines, broaches, grinding machines, gear-cutting and polishing machines, shapers, and screw-cutting machines are among the chief types of machine tools manufactured. The reported labor force in this industry is 118,145 workers, but since reports differ for some factories and figures are not available for others, this total is considered tentative.

b. Estimated Possible Production and Capacity.

The Czechoslovak machine tool industry is producing at capacity. Output and capacity are both estimated at 16,000 units in 1951 and 17,500 units in 1952. Despite obsolescence of productive facilities, it is likely that the 1953 production goal of 19,900 units will be achieved.

c. Domestic Requirements.

Data on domestic requirements are not available. Czechoslovak production is sufficient to fill domestic needs in many categories of machine tools, but other types must be imported. For example, Czechoslovakia has ordered from Western Europe grinding and gear-cutting machinery, machinery for producing ball bearings, and other special machine tools.

d. Stockpiles.

There is no stockpiling of machine tools as such, but considerable quantities of unsold light machine tools are stored in Czechoslovak factories because of a lack of markets.

e. Surplus or Deficit.

Only fragmentary information is available on the surplus-deficit position of machine tools in Czechoslovakia. Domestic production provides a surplus in some categories, principally simple tools, and leaves a deficit in other more complex products. An unsold surplus of machine tools included 288 units in 8 plants counted in February 1949 1/ and apparently was due to consumer dissatisfaction with defective products and to foreign competition. Since the quality of Czechoslovak machinery probably has not improved since 1949, it is likely that such surpluses still exist and possibly have increased, unless they have been disposed of to the other Satellites.

f. Exports and Imports.

(1) Exports.

A report of March 1951 stated that Soviet demands would be increased until 80 percent of Czechoslovak total foreign trade, in which machine tools play a large part, went to the Soviet Bloc. 2/ For example, the Czechoslovak-Hungarian trade agreement for 1950 provided for Czechoslovak exports of 150 million crowns worth of machine tools to Hungary. 3/ A Czechoslovak trade delegation in Moscow in 1949 was told that Czechoslovakia would export to the USSR 0.5 million crowns worth of machine tools, mainly horizontal boring machines and automatic lathes for the production of ammunition and weapons machinery. The USSR in 1949 also ordered all of the radial borers produced that year, about 120 machines. 4/ It was reported that, between 1 June 1950 and 15 October 1950, Czechoslovakia exported 90 freight carloads of machine tools to the USSR through Bratislava, 5/ which is an indication of the magnitude of Czechoslovak machine tool shipments to the USSR.

Czechoslovakia also exports machine tools to France, Italy, Sweden, Switzerland, Holland, Belgium, South Africa, Australia, the Irish Free State, 6/ Pakistan, 7/ India, 8/ and Austria. Italy, France, and Switzerland are the major Western European recipients of Czechoslovak machine tools. 9/ Turret lathes, milling machines, and drill presses were the chief items sent to Western countries in 1950, 10/ indicating that less complicated types which are produced domestically are being sold to the West, whereas more intricate types are being imported. The machine tool stipulations in the following trade agreements indicate the extent of Czechoslovak exports to Western Europe:

(a) The Czechoslovak-French trade agreement covering the period 1 May 1950 to 30 April 1951 specified that Czechoslovakia would ship 20 million crowns worth of metal machine tools and spare parts to France. 11/

(b) The Czechoslovak-Austrian agreement extending from November 1950 to October 1951 provided for Czechoslovakia to export $700,000 worth of machine tools. 12/

(c) The present agreement with Pakistan calls for exports to that country of 20,000 pounds sterling worth of machine and precision tools. 13/

Czechoslovak machine tool exports to Switzerland were 139 metric tons in 1938 and 37 tons in 1945, rose to a peak of 1,252 tons in 1947, and declined to 814 tons in 1948; 290 tons in 1949, and about 140 tons in 1950. 14/ Furthermore, sales of Czechoslovak machine tools to India have increased, and their value is estimated at 0.5 million rupees in the first 8 months of 1950. 15/

(2) Imports.

Czechoslovakia also imports machine tools, mainly from Italy, France, and Switzerland. Special emphasis is placed upon imports of complex precision tools, many of which are of particular importance in munitions production. Within the last few years, the Czechs have imported the machine tools necessary for the establishment of a ball-bearing industry, and gear-cutting machinery also has been obtained from the West.

In 1950, France was to export 700 million francs worth of machine tools to Czechoslovakia, 16/ and Sweden was to send, between February 1950 and January 1951, tools valued at $240,000 for working metal, wood, and other materials. 17/ In addition, Czechoslovakia has been an important postwar market for Swiss machine tools, importing 162 metric tons in 1937, 27 tons in 1945, 927 tons in 1949, and about 540 tons in 1950. 18/ A reliable source reports that in September 1950 most Swiss deliveries to Czechoslovakia were on back orders, and that few new orders were being received. 19/ East Germany, apparently the only Satellite exporter of machine tools to Czechoslovakia, on 16 March 1951 agreed to export to Czechoslovakia machine tools valued at $132,000. 20/

g. Internal Limitations.

Various difficulties face the Czechoslovak machine tool industry. Attempts to obtain complex specialized tools from Western European sources testify to the inability of domestic industry to meet requirements for these items. 21/ Production goals for heavy machines frequently are not attained, but warehouses are filled with light machinery, especially lathes, which are almost impossible to sell. 22/ Excessive supplies of machine tools and spare parts are stored at some factories, while other plants await the delivery of identical items from abroad, indicating that the direction of the industry is imperfectly coordinated. 23/

Shortages of high-grade iron ore have resulted in a deterioration of the quality of Czechoslovak machine tools and a decline in their reputation

abroad. There are complaints, for example, that gear wheels frequently break and that there is negligence in assembly and in the filling and packing of orders. 24/ Production difficulties have been aggravated by the incompetence of the Communist plant officials who replaced the trained, but Western-oriented, managers following the Communist coup in 1948. In addition, labor resistance to government controls has been manifested in a variety of ways, including outright sabotage, and the loss of skilled German workers expelled from the Sudeten has not been fully overcome.

b. Trends--Including Indications of Mobilization for War.

There are no indications of large-scale conversion from machine tool production to the production of war material. Many types of machine tools produced in Czechoslovakia are adaptable to both civilian and military use, however, and their production, although not a clear indication of war preparations, does strengthen the war potential of the Bloc. Machine tool plants which, although not apparently converting entirely to military products, make both machine tools and military armaments include Kurin, Skoda Adamov, Skoda Dubnica, Skoda Kovy, Bor, Skoda Pilsen, Strakonice, Vestin, 25/ and Ceske Zbrojovka. 26/

Significant and successful efforts have been made to purchase from the West such items as high-speed threading machines (from France), which may be used for armament production and are ideal for precision ordnance work, 27/ and gear-cutting machines from Switzerland, which the Swiss believe are to be used in the manufacture of gun components. 28/ In general, Czechoslovak purchasing efforts abroad have been concentrated on complex, precision-type machine tools, many of which are of particular value in the production of munitions.

If trade with Switzerland can be taken as an indicator, machine tool trade with Western Europe is decreasing. Czechoslovak machine tool sales to Pakistan and India may signify that Czechoslovakia is attempting to develop Asiatic markets to replace Western European outlets.

2. Electrical Equipment.

a. Production.

The following table presents figures, taken from a Czechoslovak government publication, which indicate the postwar trend in the production of electrical equipment, as well as the goals for 1953 1/:

Production of Electrical Equipment
1937, 1946-49, 1953

	1937	1946	1947	1948	1949	Units 1953 (Planned)
Electric Motors (up to 0.5 Kilowatts)	N.A.	N.A.	N.A.	171,800	161,000	N.A.
Electric Motors (0.5 to 25 Kilowatts) a/	81,600	N.A.	222,100	276,200	291,581	890,000
Radio Receivers	282,800	104,500	167,800	267,700	N.A.	300,000
Telephones	32,700	40,300	72,800	84,200	N.A.	150,000
Electric Lamps	6,090,000	8,130,000	12,460,000	14,010,000	N.A.	N.A.
Radio Tubes	N.A.	N.A.	1,652,400	2,388,800	N.A.	N.A.

a/ Czechoslovakia is known to produce substantial numbers of motors with a capacity of over 25 kilowatts, but figures are unavailable.

The following table indicates the growth of production, employment, and productivity since 1937 2/:

Indices of Electrical Equipment Industry
1937, 1946, 1948

	1937 = 100		
	1937	1946	1948
Gross Output	100	104	240
Number of Workers	100	136	167
Output per Worker	100	76	144

The Two Year Plan (1947-48) for the production of the light equipment listed above was overfulfilled in general, and the Five Year Plan (1949-53) indicates a shift of emphasis to heavy equipment, such as turbines and generators. In 1953 the value of production is to be 402 percent of the 1937 level, and the labor force is scheduled to increase 253 percent over the 1937 total. The productivity of labor is to be 195 percent over 1937 levels and 135 percent over 1948 levels. In terms of 1948 prices the value

of production of electrical equipment will be 18.3 billion crowns. 3/

b. Estimated Possible Production and Capacity.

Czechoslovakia probably can maintain the 1949 level of production and even raise it slightly if raw materials continue to be available from the West, but realization of the Five Year Plan appears virtually impossible.

c. Domestic Requirements.

No information is available on domestic requirements of electrical equipment.

d. Stockpiles.

No stockpiles of electrical equipment are known to exist.

e. Surplus or Deficit.

Czechoslovak production of electrical equipment supplies domestic requirements, and a large percentage of total output is exported.

f. Exports and Imports.

The major share of Czechoslovakia's production of electrical equipment goes to the USSR and to the Satellites. It was reported that a Soviet organization in Prague shipped approximately 90 million crowns worth of electric motors to the USSR monthly in late 1949. Krivan CKD, Bratislava, ships approximately 79 percent of its output of motors, transformers, generators, etc., to the USSR. The Skoda plant at Brno, which produces such items as switches, generators, distributors, small turbines, transformers, and motors, exports an estimated 60 percent of its output to the Bloc countries. The plants of the PAL combine, which make electrical accessories, the Skoda electrical equipment plant at Doudlevece, the Gottwald Works at Brno, and Skoda Pilsen all ship a large percentage of their output to the Soviet Bloc.

g. Internal Limitations.

Raw materials needed by the electrical equipment industry are scarce, and their procurement is becoming increasingly difficult. Shipments from the West, especially of copper, have enabled the Czechoslovak industry to operate without serious production slowdowns. In the past two years, however, Czechoslovakia's electrical products have deteriorated in quality.

Components have been defective, and castings, notably in turbines and motors, have caused great difficulty. Shortages of bearings and of technically trained personnel further limit the industry.

h. Trends--Including Indications of Mobilization for War.

Reports state that a great expansion of the electrical equipment industry is planned, with emphasis to be placed upon the production of heavy machines. The Skoda plant at Doudlevece has been enlarged, the plants of the Moravian Electro-Technical Combine have planned 1950 production at a level nearly 30 percent higher than 1949 output, and several new electrical equipment factories are under construction.

3. Agricultural Machinery.

a. Production.

Czechoslovakia manufactures a wide variety of agricultural machinery. The following official statistics on selected types of farm equipment in Czechoslovakia reveal the postwar trend in agricultural machinery production:

Production of Agricultural Machinery
1947-49

Product	1947 1/	1948 2/	1949 Units
Machines for Preparation of Soil	72,160	86,725	N.A.
Seeding and Planting Machines	13,831	14,617	N.A.
Harvesting Machines	31,280	43,187	N.A.
Machines for Processing Crops	11,934	12,936	N.A.
Machines for Processing Feed	79,036	70,141	N.A.
Other	N.A.	70,862	N.A.
Total	206,241	298,468	297,260

The 1947 Plan goal was exceeded by 6 percent and the 1948 goal by 9 percent. In terms of value, total actual and planned production was as follows:

Value of Production of Agricultural Machinery a/
1937, 1947-48

	Million Crowns		
	1937	1947	1948
Actual	275 3/	1,154 4/	1,526 5/
Planned	b/	1,100	1,148

a/ Excluding tractors.
b/ No Plan.

The increase in postwar production over prewar output is striking. For the period 1947-49 there was little change in production in terms of units but a considerable increase in the value of output. There is no data on output since 1949.

b. Estimated Possible Production and Capacity.

Since production figures for 1950 are lacking, it is not feasible to estimate production and capacity for 1951-52.

c. Domestic Requirements.

The Czechoslovak agricultural machinery industry has been able to supply domestic needs for items used on small farm units better than have the industries of most European countries. 6/ The following table was compiled for the Five Year Plan as a statement of the requirements for the Mechanization of Agriculture Program in 1949-53. 7/ It is probable that the needs of this program constitute the vast majority of the domestic requirements for the period:

Requirements of Mechanization of Agriculture Program
1949-53

Type of Machinery	Number to Be Bought	Price per Machine (Crowns)	Total Expenditure (Crowns)
Tractor Appliances	33,000	50,000	1,650,000,000
Horse-drawn Appliances, etc.	20,000	15,000	300,000,000
Tractor-drawn Binders	20,000	35,000	700,000,000
Horse-drawn Binders	10,000	25,000	250,000,000
Grain Harvesters	1,000	12,000	12,000,000
Threshers, Self-propelled	250	400,000	100,000,000
Grass Mowers	60,000	8,000	480,000,000
Potato Diggers	15,000	5,000	75,000,000
Other Equipment	-	-	300,000,000
Subtotal	159,250		3,867,000,000
Machinery for Processing Harvests (Threshers, Presses, Cutters, Cleaners, etc.)			450,000,000
Machinery for Preparing Fodder			400,000,000
Total			4,717,000,000

d. Stockpiles.

There is no known stockpiling of agricultural machinery.

e. Surplus or Deficit.

Production exceeds domestic allocations, and the surplus is exported.

f. Exports and Imports.

After World War II, Czechoslovak exports of agricultural machinery rose to a significant level. Mowing machines and reapers 8/ sold readily in Eastern Europe. In 1950, reapers were sent to Denmark, Belgium, France, Italy, and Austria. 9/ Other non-Bloc customers include Holland, Brazil, and Iceland, which bought 100 agricultural machines in 1950. 10/ Poland and Rumania have received the largest postwar deliveries of Czechoslovak

agricultural machinery. Trade agreements in 1949 provided for the shipment of 32 million crowns worth of agricultural machinery to Bulgaria, 1 million crowns worth to Poland, and 4 million crowns worth to the USSR. A 1950 agreement provides for the shipment of $250,000 worth to Rumania.

g. Internal Limitations.

Specific information on internal limitations is lacking, but the agricultural machinery industry probably is encountering the problems of low-quality raw materials, labor resistance and shortages of skilled personnel, administrative cutbacks on allocation of raw materials, and faulty electrical equipment, which are common to all Czechoslovak industry.

h. Trends--Including Indications of Mobilization for War.

The nationalization of the farm machinery industry has led to reduced production costs and improved quality. Before nationalization the industry manufactured 120 types of threshers, but present plans call for the manufacture of only 2 types. Four types of seeders were to replace the 32 types being produced in 1950. New types of tractors designed to dig sugar beets and potatoes will be tested and produced. Assembly-line production of a new type of thresher with a capacity of 10 quintals an hour is scheduled to begin in 1950. 11/ These changes probably are directed more toward economy than toward increased production.

It was reported in June 1950 by a former employee that the Dubra plant at Trencin, which manufactured agricultural machines and other non-military items, was converting to military production and would manufacture mines, ammunition, weapon parts, and special aircraft instruments. About 3,000 workers were employed there. 12/ Other information indicates that considerable conversion to military production is already under way.

4. Tractors.

a. Production.

Czechoslovakia leads the Satellites in tractor production. From 40 to 50 percent of annual production is exported, largely to the Soviet Bloc. 1/ The bulk of the output is comprised of four-wheeled diesel tractors in three "Zetor" models of 15, 25, and 30 horsepower produced at the Zbrojovka plant in Brno. Skoda Pilsen also produces a 30-horsepower model, while a small number of 55-horsepower caterpillar tractors are turned out by the CKD plant in Prague-Liben. The majority of diesel caterpillar tractors are produced at the Skoda Unicov plant. 2/

The following table shows the steady increase in tractor production since the war. Figures through 1948 were taken from official Czechoslovak statistics and are believed to be reliable.

Tractor Production
1937, 1946-53

	Units	
	Actual	Planned
1937	204	-
1946	888	-
1947	5,579	5,650
1948	9,098	9,000
1949	12,000 a/	9,760
1950	16,600 b/	12,400 5/
1951	19,000 b/	N.A.
1952	20,000 b/	N.A.
1953	-	20,000

a/ Estimated. The report of two other sources 3/ that tractor production in 1949 was 30,000 units is rejected as too high.
b/ Estimated.

The following types of tractors are being produced in Czechoslovakia:

Zetor-15: a 15-horsepower, 4-wheeled, single-cylinder, diesel-powered model with 5 gears, including 1 reverse gear.

Zetor-25: a 25-horsepower, 2-cylinder model. Except for the additional power factor, it is similar to the Zetor-15.

Zetor-30: a 30-horsepower, 2-cylinder model, similar to the Zetor-15. 6/

Skoda-30: a 32-horsepower, 2-cylinder, diesel-powered model. Much better liked by the farmers than are the Zetors. 7/

Praga: a caterpillar tractor, powered by a 55-horsepower, 4-cylinder Tatra aircooled diesel engine with direct fuel injection. It has four speeds forward and three in reverse.

The tractor produced at Skoda Unicov is a caterpillar, with a diesel engine, probably of about 60-horsepower, from Skoda Pilsen.

b. Estimated Possible Production and Capacity.

Tractor production in 1951-52 is estimated as follows:

Estimated Production of Tractors
1951-52

Year	Units Estimate
1951	19,000
1952	20,000

It is believed that in 1952 production can reach 20,000 units, the goal set for 1953, through the use of available facilities, particularly Skoda Unicov, 8/ and added shifts.

c. Domestic Requirements.

Since Czechoslovakia exports from 40 to 50 percent of its tractor production, domestic requirements for light tractors probably are being satisfied. The heavier types needed for forestry work and for military uses, however, must be imported, and it is doubtful that requirements in these categories are being fully met.

Estimated domestic requirements for agriculture are 5,000 in 1948, 6,000 in 1949, and 6,500 in 1950, 1951, and 1952. The government will purchase approximately 30,000 units of various types, virtually half of the entire 5-year output, for use in the agricultural program outlined in the Five Year Plan. 9/

d. Stockpiles.

No known reserve stocks of tractors exist in Czechoslovakia.

e. Exports and Imports.

Czechoslovak foreign trade agreements in 1949 called for the export of 3,900 tractors, with 2,700 units to be shipped to Poland 10/; over 400 to Argentina; small quantities to Bulgaria, Pakistan, and Sweden; and unspecified numbers to France. By 1951 it was reported that the Zetor-15

and Zetor-25 models were being exported to Poland, India, South America, Sweden, and Switzerland. 11/ Tractor imports are negligible, comprising only the large caterpillar-type. Seven Soviet S-80 tractors were scheduled to be imported in 1949.

f. Surplus or Deficit.

As production expands, more units will be allocated for export to the Soviet Bloc, while domestic users will continue to receive minimum supplies. It is probable that in 1952 well over 50 percent of tractor output will be exported, but an adequate supply will be allocated for domestic requirements as collectivization progresses.

g. Internal Limitations.

Tractor production is hampered by the poor quality of available castings and a shortage of electrical fittings, 12/ and dependence on the West for diesel parts, especially fuel injection pumps, is a further handicap. 13/ Despite these limitations, planned goals for 1953 probably will be reached.

h. Trends--Including Indications of Mobilization for War.

Tractors of more than 60-horsepower are badly needed for both forestry and military purposes. Although plans for production of a new type of caterpillar tractor of this horsepower have been reported, 14/ there is no indication that this new tractor is in production. Tractor production facilities in some plants, however, could easily be converted to war production. Production and exports of tractors will continue to increase. Requirements for the Five Year Plan indicate that domestic allotments will be adequate for Czechoslovak needs.

5. Transportation Equipment.

a. Production.

The production of transportation equipment in Czechoslovakia is more than sufficient for domestic requirements and allows sizable exports to the USSR and the Satellites. The following table demonstrates the trend in the production of transportation equipment. Production figures through 1948 were derived from published official Czechoslovak statistics.

Production of Transportation Equipment
1937, 1946-53

Year	Freight Cars	Locomotives	Passenger Cars	Units Commercial Vehicles
1937	3,372	75	12,634	3,615
1946	10,918	140	3,796	2,980
1947	13,777	234	9,372	5,232
1948	5,148	306	19,217	5,974
1949	6,600 a/	400 1/	20,839 a/	6,333 a/
1950	8,000 a/	415	20,600 b/	6,790 b/
1951	8,000 a/	430 a/		
1952	8,000 a/	450 a/		
1953		480 2/	40,000 5/	15,000 5/

a/ Estimated.
b/ Planned. 4/

b. Estimated Possible Production and Capacity.

It is estimated that locomotive plants will operate to capacity in 1951 and 1952, producing 430 units in 1951 and 450 units in 1952. Freight car capacity is estimated at 18,000 units a year, but production probably will be only 8,000 units in both 1951 and 1952.

c. Domestic Requirements.

The information needed to estimate domestic requirements is not available.

d. Stockpiles.

There are no known stockpiles of transportation equipment in Czechoslovakia.

e. Surplus or Deficit.

It is estimated that, after the satisfaction of minimum domestic requirements, the remaining surplus of transportation equipment will equal about 50 percent of total output. This surplus will be exported.

f. Internal Limitations.

The production of transportation equipment is hampered by shortages of raw materials, by inadequate numbers of skilled workers, and by a lack of certain critical items, such as bearings, which can be procured only from the West.

g. Trends--Including Indications of Mobilization for War.

Current Czechoslovak transport policy is to obtain increased performance with a reduced amount of equipment, and, therefore, only minimum allocations of equipment are made to domestic consumers. For example, Czechoslovak railroads are to be required to transport 100 million metric tons annually, as compared with 109 million tons conveyed in the peak year of 1929, with 21 percent less rolling stock than was used in 1929.

The automotive industry is concentrating on mass production, making 2 types of passenger cars and 4 types of trucks instead of the 12 types of passenger cars and 14 types of trucks produced before the war.

In addition, there has been some conversion of the transportation equipment industry to the production of military items, including weapons and aircraft engines.

6. Antifriction Bearings.

a. Production.

Czechoslovakia produces about 55 million antifriction bearings a year. Production is limited to a few types. Balls (for bearings) are made only up to 15 mm in size, 1/ and larger sizes must be imported.

Estimated Production of Bearings
1948, 1950

	Thousand Units	
	1948	1950
Actual	720 to 960	5,500 2/
Planned	1,800	7,500 2/

2/ Estimated. 3/

The Liseň plant of the Zbrojovka enterprise at Brno produces about 2.5 million bearings annually. Employment at Liseň was 1,200 in December 1950 but was to be increased to 1,500 by early 1951. In addition, it is planned that in 1951 this plant will manufacture balls and rollers for other Czechoslovak factories which produce bearings. 4/ Planned output for 1951 is 4 million bearings. 5/

The former SKF plant at Pernstein-nad-Chrl, now known as ZPS, was producing in December 1950, at an annual rate of 2.3 million bearings, principally axial roller bearings. SKF, Sweden, at that time was supplying all of the ball requirements of this plant, which employs 500 workers. 6/

The plant at Mecholupy, near Prague, built by the Germans during the war, in 1950 was making 700,000 nonprecision, low-quality bearings annually, which are used mainly for agricultural machinery. 7/ The factory at Kysuske Nove Mesto began production in October 1950 with 500 employees and is scheduled eventually to produce 500,000 bearings annually. 8/

b. Estimated Possible Production and Capacity.

Since Czechoslovakia's need for bearings is desperate, production will in all likelihood be at maximum capacity in 1951 and 1952. The increase in the labor force of the Liseň plant will probably permit a rise in production in 1952. Estimated production is 6 million units in 1951 9/ and 6.5 million units in 1952. 10/

c. Domestic Requirements.

Czechoslovakia annually requires about 16 million ball and roller bearings of almost all types and sizes. Requirements according to industry are approximately as follows:

Estimated Requirements of Bearings
1950

	Million Units
Motor Vehicles (Including Tractors) and Aircraft	6 to 7
Machine Tool Industry	4
Light Industry and Precision Machinery	2
Mining and Heavy Industry	1.5 to 2
Railroads	1 11/
Total	14.5 to 16

d. Stockpiles.

There are no known stockpiles of bearings in Czechoslovakia. The probability of any stockpiling is precluded by the continuous and pressing demands of Czechoslovak industry.

e. Surplus or Deficit.

Czechoslovak industry depends largely upon imports from the West for its supply of bearings, and operations would be seriously crippled by a large-scale curtailment of Western exports of such products. Domestic production of bearings could be expanded to compensate only partially for such curtailments, because Czechoslovakia also is dependent on the West for the machine tools necessary to increase domestic capacity.

f. Exports and Imports.

In 1950, Czechoslovakia imported about 10 million bearings, 12/ approximately 92 percent of them from the West. Known trade agreements for 1949-50 involved over $6 million in Western European commitments, and shipments from Italy alone were valued at $5 million in 1949. Imports in 1950 were more than sufficient to meet the deficit left by domestic production.

Bearings are imported from the following sources 13/

Imports of Bearings
1950

Country	Thousand Units Quantity
Sweden	3,000
England	1,000
Switzerland	3,700
Italy	1,500
France	50
Total	9,250

An unknown quantity of bearings were imported from Austria, and small amounts were received from the USSR and East Germany. SKF, Sweden, supplies the ball requirements for the Pernstein plant, while Switzerland supplies the other ball requirements.

Despite the pressing need of its own industry for bearings, Czechoslovakia is compelled to export them to the Satellites, particularly Poland. Polish demands for bearings are considerable, and quality requirements are exactingly high. 14/ The Soviet Union will accept from Czechoslovakia only machinery containing Western-manufactured bearings.

g. Internal Limitations.

The difficulties that Czechoslovakia has experienced in obtaining high-quality roller bearings have been a major handicap to production in the postwar period. Of the bearings produced in 1948 (for which balls had to be imported), from 70 to 80 percent were defective. As late as 1950 it was necessary for the SKF, Sweden, to supply all of the ball requirements of the Pernstein plant.

Another limitation to production is the lack of satisfactory grinding wheels for the Western-manufactured grinding machines used in the bearing industry. Czechoslovak grinding wheels are of variable quality, with an average life of 50 working hours, 15/ and it is therefore necessary to import grinding wheels from the West.

Labor difficulties and the poor quality of raw materials also delay production. The reported failure to obtain critical machinery for new plants, shortages of high-quality bearing metals (particularly high-alloy bearing steels, the domestic product being inferior to that formerly acquired from Sweden), a lack of skilled personnel, and continued Soviet demands for bearings indicate that Czechoslovakia's shortage of bearings will continue.

h. Trends--Including Indications of Mobilization for War.

Czechoslovakia is making a strong effort to increase its production of bearings to the point of self-sufficiency, but this goal is distant. A new bearing plant at Kysucke Nove Mesto with a scheduled eventual production of 500,000 bearings annually began production in October 1950.

There is no apparent conversion to war production, but the importance assigned to Czechoslovak industries under the Five Year Plan is significant. The various industries are ranked as follows:

(1) Military production, mining, and heavy industry.
(2) Precision machine tools industry, motor vehicle (including tractor) industry, and sports aviation.
(3) Light industry, optical instruments, etc. 16/

7. Munitions.

a. Production.

In 1949, Czechoslovakia is estimated to have produced about 300 pieces of artillery of over 75-millimeter caliber. Although the Czechoslovak Army is equipped with several types of mortars, it is believed that domestic production of these weapons is negligible. Known domestic requirements and exports indicate that production of all types of small arms in 1949 was at least 10 percent of the peak World War II production of approximately 1 million weapons yearly, or 100,000 a year. The estimated inventory of weapons, known exports, and production history indicate that 1949 production of ammunition included approximately 1 million artillery and mortar shells and 200 million rounds of small-arms ammunition.

b. Estimated Possible Production and Capacity.

No basis exists for an estimate of the 1952 munitions output. Production rates in 1952 are dependent upon Soviet desires and willingness to provide essential raw materials. Military production has been gradually increasing since 1949, but no specific long-range production targets appear to have been established.

c. Domestic Requirements.

The requirements for new equipment of the Czechoslovak armed forces in 1949, predicated on the size of the armed forces and the training program carried on, are estimated as follows:

Estimated Domestic Requirements of Munitions
1949

Product	Units Quantity
Artillery	50
Mortars	26
Small Arms	4,000
Ammunition	
Artillery and Mortar (Shells)	240,000
Small Arms (Rounds)	20,000,000

d. Stockpiles.

No statistical basis for the assessment of stockpiles is available.

e. Surplus or Deficit.

Munitions production is well in excess of Czechoslovak requirements. A considerable proportion of the total munitions production is exported, and some of the remaining production may be stockpiled.

f. Exports and Imports.

A large proportion of Czechoslovakia's munitions production is exported to the USSR and Soviet Bloc countries. Small exports go to the Near East, Ethiopia, Switzerland, Sweden, and several Latin American countries.

g. Internal Limitations.

Limiting factors in munitions production result from general deficiencies of the metal industry. The sharp decrease in the ores and metals available from the West has posed a major production problem and forced increased dependence upon the USSR. The inferior quality of raw materials received from the Soviet Union has caused the metal industry to develop new processing methods, thus slowing its progress. Shortages in the supply of steel, steel alloys, sheet metal, copper, and aluminum restrict production despite the attempts to overcome them by rigid allocation of available stocks and strenuous efforts to acquire foreign metals in any conceivable manner.

h. Trends--Including Indications of Mobilization for War.

Czechoslovakia's industry has gradually shifted from the manufacture of consumer goods to military production. Production of military end-products, such as hand grenades, mines and similar items, and component parts of weapons, has been progressively transferred to small well-dispersed plants and underground installations. The two main arms-producing combines in postwar Czechoslovakia, Skoda and Zbrojovka Brno, have acquired control of numbers of these small installations, although all of them are not devoted to arms manufacture.

The Skoda plant at Dubnica is the principal artillery center, while the Skoda plant at Adamov produces the bulk of artillery ammunition. The Zbrojovka Brno enterprise, a national corporation, manufactures the bulk of automatic weapons and small arms. The Povazske Strojarne enterprise, a new national corporation set up around the Klement Gottwald plant (formerly Povazske Bystrica) at Bystrica, accounts for over 60 percent of Czechoslovak small-arms ammunition capacity.

8. Aircraft.

a. Production.

The Czechoslovak aircraft industry has concentrated largely upon the manufacture of light planes of wood or metal frames covered with fabric. Equipment exists, however, for the manufacture of all-metal aircraft. Jet aircraft and engine manufacturing has been limited to the assembly of a few experimental German units and research and development of Czechoslovak airplanes and engine prototypes. Retooling for the production of a Soviet jet fighter was undertaken but suspended, and it is not known whether this project will be resumed or not, although the prototype was reported to have been completed and tested. Jet production was scheduled to start in 1951, and 1,000 planes were to be built, using the facilities of three plants.

b. Stockpiles.

There is no stockpiling of aircraft, engines, or component parts in Czechoslovakia.

c. Exports and Imports.

An insignificant number of light planes have gone from Czechoslovakia to several of the Bloc countries. Parachutes, instruments, and aircraft parts have been exported to the USSR, and some planes have been shipped to Communist China.

d. Internal Limitations.

The Soviet Union does not consider the Czechoslovak Air Force politically reliable even after repeated purges and does not want it to have first-rate equipment. In addition to this limitation, production is handicapped by a shortage of alloyed steel, most of the domestic output being shipped to the USSR.

e. Trends--Including Indications of Mobilization for War.

The Czechoslovak aircraft industry probably will expand production of light planes, engines, small feeder transports, and gliders for use within the country and for the USSR. The production of aircraft subassembly parts and aircraft instruments for the USSR is expected to increase. Jet airframe and engine production may begin, but at this time it appears that the jet programs too will be confined to subassembly manufacturing.

The USSR receives Czechoslovak aircraft instruments, aircraft parts, some small planes and engines, and probably both conventional and ribbon parachutes. Although the exports to the USSR are probably not enough to make much difference in the Soviet economy at the present time, production of these items is increasing and, together with the production of the other Satellites, will be of considerable help to the Soviet aircraft industry.

9. Shipbuilding.

Shipbuilding is probably the least important industry in Czechoslovakia. There are six known yards, all but one of which are restricted to repairs only and have an insignificant capacity for the construction of small craft. A large but undetermined number of Czechoslovak plants, however, produce components or total units of reciprocating and diesel engines, turbines, shafts, propellers, auxiliary machinery, and minor hardware for use in ship construction.

10. Miscellaneous.

a. Abrasives.

Czechoslovakia produces a wide variety of abrasive products. Output of regular aluminum oxide grain in 1949 was about 6,500 short tons. In 1950 a 12-furnace plant for aluminum oxide was under construction. This new installation may treble 1949 capacity. In 1947, Czechoslovakia, which already had one abrasives plant and two abrasive products plants, began the erection of a third abrasive products plant, with an annual capacity of 6,000 metric tons of wheels. A plant for the refining and grading of crude silicon carbide was built in 1948. Future construction probably envisages self-sufficiency in abrasives production.

Czechoslovakia is the only country in the Soviet Bloc that has a surplus of abrasive products for export, and the USSR receives the largest share of output. The Czechs also should be able to give valuable technical aid in this field to other Satellite countries.

Abrasives production has been restricted by silicon carbide shortages caused by decreased US and Norwegian exports, the high cost of electricity, the departure of skilled workers, the necessity to import low-grade bauxite from Hungary, and a lack of variegation in the available bonding materials.

b. Electronics.

Almost the entire Czechoslovak electronics industry is organized under the Tesla National Enterprise for the Radio and Electronic Industry, which controls about 15 medium-sized major plants and a large number of small plants. This nationalized enterprise is under the administration of the Czechoslovak Precision Engineering Plants, one of four administrative sectors of the Ministry of Industry. Current employment totals about 15,000, and the annual value of production is about 3 billion crowns.

Czechoslovakia ranks fourth in the Orbit in electronics production, contributing approximately 5 percent of the Orbit supplies. The industry has not been noted for good management and organization, labor productivity, or technical progress. In 1945 a number of the electronics facilities which had been established as branch factories of German companies were confiscated by the USSR and are no longer in operation.

In 1950 the output of the Czechoslovak electronics industry was disposed as follows: 50 percent to the USSR and the Satellites; 30 percent to Australia, South America, and Western Europe; and 20 percent to the domestic economy. Production included mainly commercial telephone and radio apparatus, radio components, and tubes, plus an increasing proportion of military radio and radar equipment required by the Czechoslovak armed forces. The Elec policy has been to supply domestic military requirements for communications, radar, and military devices from the output of domestic industry, with little or no Soviet support.

A modest expansion of the industry, involving some rearrangement of facilities and several plant expansions, was initiated in 1949. The two key plants of the Tesla enterprise have been reported to be Tesla-Pardubice and Tesla-Rosnov. Operations of both of these plants include a higher proportion of military work than do those of other Tesla plants. Manufacturing at the new plants began in the last half of 1950, and it is probable that total industry output will increase in 1951 and 1952.

c. Petroleum Equipment.

Czechoslovakia's production of drilling equipment is small. Drilling rigs are probably manufactured at Vitkovice's Kunice plant and at the Gottwald Works at Brno. Drilling pipe and casing are produced at the Vitkovice Works, and a large proportion of output is exported. The Czechs have made considerable efforts to import drilling machinery.

Production of refinery equipment has been a specialty of Czechoslovak industry for many years. Skoda at Pilsen and Gottwald at Brno manufacture this equipment. Skoda also builds complete petroleum refineries,

which include much specialized equipment.

Czechoslovakia exports oil-field equipment to Rumania and possibly to other Satellite countries.

d. Precision Instruments.

After the war, great emphasis was given to the development of the precision, optical, measuring, and control instrument industries of Czechoslovakia.

(1) Optical Instruments.

In 1946, five of the larger optical instrument firms merged into the Meopta National Enterprise, which then represented 80 percent of Czechoslovakia's productive capacity in this field. The principal items of production were field glasses, telescopes, cameras, projectors, and geodetical and meteorological instruments. Meopta has been expanded as much as two and one-half times since 1945. Other important producers of optical equipment are Goerts Optical Works, the optical plant at Morchenstern, and the optical section of Skoda at Pilsen.

The difficulties confronting the industry include a serious lack of raw materials, shortages of skilled labor, and shortages of special-purpose machine tools.

Production has expanded to four and perhaps five times its prewar level and is directed toward the export market. A large percentage of the productive capacity of the optical industry has been diverted to the production of war materials, including range finders, optical sights, etc., for the Soviet Union.

(2) Industrial Control Instruments.

Production facilities for industrial control instruments have expanded since the war. The Metra and Tesla plants produce a wide range of electrical measuring and control instruments, while plants affiliated with Skoda and Zbrojovka produce mechanical gauges, micrometers, etc. Plants of the PAL combine produce aircraft instruments for the USSR.

Internal handicaps to production are similar to those prevailing in the optical industry. The Czechs can produce control instruments for simple machines, but elaborate instruments for complex control are in short supply and must be obtained elsewhere.

e. Construction and Road-building Equipment.

Production of construction and road-building equipment is inadequate to meet domestic needs. Czechoslovakia produces dredges, excavators, and road rollers in sufficient quantities for its own use, but these products are in short supply because of large shipments to the USSR. The shortage of bulldozers, graders, and scrapers is particularly pressing and has led to strenuous efforts to obtain such equipment from the West. Units have been imported from Belgium, Italy, Austria, and the USSR, whereas exports go principally to the Soviet Bloc, with the USSR receiving the greatest quantity. Factories which make these items are Skoda (at the Dubnica, Hrdec Kralove, Pilsen, and Unicov plants), Banska Bystrica, Brno, and Prague-Liben.

f. Chemical Equipment.

For a number of years Skoda Pilsen has manufactured complete industrial plants and individual apparatus for producing synthetic ammonia and nitrogen compounds. Other products made in Czechoslovakia are machinery for high-pressure installations, general-purpose equipment for chemical plants, and chemical equipment such as autoclaves, water purifiers, boilers, etc. Production of chemical equipment is, in general, adequate to meet domestic requirements and probably provides exports to other Satellites.

II. Uranium.

1. Production.

Production from the uranium deposits in Czechoslovakia began in 1946 and gradually increased through 1948. The USSR took complete control of the mines in 1948 and further accelerated production. In 1950 the output from the Czechoslovak mines accounted for 15 percent of the total uranium available to the USSR.

2. Estimated Possible Production and Capacity.

The 1950 rate of output is expected to continue through 1952.

3. Domestic Requirements.

Since there are no atomic energy plants in Czechoslovakia, there are no domestic requirements for fissionable materials, and none is expected in 1952.

4. Stockpiles.

All the material recovered is shipped to the USSR, and no stockpiles are maintained within the country.

5. Internal Limitations.

The available manpower supply is sufficient for the exploitation of the uranium deposits. Mining practices are inefficient, however, and mine ventilation and mechanized equipment are inadequate, while proper food and clothing for the workers are lacking. Transportation requirements and the supply of technical personnel are believed to be adequate.

6. Trends--Including Indications of Mobilization for War.

The output of uranium concentrates from 1946 to 1950 has been steadily upward, with a sharp upswing in 1949. Increases since 1949, however, are believed to have been at a low but steady rate.

VII. Transportation.

Summary

The transportation systems of Czechoslovakia do not contribute substantially to the Soviet economic potential for war. The rail network, which is probably in the best condition of any Satellite system, is important to the USSR chiefly in maintaining the productivity of Czechoslovak industry and in delivering industrial equipment and munitions. Much of Czechoslovakia's output of locomotives and other rolling stock is delivered to the USSR and elsewhere in the Bloc, but the industry is operating well below its potential capacity. Although Czechoslovak highways are insignificant in the Soviet economic potential for war, the country's motor vehicle industry is a major source of Soviet Bloc supply. A large portion of Czechoslovakia's relatively limited vehicle production is allocated to fill Bloc requirements, to the serious detriment of Czechoslovakia's own motor transport industry.

Czechoslovak civil aviation is developed more extensively than that of any other Satellite and is of some importance to the USSR, since it provides a rapid means of movement to and from the West for high-priority personnel and strategic commodities. The waterways of Czechoslovakia, however, make virtually no contribution to the Soviet economic potential.

A. Railroads.

1. Direct Contributions of Railroads to the Economic Potential for War of the USSR.

a. General Description of the Network.

The network of the Czechoslovak State Railways (CSD) is adequate to meet the requirements placed on it by the country's economy and to afford some surplus carrying capacity. The network is very sparse in the east and quite dense in the west, and there are few lines on the east-west axis. Despite these deficiencies, the railroad system meets the requirements of one of Central Europe's most industrialized areas.

The Czechoslovak railroads are standard-gauge, and transloading of goods or change of car axles is necessary at junction points with the broad-gauge Soviet railroads. The transloading station at Cerna-nad-Tisou is one of the largest on the Soviet western perimeter and appears to be capable of handling the Czechoslovak-Soviet traffic.

b. Traffic.

Railroad traffic in 1949 amounted to 14.4 billion metric ton-kilometers, an increase of 13.7 percent over the previous year. 1/ It is estimated that the 1950 level of traffic was 15 billion ton-kilometers, a level 41 percent higher than 1938, the last normal prewar year. Planned traffic for 1953 is 17 billion ton-kilometers.

Czechoslovakia does not connect the Soviet Union with important strategic or economic areas. Therefore, the country's railroads are important to the USSR chiefly for maintaining the productivity of Czechoslovak industry, and 82 percent of total rail traffic is internal. The largest single commodity carried is coal, which accounts for 40 percent of total traffic by weight, followed by stone, porcelain, glass (19 percent), and wood (18 percent). The chief commodities which move by rail between Czechoslovakia and the Soviet Union are machinery, weapons, munitions, ores, and metals.

c. Equipment.

The facilities of the CSD suffered less in the war than most continental rail systems, and its equipment is in better condition than that of most of the Satellites. The condition of lines in western Czechoslovakia is quite good, but in Slovakia the equipment is worn and of older design. Ballast and rails are too light for the efficient handling of current traffic requirements. Signal equipment is as advanced in Czechoslovakia as anywhere in Eastern Europe, but a Soviet commission has recently surveyed the CSD network with a view to converting from the International "Q" signal system to the Soviet "Z" system.

d. Capacity.

The Czechoslovak railroads, it is believed, do not operate as close to maximum capacity as do other Satellite systems. Since Czechoslovakia, before the war, possessed a rail system adequate for an advanced industrialized nation, the sudden postwar increases in transportation requirements experienced in other Bloc countries have not occurred. It is likely that CSD can sustain temporary and local traffic increases equal to 20 percent of current traffic. The system as a whole should be able to support an over-all increase in traffic of 10 percent, or a 5-percent increase over any given route, with a few exceptions. The chief weakness in the capacity of the Czechoslovak network is on the main east-west line between Cerna-nad-Tisou and Zilina, the line which carries almost all of the Czechoslovak-Soviet traffic.

e. Vulnerability.

The Czechoslovak railroad system is vulnerable to sabotage and air attack because of its many bridges and tunnels. This vulnerability could be critical in Slovakia, where only one east-west through route exists, but is not serious in Bohemia-Moravia, where the network is dense enough to provide alternative routes for most of the lines. Workshops are not highly vulnerable in Czechoslovakia, since the well-developed and widely dispersed railroad equipment industry can provide considerable emergency maintenance capacity.

2. Direct Contributions of Railroad Equipment to the Economic Potential for War of the USSR.

a. Inventories.

CSD has an inventory of locomotives and freight cars adequate to meet all foreseeable traffic requirements. Estimated CSD equipment inventories in 1949 included 4,190 locomotives and 82,584 freight cars, representing a slight decline from the figures reported for early 1948. Inventories of 4,141 locomotives and 85,324 freight cars are planned for 1953. 2/ The 3.3-percent increase in the freight car inventory planned for 1953 will require 685 new cars a year for 4 years, and total requirements, including replacements of a possible 2,400 cars yearly, are more than 3,000 cars yearly, a figure far below Czechoslovakia's production capabilities.

b. Production Capabilities.

Czechoslovakia has the best developed transportation equipment industry in the Soviet Orbit, with a capacity to manufacture at least 18,000 freight cars yearly. Present production is estimated to be only about 8,000 freight cars because of reduced requirements and the conversion of much plant capacity to war production. Locomotive production is estimated at 220 units in 1950, 240 in 1951, and 260 in 1952.

c. Effects of Transfers to the USSR.

Substantial emergency withdrawals of railroad equipment could be made without serious disruption of the Czechoslovak economy. Removals of up to 10,000 cars of all types (12 percent of total inventories) could be made for a short period of time without seriously affecting traffic, but protracted removals might impose restrictions on certain aspects of the traffic pattern. The removal of 5,000 cars would not seriously affect traffic or reduce the total transport capabilities of the country.

A substantial part of Czechoslovakia's current production will continue to be devoted to meeting Soviet and Orbit requirements. The extent to which Czechoslovakia is now supplying locomotives and other rolling stock to the USSR is not accurately known, but it is apparent that Czechoslovak production is currently at a level far below the industry's capacity, suggesting that requirements and inventories are not far out of balance throughout the Soviet Bloc.

3. Indirect Contributions.

a. Role of Railroads in Soviet Trade.

(1) Extent and Nature of Traffic with the USSR and the Satellites.

Czechoslovak railroads do not play a vital part in Soviet trade. The CSD handles virtually no transit traffic between the USSR and other countries, nor does it handle all Czechoslovak-Soviet traffic, some of which is carried by Polish and Hungarian railroads. Czechoslovak-Soviet traffic is generally restricted to the east-west line between Zilina and Cerna-nad-Tisou, which now delivers approximately 7,500 metric tons daily to the USSR and smaller volumes from the USSR to Czechoslovakia. The chief commodities in this traffic are machinery, heavy industrial products, munitions, weapons, ores, and metals. The USSR delivers certain ores and metals to Czechoslovakia for manufacture, largely for Soviet account.

(2) Importance of Traffic to the USSR.

The volume of traffic between the USSR and Czechoslovakia is not large enough to be of serious consequence to the war potential of the Soviet economy. Transloadings at Cerna, for example, total an estimated 5 million metric tons yearly, eastbound and westbound, or only 0.6 percent of the total tonnage originating annually within the USSR. The special nature of many of the materials hauled, including machine tools and subassemblies for armaments, makes the traffic of much greater importance to the USSR than its volume alone would indicate. Nevertheless, the Soviet Union's economic potential for war would be reduced very little if CSD traffic were completely halted.

b. Role of Railroads in Trade with the West.

(1) Extent and Nature of Traffic.

Czechoslovakia's rail-borne trade with the West declined sharply in 1949 and 1950. Rail traffic to Trieste is greatly reduced, and the volume of traffic with Switzerland and Austria is also believed to be reduced. Trade with East and West Germany, the Low Countries, and overseas areas moves largely by the Elbe waterway system and highway.

(2) Clandestine Traffic.

The volume of clandestine rail traffic is not known, but Western export controls are believed to have reduced such traffic.

(3) Importance of Traffic to the Orbit Economy.

Most items imported from the West are in short supply within the Bloc and are of an economic or military importance which outweighs their dollar value. The Czechoslovak railroads, however, handle only a small volume of trade with the West and cannot be considered of major importance in terms of the Soviet war potential.

4. Inverse Contributions.

a. Equipment and Materials.

The CSD is not dependent on the Soviet Union for either railroad equipment or materials. Czechoslovak industry produces surplus quantities of locomotives, freight cars, passenger cars, rails, and signal equipment.

b. Manpower.

Czechoslovakia has an adequate number of skilled and unskilled workers to maintain all aspects of railroad service and equipment production.

c. Soviet Control.

Direct Soviet control exerted from within the Czechoslovak Ministry of Transportation would require an unwieldy organization. Instead, the USSR uses the Fourth Bureau of the Czechoslovak General Staff, the military apparatus through which the Czechoslovak Army controls the CSD. The Fourth Bureau, which has army representatives in the Ministry of Transportation and in all eight of the divisional directorates, controls all railroad planning, information, and operations, and the Ministry of Transportation is simply a vehicle for the operation and administration of traffic. In addition to controlling the Fourth Bureau through Soviet Army officers or the Czechoslovak General Staff, the USSR is also believed to have Soviet Army officers at various levels within the Fourth Bureau in order to maintain control and to procure information. These Soviet officers are called a Military Transportation Mission. 3/

5. Probable Developments.

The CSD will undertake certain improvements in 1951 and 1952 which will strengthen the rail system and yield some increases in traffic capacity but will not materially affect the Soviet economic potential for war. The east-west line between Prague and Cerna-nad-Tisou, via Zilina, may be double-tracked, with the possible exception of a short stretch east of Poprad. Electrification probably will be extended eastward from Zilina to Spiska-nova-Ves by the end of 1952 and may also be initiated on the Prague-Ceska-Trebova line before 1953. It is unlikely that increases of more than 3 percent will be made in freight car inventories by December 1952, although a 1-percent decrease in the total locomotive inventory may occur. New construction may include another line, to be opened between Banovce and Uzhorod, connecting Slovakia and the USSR.

B. Highways.

1. Direct Contributions of Highways to the Economic Potential for War of the USSR.

The Czechoslovak road system, while useful in the national economy, is in generally poor condition and makes little direct contribution to the Soviet economic potential for war. It is doubtful that the USSR in the future will either make much use of or benefit appreciably from Czechoslovak highways.

a. General Description of the Network.

In 1948 the highway network was 71,000 kilometers, slightly more than the 69,810 kilometers in use in 1938. Of the 1948 total, only 12,000 kilometers, or less than 17 percent, were reported to be hard-surfaced highways, and the remainder was considered unsuitable for heavy traffic. 1/ Several reports indicate that little highway construction and repair work has been undertaken since the end of World War II and that the road system generally is in dire need of repair, only 20 percent of the roads being classified as in "good condition." Several of the same sources agree, however, that all of the more important bridges have been restored. A total of 930 permanent bridges were built between 1945 and 1950. 2/ Road construction plans for 1950 indicated that no major effort was intended: 445 kilometers were to be reconditioned, 1,860 kilometers rolled, and 790 kilometers resurfaced. 3/ Perhaps the most significant project in the 1950 program was the reconstruction and widening of one of the few highways linking eastern Slovakia with the USSR. 4/

Since highways now radiate from all the important Czechoslovak cities, and the density of the system (0.56 kilometer per square kilometer) is already comparatively high by Eastern European standards, 5/ little expansion effort is required. Moreover, bridges are now in generally good repair, and it is believed that the entire network could be put in first-class condition within a few months, should either economic or military circumstances be considered compelling.

b. Traffic.

Motor vehicles operating under the Ministry of Transportation account for between 15 and 20 percent of total passenger traffic and a little over 20 percent of total freight tonnage hauled by all types of transport. In terms of ton-kilometers, however, this tonnage equals not more than 3 percent of the freight carried by all forms of Czechoslovak inland transport. 6/ Motor transport is concentrated around the large urban areas and consists primarily of short-haul cartage and commuter service.

Under the Five Year Plan (1949-53), development of highway transport is being directed toward "the greatest possible cooperation ... with the railroads in the form of radial transportation." 7/ The new system is

designed to achieve a more economic use of both rail and highway transport. A sharp curtailment of less-than-carload rail shipments is implied. "Expedient operating districts" have been established, and shipments of packaged goods within these districts must be made entirely by highway. The districts probably are so defined that the longest possible shipment is not much in excess of 15 kilometers, the distance recently estimated as the approximate average length of haul. If shipments are to cross district boundaries, they must be moved by highway to the nearest rail collection center and transhipped in carload lots by rail. 8/

Passenger traffic figures are shown in the following table 9/:

Passenger Traffic a/
1937, 1947-49, 1953

Year	Passengers Carried (Million)	Passenger-Kilometers (Million)	Kilometers Traveled (Million)	Average Length of Haul (Kilometers)
1937	75.0	N.A.	45.0	N.A.
1947	172.7	1,654.1	67.1	9.6 b/
1948 b/	245.3	N.A.	86.2	N.A.
1948				
July Plan	225.6	2,229.9	87.1	9.9
Revised Plan	226.6	2,722.4	94.9	12.0
1949				
July Plan	249.5	2,507.3	99.0	10.1
Revised Plan	240.5	2,877.0	109.4	12.0
1953				
July Plan	307.4	3,246.6	127.4	10.6
Revised Plan	241.5	2,940.0	118.0	12.2

a/ Includes only nationalized concerns reporting to the Ministry of Transportation.
b/ Estimated.

Freight traffic is as follows 10/:

Freight Traffic a/
1937, 1947-49, 1953

Year	Tons Carried (Million)	Ton-Kilometers (Million)	Kilometers Traveled (Million)	Average Length of Haul (Kilometers)
1937	12.5	N.A.	74.9	N.A.
1947	17.3	303.0	114.7	17.5
1948 b/	21.7	N.A.	136.2	N.A.
1948				
July Plan	21.4	318.0	161.7	14.9
Revised Plan	24.0	340.0	167.7	14.2
1949				
July Plan	22.0	356.9	200.1	16.2
Revised Plan	25.1	374.3	188.8	14.9
1953				
July Plan	26.3	441.1	244.5	16.8
Revised Plan	29.8	441.0	224.0	14.8

a/ Includes only traffic of nationalized concerns reporting to the Ministry of Transportation.
b/ Estimated.

Although actual figures for 1949 and 1950 have not been released, press reports suggest that motor transport operations have expanded considerably since 1948. In 1949, total freight carried reportedly reached 26 million metric tons, an increase of 21 percent over 1948 and well in excess of the Plan goal. It appears that planned goals are subject to change as the circumstances warrant. In late 1948 the Czechs evidently considered the revised goals for 1949 and 1953 attainable, but whether changing conditions have prompted further Plan revisions since that time is not known.

Restrictions on the use of motor fuel, imposed on 1 August 1948, had some effect on motor vehicle traffic. Private vehicle operation was sharply reduced, and, although gasoline was removed from the list of rationed commodities in January 1950, its price remained at $1.75 per gallon, thus making any widespread resumption of use of private cars or trucks unlikely.

All wholesale trucking companies and all private bus lines were nationalized in 1948, shortly after gas rationing was instituted. CSAD, the state enterprise for motor transport, has effectively monopolized highway passenger traffic and endeavored to expand its trucking operations. The largest part of total motor freight, however, has been moved in foreign (mostly Dutch and Belgian) trucks and in vehicles belonging to the various large nationalized industrial organizations, and traffic statistics for these vehicles are not available. Military traffic data are also unknown.

Although information permitting a commodity breakdown of highway traffic is not available, it is believed that most motor freight comprises industrial raw materials and products. Total highway traffic also embraces horse-drawn transport, which is of less magnitude and significance in Czechoslovakia than in the other Satellites but provides a fundamental service to the agricultural economy and is, therefore, of some national importance. Altogether, total Czechoslovak highway traffic must be considerably larger than is indicated by the figures of the Ministry of Transportation. Nevertheless, since most of it is carried only short distances, total highway traffic in ton-kilometers remains small.

c. Road Construction and Maintenance Equipment.

Details as to the quantity and employment of road-building machinery in Czechoslovakia are not known. There is some evidence that high priority has been given to the purchase of earth-moving equipment from the West. 11/ There also is some indication that road maintenance and repair are to be handled in the future by road-building machinery stations, which are being established in Czechoslovakia on the Soviet pattern. 12/ It is believed that to date, however, the small amount of maintenance and repair work actually undertaken has been performed mainly by manual labor.

d. Capacity.

Despite limitations of capacity imposed by the poor condition of the roads throughout much of Czechoslovakia and, in certain seasons, by the weather, highway use is restricted principally by the availability of serviceable vehicles and of traffic and probably does not closely approach the capacity of the road network, except possibly in the large urban areas. The highway network, although in need of repair, apparently is meeting the requirements of the national economy.

e. Vulnerability.

Since motor transport accounts for less than 3 percent of total freight traffic in terms of ton-kilometers, its over-all economic vulnerability is judged to be relatively slight. There are long-distance road connections between the major cities, but alternative routes are generally available, particularly in the western part of the country. Moreover, the roads also are supplemented by rail lines, thus reducing the economic effectiveness of attacks on highway targets unless rail connections were disrupted at the same time.

The physical vulnerability of the Czechoslovak road system to air attack and ground demolition is considerable because of the large number of bridges and culverts on all main routes. Vulnerability is heightened by the many obstacles to cross-country movement and dispersal, both in the mountainous areas and in the highly cultivated river valleys. Good demolition targets also exist on hilly sections of many routes, where the roads are frequently cut into rock above steep-sided valleys. These conditions prevail particularly on the

frontier crossings around the Czechoslovak perimeter. Because of the terrain, however, frontier crossings would be readily defensible against ground forces. 13/

The vulnerability of the motor vehicle park is high, and an intensive attack directed against the park probably would be the most effective means of disrupting highway transport. The destruction of urban transport facilities would have a high nuisance value, and horse-drawn transportation probably would be inadequate to compensate for any wholesale destruction of motor vehicles.

2. Direct Contributions of Highway Transport Equipment to the Economic Potential for War of the USSR.

a. Inventories.

Official figures on the motor vehicle inventory have not been released since 1948. At that time the situation, as compared with 1938, was as follows 14/:

Motor Vehicle Registrations
1938, 1948

	31 August 1938	29 February 1948
Motorcycles	80,576	149,600
Automobiles	99,119	105,000
Trucks	28,537	61,100
Tractors	6,097	17,000
Buses	3,144	1,800
Others	4,040	3,880
Total	221,513	338,380

The 1948 figures do not include 2,870 trucks and 2,041 buses owned by the State Railways or the various vehicles operated by the police, the post office, and, presumably, the Army. It is not believed that the total vehicle inventory has changed significantly since 1948. Increases from domestic production cannot have been large, because considerable numbers of new vehicles have been exported.

Although complete export figures have not been reported, substantial motor vehicle shipments are known to have been made to Poland, Rumania, and the Netherlands, the first two receiving mainly trucks and the third passenger cars. Czechoslovakia also exports vehicles to all of the other Orbit countries, as well as to several Latin American countries, India, Pakistan, and most of the Western European countries. Total estimated exports in 1949 are shown below 15/:

Estimated Motor Vehicle Exports
1949

Units

Type	Number	Percent of Total Production
Passenger Cars	10,400	50
Trucks and Buses	2,100	33
Motorcycles	21,600	33

Taking into consideration the limited imports of 150 passenger cars and 50 trucks in 1949, vehicles allotted for domestic consumption permitted a retirement rate of only about 5 percent for trucks and 8 percent for passenger cars, assuming no change in the 1948 inventory. 16/ Since some proportion of all new vehicles are always allotted to the Army, the replacement rate for civilian vehicles would be even lower than the retirement rate.

In 1950, planned allotment of production was as follows 17/:

Planned Distribution of Motor Vehicle Production
1950

Purpose	Trucks		Buses		Passenger Cars		Total	
	Number	%	Number	%	Number	%	Number	%
Export	3,240	56	329	32	22,600	92	26,169	83
Military	864	15	71	7	188	1	1,123	4
Ministry of Transportation a/	331	6	600	58	0	0	931	3
Other b/	1,315	23	40	3	1,812	7	3,167	10
Total	5,750	100	1,040	100	24,600	100	31,390	100

a/ CSAD, railroads, and nationalized trucking concerns.
b/ Nationalized industrial enterprises and private operators.

The possibility exists that the combined effects of vehicle exports deliveries to the Army, and necessary retirements have forced a reduction in the number of motor vehicles available for commercial and industrial highway transport. The present objectives of the motor transport industry probably are the maintenance of the 1948 level of inventory and the more efficient utilization of the motor park. This policy estimate is borne out by the data in the following table 18/:

Status of Vehicles Operated Under Control of Ministry of Transportation*
1948-49, 1953

Units

Vehicles	1948	1949 (Planned)	1953 (Planned)
Buses			
Total	4,730	5,444	5,407
Operable	3,467	4,012	4,255
In Operation	2,518	2,960	3,349
Trucks			
Total	15,570	14,806	16,037
Operable	10,167	11,312	12,477
In Operation	7,280	8,644	9,714

Although not stated, it is presumed that nonoperable vehicles are undergoing or awaiting heavy repair or rebuilding and that operable vehicles not in operation are undergoing minor repairs or routine maintenance and servicing. The most noteworthy fact apparent in the above table is that no major change in the vehicle inventory between 1948 and 1953 is contemplated. The total number of vehicles is to be increased by only about 6 percent in this period. By 1953, vehicles actually in operation, however, are to increase by 33 percent, and 61 percent of the total vehicle park will be in operation. The low serviceability of the park in 1949 is attributed to the high proportion of overage vehicles and to a shortage of repair installations and equipment. A major effort is to be made under the current Five Year Plan to alleviate this shortage. 19/

No data are available on the number of horse-drawn vehicles employed for transportation. Although use of these vehicles is likely confined to the agricultural segment of the Czechoslovak economy, they nevertheless constitute an important aspect of highway transport.

* The vehicles discussed here represent close to 100 percent of all buses and about 25 percent of all trucks in Czechoslovakia. This is believed to be a sufficiently reliable sample to determine the trend of the Czechoslovak motor vehicle inventory as a whole.

b. Effect of Transfers to the USSR.

Although the USSR probably does not receive much more than 5 percent of the total number of vehicles exported by Czechoslovakia, the Soviet Bloc as a whole receives over 75 percent of such exports. 20/ Since Czechoslovakia is the foremost Satellite producer of motor vehicles and a major source of supply for the Bloc, it is probable that production is so allocated as to leave in Czechoslovakia only the minimum number of vehicles required to meet planned traffic goals. This minimum requirement probably is determined on the assumption that available vehicles will be intensively used. The effect of current exports, therefore, is to accelerate, through excessive use, the deterioration of the Czechoslovak vehicle park, which has never fully recovered from the effects of the war. There is little likelihood, however, that exports will seriously curtail Czechoslovak highway traffic, except in an emergency.

3. Indirect Contributions.

a. Role in Soviet Trade.

Although some highway traffic probably moves between Czechoslovakia and the USSR, no data are available. Presumably the highway improvement program currently being carried out in eastern Slovakia presages a future increase in economic and/or military highway traffic with the USSR.

b. Role in Trade with the West.

A large volume of traffic has in the past moved between Czechoslovakia and the West by highway, although exact quantities and commodities are not known. Until 1950, motor vehicle freight was carried regularly and frequently, with the exception of the period of the Berlin blockade, between Czechoslovakia and the Low Countries, with vehicles of all three countries participating. In March 1950, however, the Dutch announced the termination of motor transport service to Czechoslovakia, claiming that the safety of Dutch subjects in Prague could no longer be guaranteed. 21/ Presumably trade with Belgium also has been sharply curtailed, since 1950 information indicates that the Czechs had decided virtually to abandon their use of Benelux ports in favor of the North German ports. Arrangements were completed in August 1950 authorizing the clearance of Czechoslovak trucks to Hamburg, but this traffic was not to exceed 150 round trips a month. 22/

Since the curtailment of motor vehicle movements to and from the Netherlands and Belgium, it seems likely that highway traffic between Czechoslovakia and the West is no longer of much significance. Most of the traffic was carried in foreign trucks because few Czechoslovak vehicles were suitable for long-distance travel and because Czechoslovak drivers experienced increasing difficulty in securing permission to leave the country. These limiting conditions still prevail.

There have been instances of clandestine motor vehicle traffic between the West and Czechoslovakia, and such trade probably still takes place. Although Czechoslovakia has received automotive equipment and parts from the West, the quantities received are believed to have steadily declined.

4. Inverse Contributions.

a. Equipment.

The USSR could facilitate and accelerate Czechoslovak highway construction by supplying road-building machinery, but there is no evidence that this has been done. Future deliveries appear unlikely as long as such equipment remains scarce in the USSR. As far as is known, Czechoslovakia has not received any motor vehicles from the USSR.

b. Materials.

Czechoslovakia must import substantial quantities of gasoline and asphalt, but it is believed that these supplies come mainly from Albania, Rumania, and Austria. High-grade ore for steel production is imported, but most of it comes from Sweden rather than the USSR. It is possible that the Soviet Union supplies rubber and/or tires for the Czechoslovak vehicle industry, but quantities are unknown.

c. Manpower.

Czechoslovak technical skill, including engineering and designing, is adequate for the needs of the motor transport industry, and no foreign assistance is required.

d. Soviet Control.

It is probable that the USSR controls most aspects of Czechoslovak highway transport. A Soviet military transportation mission reportedly is assigned to the Ministry of Transportation. In addition, Soviet officers probably serve on the Czechoslovak General Staff, one section of which is designated as Military Transport Headquarters. The function of this section is to study all aspects of the national transportation system in preparation for the assumption of complete control of the system in wartime.

5. Probable Developments.

No significant changes in the present motor transport situation are anticipated. Highway traffic will increase slightly as more intensive use is made of the vehicle park. The total number of motor vehicles will remain substantially unchanged, while their condition will continue to deteriorate despite planned increases in serviceability. Road construction will be of little consequence, and, in general, the contribution of Czechoslovak highway transportation to the Soviet military potential for war probably will decline in importance. The major contribution thus far to the USSR economic potential for war has been the vehicles which Czechoslovakia has exported to the Bloc. This contribution will probably continue, but to the detriment of the contributor.

C. Water Transport.

1. Direct Contributions of Water Transport to the Economic Potential for War of the USSR.

a. General Description of the Network.

There are about 300 miles of navigable waterways in Czechoslovakia, of which only about 240 miles are navigable by barges of over 400 gross tons capacity. The network is composed of three systems: the Elbe-Vltava, the Danube, and the Oder, all of which are of minor importance to the Soviet war potential.

The Elbe route, whose deep-sea outlet, Hamburg, is controlled by the West, is the most important waterway of Czechoslovakia. This river, with the Vltava, forms the inland water route to the ocean for the entire western portion of the country, where Czechoslovak industry is concentrated. Vessels of up to 1,350 gross tons navigate the lower reaches of the Elbe, while 1,000-ton ships can travel up the river as far as Prague. The main Czechoslovak ports on the Elbe-Vltava system are Prague, Loubi, and Usti.

The Danube, which flows along the southern border of Czechoslovakia for about 100 miles, is the route for Czechoslovak traffic to the Black Sea ports of the Soviet Bloc. Barges of 650 gross tons can navigate the Danube in Czechoslovakia from Bratislava to Komarno, while craft up to 1,000 tons can travel below Komarno. 1/ The only two ports of economic importance are Bratislava and Komarno. Bratislava is the largest port in the country and will be the Danube terminal of the projected Oder-Danube Canal. 2/

The Oder in Czechoslovakia is too shallow to support traffic of any consequence, but Czechoslovakia does participate in Oder traffic across Poland. There are a large number of Czechoslovak barges and tugs on the Polish Oder, one report listing as many as 100 barges and 21 tugs. 3/ Construction of the long-discussed canal to connect the Oder with the Danube near Bratislava will eventually make the Oder route of much greater economic and strategic importance to the Soviet Bloc. Thus far, however, little progress appears to have actually been made on the canal.

b. Traffic.

The inland water traffic of Czechoslovakia carries principally iron ore, grain, petroleum, coal, coke, and bauxite and accounts for about 5 percent of all ton-miles of inland traffic, but is of little significance to the USSR. In 1949, waterway traffic totaled about 2.4 million metric tons, a considerable increase over immediate postwar years but still far below pre-war traffic levels. Import traffic exceeds exports by a considerable margin, particularly on the Danube, where Rumanian petroleum is a major item of import traffic. Czechoslovak barges also participate in the Oder traffic in Swedish ore, which is transshipped at Kazle in southern Poland for rail movement to Czechoslovakia. Export traffic consists primarily of industrial products and specialized raw and bulk materials such as coke, sugar, and cement, some of which goes to the USSR.

Although Czechoslovakia has no ocean fleet, it is estimated to have about 30,000 gross tons of Western shipping under charter, as well as having the use of a 5,000-ton Soviet merchant vessel. These vessels trade out of both Hamburg and Stettin and are employed principally in traffic with China. There are indications that the Czechoslovaks will become increasingly active in maritime activities.

c. Equipment.

Port equipment appears to be in fairly good condition, war damage having been largely repaired. Considerable emphasis is being placed upon further port rehabilitation and expansion, and about one-third of all money proposed for water transport in the Five Year Plan will be spent on port development.

d. Capacity.

The capacity of the Czechoslovak inland water system is relatively small and severely limited, principally by the size of the fleet. The Plan for 1953 provides for a mere 70-percent increase over the 1948 level of traffic, an increase which was actually accomplished in 1949. Since the Plan apparently has not been revised, it seems evident that the rapid postwar expansion of waterway traffic has been completed and that little further expansion of water transport capacity is contemplated.

Seasonally unfavorable navigating conditions also limit waterway capacity. Navigation on the inland waterways system is impeded for considerable periods each year by ice, floods, and low water. Traffic on Elbe-Vltava is hampered by ice for from 60 to 75 days a year, while the Danube is icebound for periods up to 2 months. Both systems are troubled with floods in the spring and autumn. 4/

Few data are available on Czechoslovak port capacities. Bratislava has an estimated cargo-handling capacity of about 3,500 metric tons a day. Komarno, which was not seriously damaged during the war, is probably back to or above its prewar capacity of about 2,000 tons a day. 5/

If the proposed Oder-Danube Canal actually is constructed, the waterway capacity of Czechoslovakia will be considerably increased. The principal beneficiary of this project, however, would be Poland, which has a greater volume of trade with the Balkan and Black Sea areas than has Czechoslovakia.

e. Vulnerability.

The inland water system is considered vulnerable to both economic and military warfare. At present, Czechoslovakia can meet fairly well its production requirements for river craft and cargo-handling equipment without dependence on the West for supplies. On the other hand, the country's principal waterway route, the Elbe, is extremely vulnerable to peacetime interference, since its mouth is controlled by the West. Poland and the USSR continue to

press for the substitution of the much less satisfactory Oder route to Szczecin, and Poland has even given the Czechs a free port area in Szczecin to induce its use. This port will probably be put to increasing use, but its attractions do not yet outweigh the advantages of Hamburg, which remains the principal deep-water port for Czechoslovak traffic. 6/

The military vulnerability of Czechoslovakia's waterways constitutes a serious weakness. The Elbe-Vltava route has several locks and dams which could be destroyed, while bridges and port installations could be damaged or demolished, as they were in World War II.

2. Direct Contributions of Shipping to the Economic Potential for War of the USSR.

a. Inventories.

Czechoslovakia can make no significant contribution to the Soviet economic potential for war from its present inventory of barges and tugs. Contributions from current production likewise probably would be of no great importance.

b. Effect of Transfers to the USSR.

Although the inland water fleet carries only a minor part of all traffic hauled by the Czechoslovak domestic transport system, reduction or loss of the fleet would seriously hinder the economy. Despite its small relative volume, the total waterway traffic of Czechoslovakia could not be absorbed by the Czechoslovak State Railways, because only a few rail routes parallel the rivers and the necessary increases in rail traffic would far surpass the present excess capacity of these lines.

3. Indirect Contributions.

a. Role of Water Transport in Soviet Trade.

Czechoslovak exports to the USSR by water consist of coke, lumber, and industrial products via the Danube; soft coal, sugar, and cement via the Elbe; and, by means of transshipment at Kozle, metallurgical products via the Oder. Imports from the USSR via water include grain, iron and other industrial ores, cotton, and industrial products. The total volume of water exports to the USSR is not large, but the nature of the goods carried lends some importance to the traffic.

b. Role of Water Transport in Trade with the West.

Czechoslovak water transport plays a minor role in trade with the West, although the use of the Elbe keeps open one direct trade channel. The traffic consists principally of Czechoslovak cement, paper products, coal, and sugar in exchange for Western copper and phosphates. Any increase in this

trade is most unlikely, since the USSR imposes rigid restrictions on Satellite trade with the West, and the Western nations severely restrict the types of products which may be exported to Czechoslovakia.

There is some clandestine water traffic via the Elbe, but the volume of such traffic is not known.

4. Inverse Contributions.

Under present conditions the USSR need not and probably will not contribute water transport equipment to Czechoslovakia. Manpower requirements of the present water transport program, as well as any program which might be undertaken, can be met by the Czechoslovak labor force. Soviet control extends throughout all phases of inland water transport but apparently is strongest at the planning and administrative level. Actual operations appear to be in Czechoslovak hands.

5. Probable Developments.

There do not appear to be any prospects for significant changes in inland water transport before the end of 1952. The Czechoslovak river fleet will be expanded by possibly 10 or 15 percent, and the Five Year Plan provides for major improvements of ports and routes. The net improvement in both actual operations and the over-all water transport potential, however, is likely to be of no appreciable significance to the economic potential of either the USSR or Czechoslovakia.

D. Air Transport.

1. Direct Contributions of Air Transport to the Economic Potential for War of the USSR.

Czechoslovak air transport makes only a small direct contribution to the Soviet economic potential for war, constituting, together with the Polish airfields, a necessary link between the USSR and Western Europe for the transportation of certain high-priority products in which the USSR is deficient. Completion of the current airfield improvement programs, which envisage additional facilities for all-weather and night operations, will contribute considerably to the Soviet Bloc's air logistics potential.

a. General Description of the Network.

Czechoslovakia has 56 airfields, of which 20 are used exclusively for civil aviation and 13 are shared jointly by civil and military aircraft. 1/ Two active programs of construction and airfield improvement have been under way since 1949. One is being undertaken by the Czechoslovak Ministry of Transportation on behalf of the state-owned civil airline, while the other, sponsored by the USSR, is of a military nature. The two principal civil airfields, Prague/Ruzyne and Bratislava/Ivanka, have 6,000-foot runways. The four major military bases, Ceske Budejovice, Milovice, Mimon, and Zatec, have runways reported to be in excess of 8,000 feet and are suitable for use by the heaviest transports (120,000 pounds or more). The Prague/Kbely installation, with a 5,000-foot runway, is the main military air transport base in Czechoslovakia and also is a major supply depot.

The majority of Czechoslovak airfields, although in the 2,000-foot runway class, are equipped with facilities permitting transport operations by DC-3s or Soviet-built IL-12s.

b. Traffic.

International and domestic air transport operations are conducted by Ceskoslovenske Aerolinie (CSA), a state-owned organization created in 1945. This airline, serving 16 foreign countries, has the broadest European coverage of any continental air transport company. Air traffic, however, has steadily declined since the Communists took office in February 1948. 2/ At that time, in addition to extensive European services, CSA operated profitable routes through Rome to the eastern Mediterranean countries. As a direct result of the US-UK Joint Satellite Aviation Policy, Czechoslovak air transports have been barred from the Mediterranean and Near East.

Despite the reduction in over-all Czechoslovak air transport traffic, some expansion of operations has been attempted on certain international routes, and a considerable volume of traffic is still carried. This traffic is insufficient, however, to meet the requirements of the Five Year Plan (1949-53) for Aviation. 3/

This Plan, originated by the Ministry of Transportation, called for a gradual traffic build-up from the 6.2 million kilometers flown in 1948 to 13.6 million kilometers in 1953, or an increase of 120 percent. Assuming improved international relations and the acquisition by CSA of modern Western transports, the Plan visualized an increase from 34.9 million passenger-kilometers in 1948 to 315.9 million in 1953, and a rise in freight traffic from 7.2 million ton-kilometers carried in 1948 to 27.3 million in 1953. Relations with the West, however, have progressively deteriorated, the latest development being the British cancellation in June 1951 of CSA's London service, its most profitable route. The performance of the 32-passenger IL-12 transports, reluctantly obtained by Czechoslovakia from the USSR because other aircraft were unavailable, has proved unsatisfactory, necessitating modification of the planes and limitation of unit capacity to only 18 passengers.

Listed domestic and international schedules for CSA indicate that approximately 3.3 million kilometers were flown in 1950, and the estimate for 1951 ranges from 3.2 million to 3.4 million kilometers. No figures are available on present utilized passenger-kilometers and utilized ton-kilometers flown, but the decrease probably is proportionate to the decrease in operations already noted. The CSA airline serves most of the large cities of Czechoslovakia, as well as most of the capitals in the Soviet Bloc and Western Europe. 4/

Foreign air traffic into Czechoslovakia is as follows:

Foreign Air Routes in Czechoslovakia
1951

Airline	Route	Frequency
Non-Soviet Bloc Countries		
Air France (France)	Paris-Prague	Three Times Weekly
KLM (Netherlands)	Amsterdam-Prague	Weekly
Sabena (Belgium)	Brussels-Prague	Twice Weekly
Swissair (Switzerland)	Zurich-Prague	Three Times Weekly
SAS (Scandinavian Countries)	Stockholm-Copenhagen-Prague	Weekly
Soviet Bloc Countries		
Aeroflot (USSR)	Moscow-Minsk-Warsaw-Prague	Four Times Weekly
	Prague-Lwow-Kiev-Moscow	Four Times Weekly
LOT (Poland)	Warsaw-Prague	Twice Weekly
MASZOVLET (Hungary)	Budapest-Prague	Three Times Weekly
TARS (Rumania)	Bucharest-Arad-Prague	Weekly

c. Equipment. 5/

The principal Czechoslovak civil airfield, Prague/Ruzyne, is equipped with adequate facilities for air transport operations under all-weather and night conditions. When improvements now in progress at Bratislava/Ivanka are completed, this new international airport also will have excellent facilities. Of the 56 Czechoslovak airfields, 28 have some radio facilities, several are fully equipped for night landings, and 15 have at least boundary and obstruction lighting. Five more airfields are being prepared for night operations. Repair shops, furnishing at the minimum field maintenance and at the most base depot repair facilities, are located at 14 airfields, and major improvements are projected for 4 others. Available storage facilities for petroleum products are adequate for present operations at most Czechoslovak airfields.

d. Capacity.

The principal Czechoslovak airfields have a capacity considerably in excess of present use. With few exceptions, the entire airfield complex could be adapted to air transport operations with DC-3 type aircraft. Four military airfields with runways of 8,500 feet are capable of supporting operations by the largest US-type transports.

e. Vulnerability.

Seven principal airfields, including the two main civil airports, are vulnerable to air attack or sabotage. The majority of Czechoslovak airfields, however, are grass-surfaced and do not have facilities of sufficient importance to justify such attacks.

2. Direct Contributions of Air Transport Equipment to the Economic Potential for War of the USSR.

a. Inventories.

With the exception of the IL-12 aircraft bought from the USSR, the CSA fleet consists entirely of old transports.

(1) Civil Aircraft. 6/

The CSA aircraft inventory consists of 10 IL-12s (of which 5, under reconditioning, were to return to service in March 1951), 3 JU-52s, 3 Siebel C-103s, and 24 DC-3s (of which about 20 are estimated to be operable). The inventory of chartered aircraft (Svitlet) includes 2 DC-3s, 2 JU-52s, 5 Siebels, and 1 Cessna UC-78.

(2) Military Aircraft. 7/

Czechoslovakia's military aircraft include 12 C-47s and 15 JU-52s. Six C-47s and 13 JU-52s are in tactical units.

b. Effect of Transfers to the USSR.

Czechoslovakia has transferred no transport aircraft to the USSR, and it is unlikely that any transfers will be made.

3. Indirect Contributions.

a. Role of Air Transport in Soviet Trade.

The USSR does not permit the CSA to fly into Soviet territory. Certain high-priority materials, such as industrial diamonds, special types of ball bearings, and other manufactured equipment, brought into Czechoslovakia by air from the West, are believed to be transshipped to the USSR by the Soviet airline Aeroflot. No positive information is available on the importance of this traffic through Czechoslovakia to the USSR.

b. Role of Air Transport in Trade with the West.

(1) Extent and Nature of Traffic.

The significance of Czechoslovak air freight traffic with Western Europe lies in the nature of the traffic rather than in its volume, which is not great. Imports of critical items of high value are frequently carried by air. Although accurate figures are lacking, by deduction from published schedules it is found that 38,112 route-kilometers, or 57 percent of all Czechoslovak air transport operations, are flown on international routes. Of this international traffic, 21,100 route-kilometers, or 56 percent, are flown between Czechoslovakia and the Western European countries, Yugoslavia, and Finland. Some freight also is flown to and from the West in chartered aircraft (Svitlet).

(2) Clandestine Traffic.

Clandestine air traffic in and out of Czechoslovakia reached a peak during the Israeli-Arab hostilities in 1948-49, but the CSA has not been directly involved in such traffic. Shipments of airplane motors and spare parts have been brought into Czechoslovakia chiefly by highway but occasionally have been flown in from Western Europe by Svitlet. At present it is probable that clandestine air traffic is negligible.

(3) Importance of Traffic to the Bloc Economy.

Czechoslovak air transport traffic greatly facilitates the movement of political and business representatives and thereby promotes the development of trade among the Satellite countries, as well as with Western Europe. This passenger traffic is the most important contribution made by Czechoslovak air transport to the Bloc.

4. Inverse Contributions.

a. Equipment and Materials.

Czechoslovakia is increasingly dependent on the USSR for its air transport equipment. The US-built DC-3s, which still form a large part of

the Czechoslovak air fleet, are worn, and spare parts and engine replacements are almost impossible to obtain from the West. It is reported that Western aviation interests are still being approached for aircraft and parts, 8/ but the Czechs are not meeting with success, at least in overt negotiations. A similar situation exists in relation to materials needed for air operations. Until recently, however, some communications equipment was reaching Czechoslovakia from the UK.

b. Manpower.

Although some pilots and air crews have defected to the West, Czechoslovakia is not at this time dependent upon the USSR for manpower in the operational or administrative branches of the air transport system.

c. Soviet Control.

There is evidence that the USSR exercises indirect but effective control over Czechoslovak aviation policy.

5. Probable Developments.

Some credence can be given to a report that the Satellite airlines may form a consortium for joint or integrated operations within the entire European Satellite area. This probably would involve a pooling of aircraft and common use of facilities. The report indicates that discussions are about to be initiated, but it is too early to assess the probability of adoption of such a plan.

VIII. Current Allocations of Economic Resources.

1. Investment and Production in Industry.

The economic policy of Czechoslovakia, the pivotal industrial state among the Satellites, is directed from Moscow, and a Soviet-style form of economic organization is far-advanced. The metalworking, electric power, and transportation industries are to be expanded under highest priority. The total mobilization of natural resources and labor is to be concentrated on the long-range build-up of the military-industrial sector of the economy, while living standards at best will make slight gains and possibly suffer a decline in the current Five Year Plan (1949-53).

Czechoslovakia's relative economic maturity is indicated by the fact that 82.4 percent of the national income is derived from nonagricultural activities. Before the war the country's products of iron and steel, machinery, armaments, textiles, glass, and china enjoyed a world reputation. The industrial system which turned out these products was technologically advanced by Eastern European standards and did not sustain important war damage. To a considerable extent, the problem of integrating the Czechoslovak economy into that of the Soviet Bloc is one of modifying existing production facilities required by the USSR and other Bloc members. This involves a transformation from a predominantly light industry complex to a heavy one. Thus while the planned average annual rate of industrial construction of 7.7 percent during the Five Year Plan is small when compared with the planned rate for other Satellites, nevertheless over 40 percent of Czechoslovak investment is to be in industry, aiming at an increase in industrial production by 1953 to about 50 percent above the 1949 level.

2. Agricultural Development.

Agriculture in Czechoslovakia accounts for 17.6 percent of the national income and employs approximately one-third of the population. It produces over 90 percent of domestic food requirements and a small export surplus. Under the Five Year Plan, agriculture will receive 8 percent of the national investment budget. The primary purpose of this expansion is to supply newly created machine tractor stations and producer cooperatives with equipment, fertilizers, fuel, and other basic materials. Crop policy under the Five Year Plan is designed to increase livestock and sugar beet production at the expense of grain. In 1948, crop production was 65 percent of the total value of agricultural output, livestock being only 35 percent. By 1953 the ratio is planned to be 52 percent for crop production and 48 percent for livestock. This agricultural program will call for imports of grain from less highly industrialized areas of the Soviet Bloc, but it should make better use of available land in Czechoslovakia, yielding more livestock products for home consumption and more sugar

for export. The chronic labor shortage in Czechoslovak agriculture has been only partially relieved by Communist mandatory work programs.

3. Civilian Consumption.

With a high degree of economic development and near self-sufficiency in food, and having suffered little war damage, Czechoslovakia's standard of living remains the highest in Eastern Europe, despite the addition in early 1951 of bread and flour to the list of rationed foodstuffs. On the other hand, high prices, the relative scarcity of goods as compared with prewar availability, and government pressure to work longer and harder have seriously impaired public morale. Because of the lack of new construction and of repair of existing units since 1941, housing remains inadequate. Factors contributing to the housing shortage include raw material shortages, high prices, an insufficient labor supply, and the priority given to industrial development. A planned increase in the total investment of the National Health Service may contribute to an improved standard of living.

4. Contribution of the Economy to the War Capabilities of the USSR.

Czechoslovakia and Poland, under Soviet guidance, are to become the main centers of heavy industry in the Soviet Orbit. Coal and heavy industry, particularly the engineering industry, in Czechoslovakia will provide the nucleus for the industrialization of the Satellites. The engineering industry produces mainly heavy machinery, including electrical equipment, precision machinery, aircraft and vehicles, and general machinery. Over 60 percent of production in these categories and from 40 to 50 percent of tractor production are exported to the Bloc. The export of half of Czechoslovakia's output of machine tools to the Bloc constitutes a basic contribution to the Soviet potential for war. The Czechoslovak machine tool industry is second only to that of the USSR, which is incapable alone of supplying Bloc requirements for this type of equipment.

Czechoslovak uranium mines accounted for 15 percent of the total supply of uranium obtained by the USSR in 1950. This proportion is expected to be maintained through 1952. The Satellites depend on Czechoslovakia for rubber products, and coal and metallurgical coke are exported to the Bloc. Despite the fact that the production of consumer goods is being subordinated to heavy industry, Czechoslovak exports of goods such as shoes, textiles, sugar, and glassware make a significant contribution in view of shortages of such products in other Bloc countries.

IX. Estimated Degree of Vulnerability to Western Economic Warfare.

1. Major Imports.

Czechoslovakia, the most highly industrialized country in the Soviet Orbit, is dependent upon the West for certain industrial products and raw materials, the lack of which would seriously prejudice the achievement of the Five Year Plan goals and reduce Czechoslovakia's contribution to the Soviet war potential. Many of these items either cannot be obtained within the Bloc or can be procured there only at considerable cost. For example, Czechoslovakia's ferrous metal industry is dependent upon Swedish high-grade iron ore, and the denial of these imports would substantially reduce Czech steel production until a reconversion could be made in order to use lower-quality Soviet ores. In various other instances, production increases are predicated upon increased imports from the West.

Specialized machinery (particularly complex machine tools), bearings, industrial diamonds, pyrites and sulphur, tin, electrolytic copper, rubber, and other items are needed from the West and are of particular importance to attaining the planned production of Czech industry.

The effects of Western European restrictions on exports of many critical items are evident in Czechoslovak efforts to acquire such items, especially bearings, industrial diamonds, some types of machine tools, and electrolytic copper, through covert channels. Although it is a major exporter of manufactured goods, largely light industrial commodities, Czechoslovakia has not enjoyed a favorable bargaining position with the West because its plants must often compete with similar industries in Western Europe.

Czechoslovakia depends on overseas countries for many raw materials, principally cotton, rubber, hides, wool, and jute, none of which can be supplied in quantity by the Soviet Bloc.

2. Degree of Vulnerability of Major Sectors of the Economy.

The steel industry in Czechoslovakia is dependent upon Sweden for about one-half of its iron ore. If the importation of this high-grade ore should stop, a minimum of 1 year would be necessary to convert the industry to the utilization of lower-grade ore, and production schedules all along the line in heavy industry and in other sectors dependent upon it would not be met.

Czechoslovakia manufactures only slightly more than one-third of its antifriction bearing requirements. An effective embargo on bearings would severely limit Czechoslovakia's contribution to the Soviet war potential,

raise a serious obstacle to production in many branches of Czech industry, and force the USSR to meet bearing needs out of its own limited production. The long-term effect of such a stoppage of trade might be to transform Czechoslovakia into a Soviet burden.

Czechoslovakia produces no native sulphur and is dependent upon the West for nearly all of its sulphur requirements, as well as for 60 percent of its pyrites needs. Increased restrictions on Western machine tool shipments would directly reduce the industrial and military potential in a relatively short time. Industrial diamonds likewise are critically needed, and the Czechs have resorted to covert methods to obtain them. The textile industry is dependent on the West for a large proportion of its raw cotton, and if these imports were cut off, the USSR would have to provide supplementary supplies or reduce the Czechoslovak textile output to a minimum.

If all imports of critical items from the West were halted by embargo, allocations of remaining supplies would favor the more important industries, particularly heavy industry, while those of secondary importance would suffer. Nevertheless, despite such reallocations and possible economies, heavy industry would fall significantly short of production plans and the war potential of the Bloc would be reduced.

3. Compensating Measures to Offset Western Economic Warfare.

If the West should stop trade with Czechoslovakia, the most effective and perhaps the only means of compensation available to heavy industry would be increased imports of embargoed items or substitutes from the Bloc. This alternative would exist, for example, in the case of cotton, machine tools, and bearings. For many items, however, the Bloc could not meet total Czechoslovak requirements, and, as a consequence, a decline in production would be inevitable.

Czechoslovakia can obtain critical items through Poland, which can supply coal needed in Western Europe, or through the use of Soviet gold reserves, which are especially suitable for covert trading. Since Czechoslovakia has the highest living standard of the Satellite countries, the effects of economic warfare might be slightly offset by the diversion of resources used in the production of consumer goods to the manufacture of producer goods. By the use of such measures, the production of more critical industrial machinery might be maintained in the face of a Western embargo, but Czechoslovakia would be forced to abandon planned production increases and concentrate on holding existing economic levels.

X. Indications of Preparations for War.

As the rearmament program within the Soviet Bloc was accelerated, Czechoslovakia, under Soviet direction, and particularly after 1948, considerably raised production levels in industries contributing to the economic-military potential of the Bloc and curtailed the production of consumer goods. An increasing degree of conversion to military production took place in the engineering industry, particularly in agricultural equipment factories.

Evidence of actual dispersal of industry is limited, but some displacement of manufacturing plants eastward to Slovakia has occurred, particularly in the rubber industry, and the Five Year Plan calls for the rapid industrial development of Slovakia. Despite the natural advantages of Slovakia's relative abundance of labor and its greater proximity to raw material sources, such a reorientation in industrial development may be indicative of preparation for war.

There is no ostensible conversion to war production as such, but the assignment of priorities for production and allocation of raw materials is as follows: (1) war industry, mining, and heavy industry, particularly steel and rolling mills; (2) precision tool industry, vehicle industry, and tractor industry; and (3) light industry and optical instruments. The forced reorientation of the Czechoslovak economy to supply industrial requirements for the Bloc necessitates considerable substitution and economy in the use of raw materials, regardless of military considerations. Expedients such as utilization of substitute materials, reduction in the use of alloy steel, and extension of the use of hard metals are being employed. The accumulation of food stocks, like the effort to find substitute raw materials, is not in itself an indication of war preparations.

The rail network, which is of predominant importance in the Czechoslovak transportation system, contributes to the Bloc economic-military potential chiefly in maintaining the productivity of Czechoslovak industry. There is little or no evidence in railroad operations of preparations for hostilities, but the continued improvement of highways may be indicative of war preparations.

APPENDIX A

RECAPITULATION OF LIMITATIONS, DEFICIENCIES, AND REQUIREMENTS OF INTELLIGENCE

Sections I, III, VIII, IX, and X do not have material to be included in this Appendix.

II. Capacity of Human Resources for Economic Development.

The results of the 1947 census of population, particularly for the agricultural sector, are available, but 1950 census results are not. Intercensal estimates of population, births, and deaths appear in the official statistical publications. Further information is needed on changes in manpower plans as they occur. Additional information concerning hours of work, productivity, and the content of training courses also is desirable.

IV. Foreign Trade and Finance.

Information on Czechoslovak trade with all countries is adequate through 1948 and the first half of 1949, but since the middle of 1949, however, it has become progressively more difficult to obtain specific and dependable intelligence.

Information on trade with Western Europe is still good. Overt trade statistics provide information of sufficient accuracy in general commodity groupings. In some instances detailed breakdowns are available, whereas in others only broad categories are given. Reporting on free port transactions and transshipments also is fragmentary and insufficient.

Information on trade with the Soviet Bloc is insufficient. Data are needed not only on commodity movements but also on pricing policies and methods of payment.

Information on trade with other areas of the world is available in some instances, but much time would be necessary to exploit such information, and in many instances it is inadequate.

Knowledge of specific consumption requirements, import requirements, and export availabilities of the Soviet Union, Czechoslovakia, and the other Soviet Bloc countries is necessary to answer the problem posed in this paper. Such information is not available to the Trade and Finance Branch except in very limited instances.

Information on balance of payments items other than commodity movements is inadequate. For instance, the problem of using the facilities of other countries is particularly important in the case of Czechoslovakia, which is land-locked, but little is known about the transportation and insurance charges paid for the use of such facilities.

V. Agriculture.

Adequate prewar information is available on Czechoslovak agriculture, but considerable work remains to be done to establish a firm base for comparison. Until recently, reports from the US Embassy in Prague have been fairly adequate. At the present time, however, there is no agricultural attache in Czechoslovakia, and reports are inadequate in number and quality. SO reports have been helpful, and the service should be expanded. Greater dependence must now be placed on newspapers, radio broadcasts, and other incidental bits of information than previously, and therefore greater dependence must be placed on weather information, if and when obtainable, in making estimates.

VI. Industrial Capacity and Levels of Production.

A. Ferrous Metals.

After the Communist coup in Czechoslovakia and until approximately January 1950, defectors, several of whom held high positions in the iron and steel industry, were sources of information and of basic documents of great value to this office. Since January 1950, little information has been received. Reliable information is needed on the following:

1. Location and description of iron ore and manganese deposits, mines, and concentrating plants; estimates of reserves.

2. Descriptions of installations and equipment of existing iron and steel plants, to be used as a basis for a detailed plant study.

3. Actual production of all raw materials and semifinished products of the iron and steel industry from 1948 to date; estimates for 1951-53.

4. Consumption of raw materials by the iron and steel industry from 1948 to date; consumption of iron and steel products within Czechoslovakia by industry.

5. Import and export trade in iron and steel raw materials and products from 1948 to date; trade agreements, with detailed commodity exchange lists.

B. Nonferrous Metals.

1. Copper.

Information is lacking on imports for 1949 and 1950, planned imports for 1951 and 1952, and stockpiles.

2. Lead and Zinc.

Information is lacking on production in 1950, requirements, stockpiles, and expansion of lead and zinc mines. Information is needed on the smelters at the Weinmann Werke at Svetec-Chotejovice and the Gebr. Dudek, Settenz, near Teplitz Schonau, reportedly closed down in 1944.

3. Aluminum.

Information is required on the use pattern for imported aluminum and the location of Czechoslovak fabricating plants.

4. Antimony.

Data are needed on production, location of mines, planned expansions, requirements, use pattern, and location of fabricating plants.

5. Tin.

Information is required on the new development in Cinobana, Slovakia.

C. Coal.

The following information is requested:

1. Production in 1950 by districts and by individual mines and Plan figures for 1951 and 1952.

2. Data on actual imports of bituminous coal from Poland in 1950 and exports by types of coal and coke to various countries in 1950.

3. Size of coal stocks in the country in 1950.

4. Analysis of the supply situation and evidence of any shortages of coal and coke.

5. Data on actual production of metallurgical coke, other hard coal coke, and brown coal coke in 1950 and plans for 1951 and 1952. Output figures by individual plants are desired.

6. Data on the production and capacity of briquette plants.

7. Information concerning the development of new mines, expansion of old mines, and closing of any mines in 1950.

8. Data on mining machinery and equipment, including quantities and types being produced; quantities required by the coal industry; and quantities, types, and sources of imports.

9. Analysis of production difficulties and possibilities for expanding coal production.

10. Data on the consumption of coal and coke in 1950 and planned consumption in 1951 and 1952.

D. Petroleum.

Information is needed on the following:

1. Stockpile size, location, and product composition.

2. Imports and exports by quantity, product, and origin or destination.

3. Expansion of old refineries and construction of new ones, with particular emphasis on synthetics.

4. Production of high-grade aviation gasoline.

5. Consumption by consumer group, product, and quantity.

6. Information on exploration and exploitation of new fields.

E. Electric Power.

3. Internal Limitations.

a. Energy Resources.

No critical gaps exist in intelligence material covering energy resources for electric power generation. Information on potential water power resources is scanty, but such resources play a minor part in electricity production.

b. Electricity Generating Plants.

There is sufficient information to determine the total installed capacity within from 10 to 15 percent accuracy, but net additions since 1947

cannot be learned from available material. Further examination of IR records may reduce this deficiency. Information on the physical condition of equipment is inadequate. Such information is of importance in establishing the real capability of the plants to deliver power, as well as in determining replacement needs. Current information on the progress of new project construction also is inadequate. Specifically, information is desired on the progress of construction at the joint Czech-Polish plant at Dwory, which is large enough to make significant contributions to the electric power supply of the Silesian region.

c. Transmission Systems.

Available material provides a reasonably good knowledge of Czechoslovakia's existing and proposed transmission systems, but much additional information is needed to determine their carrying capacity and the degree of coordination into a national network.

4. Production.

Statistical data on electrical production from prewar years to the present are more plentiful and more reliable than for most of the other Satellite nations. It is becoming more difficult each year, however, to obtain such information.

5. Consumption.

Considerable intelligence material is available as to the pattern of use of electricity by the main sectors of the Czechoslovak economy, and the same is true of the proportionate use by the principal consumers in industry. Further information and research, however, will be necessary to establish reliable power requirement figures for essential industries.

6. Input Requirements.

Except for the need for more information on requirements of new and replacement electrical equipment, there are no critical gaps in intelligence material on input requirements.

7. Vulnerability.

Information is needed on the availability of certain raw materials for electric equipment, which appears to be the principal point of vulnerability. Further research with D/I and D/M should reduce this deficiency.

F. Chemicals.

1. Synthetic Ammonia.

Because of the great importance of the Czechoslovak nitrogen industry in time of war as well as in peacetime, the need to know more about its capacity

and rate of production is a matter of highest priority. Unfortunately, the volume of information available to this office has dropped markedly since early 1950, and the quantity received in 1951 has been negligible.

More information is particularly required on the two new nitrogen plants at Most and at Martinov. Confirmation of their planned capacities and details on the progress of their construction are needed.

Other data on the existing plants would be helpful. The nitric acid facilities of the Moravska Ostrava plant have been increased, but there is little information about new capacity and average daily rate of production. More recent confirmation of the synthetic ammonia or nitrogen capacities of the Semtin ("Synthesia") plant at Moravska Ostrava and the plants at Usti-nad-Labem would prove valuable.

6. Sulphur and Pyrites.

More information is needed on quantity and sources of Czech imports of both sulphur and pyrites. Since dependence on the West for a substantial part of its pyrites supplies renders Czechoslovakia vulnerable to economic warfare measures which would seriously cripple many of its strategic industries, efforts to obtain supplies through clandestine means particularly should be watched.

Information is also needed on progress in the development of Czechoslovakia's resources of domestic pyrites and by-product sulphur.

7. Rubber.

Recent information on the Czechoslovak rubber industry is inadequate. Production data, information on expansion of fabricating facilities, and information on any action taken to increase synthetic rubber production are particularly desired. In addition, information on carbon black and rubber chemicals is extremely scanty. It is believed that a good deal of such information could be gleaned from open sources, such as trade journals, newspapers, and technical articles, were they made available to this office.

C. Engineering Industry.

In the preparation of this paper, considerable use was made of the Situation Report for Production Equipment (Working Paper), 30 June 1950, for information which it was not possible to obtain from library sources because of the time limitations. This paper represents approximately 90 percent coverage of 1950-51 material and approximately 50 to 60 percent coverage of material previous to that period.

For the engineering industry as a whole, the following are the chief information deficiencies:

1. Production figures for 1950 and the first 6 months of 1951 by product.

2. Degree of achievement of the Five Year Plan quotas for 1950 and the first 6 months of 1951.

3. Specific breakdowns of the commodities exported to the USSR, their quantities, origin, and, whenever possible, their destination.

4. Types of commodities being exported to the Satellites and factory of origin.

5. Trade agreements (1950-51) with the countries of Western Europe and the Soviet Bloc, particularly secret agreements.

6. Shortages in raw materials, highly specialized machinery, etc.

7. Names and quantities of those items currently received from the USSR which are important to the Czechoslovak industrial economy.

8. Morale of personnel, the factors which affect it, and the effect of morale on production.

9. Organization of factories, with names and biographical information on top personnel.

10. Condition of factory machinery, degree of obsolescence, etc.

11. Factories recently constructed and plans for new construction.

12. Instances of factory conversion to material of direct war utility.

13. Soviet supervision of Czechoslovak plants, the sectors supervised, purpose of supervision, and names, addresses, and technical background of supervisors wherever possible.

8. **Aircraft.**

In the time allowed, it was impossible to do a thorough research job and make an evaluation of quantities of items being produced at the various aircraft factories. Nearly all information is of a hearsay nature. The system whereby the CIA Library files some documents and SO controls the distribution of especially valuable ones, thereby making their contents unavailable for research, increases the time required and reduces the reliability of estimates.

9. Shipbuilding.

In the preparation of this paper, research was restricted to the material on hand covering the production of finished craft in shipyards. Data on marine equipment comprises 60 percent of the information available in the Industrial Register and the CIA Library on the all-inclusive subject of shipbuilding, which has not been exploited. The time allowed for a review of the subject was totally inadequate.

H. Uranium.

There is a large volume of information on the uranium resources of Czechoslovakia in OSI, but very little of this material is now available in this branch. An accurate knowledge of the real shortages in this field will be possible only when a complete survey of the material in the Special Commodity files and in OSI has been made.

VII. Transportation.

A. Railroads.

Reliable figures for traffic or inventories have not been available since 1948. Railroad trackage developments and changes in the signal system have been rumored, but no authoritative information is available.

B. Highways.

The major deficiency in intelligence information on Czechoslovak highway transport is the lack of detailed data concerning all aspects of highway traffic. Highway transport is important to numerous segments of the national economy, including agriculture, industry, the armed forces, commerce, and government. The total vehicle park, including both motor vehicles and animal-drawn equipment, is distributed according to the requirements of those segments. In order to estimate accurately the over-all capability and the economic vulnerability of Czechoslovak highway transport, the allocation of vehicles to those interests and the nature and quantity of all types of highway traffic movements must be known.

C. Water Transport.

The capacity of the inland water transport system is not known with accuracy. Available information is incomplete, often misleading, and ambiguous. Port capacities are not sufficiently detailed. Fleet inventory information is inadequate, since available statistics do not differentiate clearly between Czechoslovak craft on national waterways and those operating in Poland. More details are also needed on the nature and volume of traffic.

D. Air Transport.

To assess better the importance of Czechoslovak air transportation to the USSR economic potential for war, information should be obtained on the nature and volume of Czechoslovak air imports and exports by country of origin or destination and on the percentage of air imports from the West that are transhipped by air to the USSR.

To assist in evaluating Czechoslovakia's dependence on the USSR for air transport equipment and spare parts, reports are desired on the nature and volume of such freight delivered by air or other means of transport to Czechoslovakia from the USSR.

APPENDIX B

FOOTNOTES AND SOURCES

Sections I, V, VIII, IX, and X do not have material to be included in this Appendix.

II. Capacity of Human Resources for Economic Development.

1. UN Demographic Yearbook.
2. State Despatch No. 8, Prague, 15 Dec 1946.
3. The Mobilization of Labor in Czechoslovakia, B. Glos.
4. CIA 406410, 16 Jan 1950 (data on the Five Year Plan).
5. [redacted] 25X1A2g
6. CIA 406410, op. cit.
7. Ibid. 25X1A2g
8. Statisticky Zpravodaj, XIII, No. 4, p. 150, 1950; [redacted]
9. From 1950 figure plus increase announced in FBIS, 1 Feb 1951.
10. Estimated on the basis of increase planned from 1951 to end of Plan in FBIS, 11 Apr 1951.
11. CIA 406410, op. cit.
12. Statisticky Zpravodaj, op. cit., p. 16.
13. CIA 406410, op. cit., with increase shown to end of Plan distributed over the Plan period.
14. Ibid.; Reports of State Statistical Office of Czechoslovakia, Vol. XXX, Nos. 55-58, 1949.
15. CIA 406410, op. cit.
16. Estimated from total increment announced for Five Year Plan, FBIS, 6 Apr 1951, less the number to be added from 1 Jan 1951 to end of 1953, FBIS, 11 Apr 1951.
17. FBIS, 30 Jan 1951.
18. Reports of the Central Statistical Office, Vol. XXX, No. 59, 1949.
19. FBIS, 6 Dec 1950 (announced increases converted to prewar base).

III. Living and Working Conditions.

1. East Europe, Vol. V, No. 216, p. 5, 27 Jan 1949 (quoting Prague radio broadcast of 16 Jan 1949).
2. FBIS, 1 May 1951 (citing Zemedelske Noviny, 27 Apr 1951).
3. Ibid.
4. Hospodar, 5 Apr 1951.
5. East Europe, Vol. VI, No. 266, p. 7, 26 Jan 1950.
6. FBIS, 31 May 1951.
7. FBIS, 11 May 1951.
8. Features and News From Behind the Iron Curtain, Vol. III, No. 8, 23 Feb 1951.
9. Economic Information on Czechoslovakia, D-1245, Vienna, 17 May 1951.

IV. Foreign Trade and Finance.

1. State Desp. 291, Prague, 7 Nov 1950; State Desp. 195, Prague, 4 Mar 1950; State Desp. 134, Prague, 11 Mar 1949; Joint Weeka 9, Prague, 3 Mar 1950; 25X1A2g [redacted] Joint Weeka 37, Prague, 20 Sep 1949.
2. State Desp. 134, Prague, op. cit.
3. State Desp. 291, Prague, op. cit.; SO 47679.
4. State Desp. 391, Prague, 1949; State Desp. 333, Prague, 1950.
5. [redacted]
6. [redacted] 25X1A2g
7. [redacted]
8. [redacted]
9. State Desp., Bucharest, 3-5 Jan 1950; State A-115, Prague, 7 Feb 1949.
10. [redacted]
11. [redacted] 25X1A2g

VI. Industrial Capacity and Levels of Production.

A. Ferrous Metals.

Sources:

[redacted] 25X1A2g

HQ 7707 Eucom RT 666-49, 24 May 1949.
USFA Special Biweekly Report, No. 103, 28 Oct 1949.
Various Trade Agreements.

B. Nonferrous Metals.

1. Copper.

1. FDD 1/50, 10 Jan 1950 (detailed Five Year Plan for the Czechoslovak Metallurgical Industry).
2. Ibid.
3. SID Czechoslovakia, May 1948.
4. FDD 1/50, op. cit.
5. FDD, Special No. 10, 6 Feb 1951.

6. Ibid.
7. DRS reply to Collection Request No. 9597.1.
8. Weekly Economic Developments Abroad, 11 May 1951.

2. Lead and Zinc.

1. SID Czechoslovakia May 1948 - CIA No. 129510 p. 80.
2. FDD Special 10, 6 Feb 1951.
3. Minerals et Metaux Statistiques, 1948.
4. 1948 AHMS 1949-52, [redacted] 25X1A2g
5. FDD 1/50, op. cit.
6. FDD Special 10, 6 Feb 1951.
7. FDD, 10 Jan 1951.
25X1A2g 8. [redacted].
9. Bureau of Mines, Eastern Europe Minerals Survey, Jan 1948.

3. Aluminum.

1. Czechoslovakia, 1949 Operational Plan, FDB 10, 6 Feb 1951.

4. Antimony.

1. Bureau of Mines, Minerals Yearbook, Preprint, 1949.
2. The World Today, Royal Institute of International Affairs, London, Apr 1951.

5. Tin.

25X1A2g
1. [redacted]
2. OIR Report 5364, 28 Sep 1950.
3. International Tin Study Group Statistical Bulletin, Apr 1951 (figures for 1948 and 1949 officially reported to the Combined Tin Committee as actual or estimated consumption; 1950 figure estimated).

D. Petroleum.

25X1A2g 1. Foreign Minerals Quarterly, Jan 1938.
2. [redacted]
3. Ec. Eval. J-98, ID EUCOM, 18 Apr 1949.
25X1A2g 4. [redacted]
5. IFI Information Paper 88, CIA 518418, 17 Oct 1950.
6. Ec. Eval. J-98, op. cit.
7. IFI Information Paper 88, op. cit.
8. Ibid.

9. FDD Trans. Sp. 6, "1949 Operational Plans for Production and Allocation of Fuel and Power in Czechoslovakia," 21 Dec 1950.
10. IFI Information Paper 88, op. cit.
11. FDD Trans. Sp. 6, op. cit.; State Rpt. 34, op. cit.
12. 25X1A2g
13. FDD Trans. Sp. 6, op. cit.; 25X1A2g
14. FDD Trans. Sp. 6, op. cit.; Air Attache Prague, IR-70-50, CIA 464889, 31 May 1950; AF-127838, CIA 449678, Wright Field, 28 Apr 1950.
15. 25X1A2g

E. Electric Power.

1. UN Statistical Bulletin through Aug 1944; 25X1A2g
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Approved For Release 1999/09/27 : CIA-RDP79R01012A000900030002-6

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