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THE SOVIET STATE RESERVES SYSTEM

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FOREWORD

A study of the Soviet state reserves system is important to the US intelligence community in two ways. First, the nature and extent of state reserves must be considered in assessing the war potential of the USSR. Second, state reserves serve as a "flywheel" in the operation of the Soviet planned economy, and a better understanding of the working of the Soviet economy may be obtained by studying them.

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THE SOVIET STATE RESERVES SYSTEM*

Summary and Conclusions

Soviet state reserves consist of a large, maneuverable fund of commodities stored throughout the USSR under the direct control of the central government. They constitute a major part of Soviet reserve stocks of producer and consumer goods. In value and volume a few bulk commodities -- notably agricultural and petroleum products -- form a fairly large part of Soviet state reserves, but the state reserves program also covers a great number and variety of other commodities, of which some 1,400 have been identified.

The postwar expansion of the Soviet state reserves program began in 1947, when the construction of storage bases was initiated on a large scale. Under the Fifth Five Year Plan (1951-55), the USSR undertook to double the size of state reserves. There is abundant evidence that a large investment has been made in the program during this period. The aggregate volume of this investment, however, cannot be estimated, and estimates pertaining to Soviet reserves of commodities and commodity groups generally carry a very wide range of error.

In the Soviet economy, where almost every product of economic significance is allocated by the central planning authorities, centralized control over reserve stocks is logically and practically necessary. Current planning must cover allocations to (and from) reserve stocks, and long-term planning must allow for any kind of

* The estimates and conclusions contained in this report represent the best judgment of ORR as of 1 September 1955. (However, some of the data upon which the estimates and conclusions are based are of an earlier date.)

contingency, including natural disasters and war, in which reserves would be needed to sustain Soviet economic and military activity. In practice, moreover, close centralized control of reserve stocks is required in order to prevent their unauthorized accumulation or dissipation, which could easily distort or defeat the aims of the central planning authorities. Working stocks in the hands of enterprises are maintained, therefore, under strict control at calculated minimum levels.

There are three categories of Soviet state reserves. The first is designed to maintain continuity of planned production in the event of a serious interruption of normal supplies. The second is designed to permit the rapid conversion of the economy to a wartime basis, under mobilization plans. Both these categories of commodities are stored at plants and warehouses of the economic ministries. The third consists of stocks held at state reserves bases, for use in extreme emergencies when all other stocks have been exhausted.

Soviet state reserves are thus very much broader in character and purpose than the "strategic stockpiles" of Western countries. Moreover, state reserves operations penetrate the economy to such an extent that they necessarily involve a large pipeline operation: A considerable portion of current Soviet consumption of some commodities is regularly supplied by planned releases from state reserves.

The magnitude and coverage of the Soviet state reserves program require some flexibility in dealing with both the procurement and the release of commodities, and available information contains a few examples. There is, in particular, considerable evidence that state reserves, especially of grain, were drawn upon in 1953-54, to a much greater extent than in previous years, to meet the shifting requirements of Soviet economic policy. It is probable that these releases were large enough to interfere with the fulfillment of current plans for increasing state reserves and that the Fifth Five Year Plan goal of doubling state reserves will not be met. A recent statement by Premier Bulganin implied that state reserves will not be drawn upon again on so large a scale, at least in the near future.

The releases made in 1953-54, however, even though exceptionally large, cannot be regarded as unique in character, since it is clear that in doctrine and in practice one of the functions of state reserves is to serve as a "buffer" or "flywheel" and that state reserves operations are in plan and execution an integral part of the operation of the Soviet economy.

Although Soviet state reserves operations are an important concern in economic planning and policy at the highest level, the state reserves organization -- the Chief Directorate of State Material Reserves -- is not believed to have ministerial status at present. It is organized functionally, the first eight numbered directorates being each responsible for Union-wide storage and maintenance of reserves of a commodity or commodity group. Its operations are carried out through territorial directorates of which there are over 50, corresponding fairly closely to administrative divisions. Its own bases, of which over 300 have been identified, are located throughout the USSR. Their geographical distribution reveals that the largest single cluster is in the country's chief industrial area. Nearly half the known bases, however, lie east of the Urals, in regions which produce altogether only one-fifth of total Soviet output and support about one-fifth of the total population of the USSR.

Policies governing the level of Soviet state reserves are determined by the application of specific criteria: essentiality (in war and peace), scarcity, scale of production, storage conditions, the feasibility of quickly increasing production, and distribution (including transport) factors. On the basis of these criteria, objectives for individual commodities are set in terms of the economy's requirements over a given period. It is believed that the objectives for most commodities would run at least from 3 to 6 months' supply.

The only known source of financing the purchase of commodities for state reserves is the Union budget, in the residual item "other expenditures" under "financing the national economy." This allocation is believed to be on a gross basis. It was 3.5 billion rubles in 1941, the last year for which a breakdown is available. Since 1948 a crude analysis of this budgetary item indicates that annual

allocations to state reserves may have been two or three times this amount, and perhaps even higher in some years. At producers' prices the volume of state reserves purchases is obviously very great, especially since producers' prices for agricultural commodities, which bulk large in the state reserves program, are artificially low. Moreover, it is also possible

reserves purchases may be financed from sources other than this item in the budget. If this is true, then reserves expenditures are of a larger order of magnitude than the ranges indicated by budgetary analysis.

Although it cannot be measured or analyzed, the cost of the state reserves program -- not only of the net investment in commodities but also of processing, transportation, storage, and maintenance -- represents a significant charge on the Soviet economy. The state reserves program also has important direct effects on the allocation of resources, and it will continue to have such effects until the basic objectives have been attained. The high cost of the state reserves program, however, is fully justified -- in the Soviet view -- as one of the conditions of maintaining the adaptability and continuity of the Soviet economy, in peace as well as in war.

I. Introduction.

Stocks of various types of goods are a vital part of the Soviet comprehensive system of reserves. In addition to monetary reserves of gold and foreign exchange, the USSR also holds in reserve several types of material stocks, subdivided according to the purpose they are to serve.

The four general categories of Soviet material reserves are emergency (strakhovyye) stocks at the enterprise level, military stocks of the armed forces, the reserve of the Council of Ministers, and the state food and material reserves.

Emergency stocks are of two types, agricultural and industrial. In agriculture, such stocks consist of seed, fodder, and food supplies, which the kolkhozes are required by law to maintain at specified levels. The size of these stocks is indicated by a decree stipulating that kolkhozes must create, during 1947-48, untouchable emergency seed funds on the order of 10 to 15 percent of their annual needs.

Emergency stocks at the industrial enterprise level consist of supplies of raw materials and other materials consumed by the enterprise in its daily production. They are financed by the working capital of the enterprise. The emergency stocks are set aside, to be drawn upon only in case the current supply should become exhausted through late delivery, an increase in the plant's consumption of the material, or some other local contingency.

The size of the emergency stock is determined "on the basis of the least time needed for restoring the current supply, /including/ the time needed for ordering from the supplier, for the supplier to sort and ship the materials, for the transport of the materials, and for preparing them for consumption at the enterprise." The emergency stock may vary from zero, where prompt, regular delivery of the material is assured, to 15 or more days' supply, at enterprises which would require that length of time to obtain an urgent delivery of the material.**

The importance of emergency stocks in industry and agriculture is limited by the size of these stocks. Designed to act as a short-term buffer against temporary interruptions in normal supply, they would be exhausted quickly in the event of any extensive breakdown of the usual supply channels.

For serially numbered source references, see Appendix E.

** There is evidence, early in 1955, of a change in Soviet policy toward emergency reserves in industry, the ultimate effect of which would be to reduce sharply or eliminate these reserves.

Inventories of military end items are stored in an extensive network of regional depots, operated by the Soviet Ministry of Defense and located throughout the USSR. In addition to maintaining stocks of weapons, ammunition, tanks and vehicles, airplane parts, signal equipment, and fuel, military depots also contain supplies of rations and feed, clothing, medical supplies, and engineering goods. The current needs of the armed forces are met partly from these stocks. Inventories probably are kept at a high level to provide a first-line reserve in case of war. The stockpiling function of the Ministry of Defense thus is limited to inventories of military end items for supplying the armed forces.

The reserve of the Council of Ministers forms a third category of material reserves in the USSR.* From this reserve, which appears in the material balances, "the Government meets various demands in material resources, arising during the year and not foreseen by the annual plan -- for example, the overfulfillment of the production plan, the starting of construction of a new project /ob"yekt/, etc."

references have shown allocation of coal, motor gasoline, newsprint, canvas cloth, iron, and possibly motor vehicles to the reserve of the Council of Ministers. It appears that above-plan production and other unallocated supplies sometimes are placed in it.

The reserve of the Council of Ministers probably is not large enough to warrant setting aside special areas exclusively for its storage. There is evidence that some of the products contained in it are stored at the enterprises which produced them.

Although the size of this reserve is not known, a probable upper limit to its ruble value can be determined. It is believed that this

* The reserve of the Soviet Council of Ministers is described here. The insignificant reserves of the Union Republics' Councils of Ministers are not discussed, although the remarks made here also apply to these reserves.

reserve is financed out of the All-Union budget, from the subcategory "Reserve Fund of the Council of Ministers" under "Financing the National Economy." This ruble fund appears to be used chiefly for two purposes. First, it is used to purchase commodities allocated to the Council of Ministers' reserve. Second, it may be drawn on as an insurance fund when property of All-Union or Union Republic enterprises has been damaged or destroyed by a natural catastrophe. It is, however, a flexible fund, which occasionally has been used for other purposes designated by the Council of Ministers.* In the 1952 Soviet budget the Reserve Fund of the Council of Ministers was established in the amount of 6.1 billion rubles. It is not known what portions of this amount were used for each of the purposes just discussed.

The reserve of commodities held by the Council of Ministers probably is limited both in size and in range of products. Otherwise, it would duplicate certain functions of the state food and material reserves, which are described below.

The reserve of the Council of Ministers thus appears to be a relatively small stock of certain widely used materials. Its direct control by the Council of Ministers facilitates the urgent dispatch of these materials in an emergency, as designated by the Council. A secondary function of the reserve may be to hold unallocated production in order to prevent its being dissipated for unauthorized purposes.

The fourth general category of Soviet reserves is state food and material reserves. As a large, maneuverable fund of centrally controlled commodities located throughout the USSR, state reserves are designed to serve as a buffer "against any eventuality." 12/ While fulfilling the functions of a "strategic stockpile," the Soviet state reserves are much broader in scope than the traditional Western concept. They serve as the Soviet economy's ultimate source of supply, and, as such, they have certain unique characteristics.

* For further discussion of this fund, see source .

First, the Soviet state reserves are planned as a buffer against natural catastrophes and against military, political, and economic eventualities. Second, they are believed to contain stocks of approximately 1,400 individual products, covering several hundred commodity categories and including such critically important goods as mercury and motor vehicles as well as common, bulk articles like firewood and barley. Third, the control over state reserves is exercised directly from Moscow, and withdrawals from them may be made only with the consent of the Soviet Council of Ministers. Fourth, there is a constant flow of goods into state reserves (as sequestrations), between state reserves bases in different areas (as transfers), and out of state reserves into production and distribution (as refreshening, as loans, and as unrequited releases).* Fifth, there are several separate categories of state reserves, classified according to general type of product and specific use or consumer. Each category is administered in a particular way.

It is upon these large, flexible, all-inclusive state reserves that the USSR must depend to meet any large-scale or long-term emergency. In time of war they would furnish the material means for converting the economy to war production, for maintaining economic life in areas isolated by military action, and for limited, direct support of military forces. In peacetime they are called upon to lessen the effects of breakdowns in production and distribution and to give the USSR a certain degree of regional self-sufficiency. Figure 1** shows the position of state reserves in the Soviet system of material buffer stocks.

This report is limited to surveying the Soviet state food and material reserves in their various aspects.

* Releases and sequestrations are defined in III, B, below, and transfers are defined in III, E, below.

** Following p. 8.

Buffer Stocks in the Soviet Economy

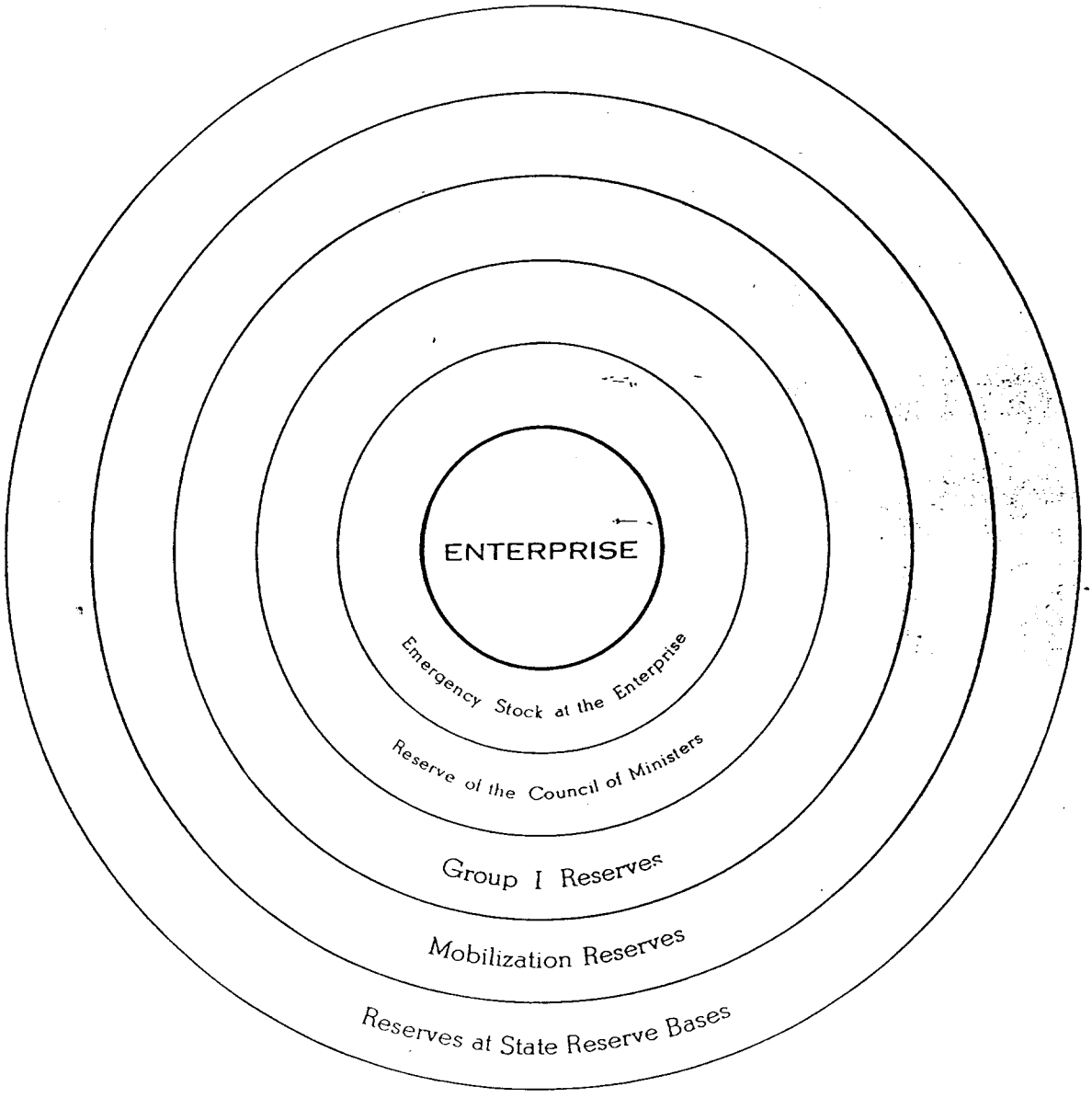


FIGURE 1

II. Rationale and Organizational Structure of the State Reserves System.

A. Rationale.

The Soviet state food and material reserves are a function of the Soviet planned economy. Their rationale is twofold: "for the planned conduct of the national economy and for the defense needs of the nation."

The difference in concept between this and a "strategic stockpile" is clearly brought out in Soviet economic literature. In a Soviet article on stockpiling in Western countries, a German economist is criticized for his views on stockpiling because "he thinks of the state reserve as an untouchable fund for wartime. The maneuverability of these stocks and their utilization for fulfilling various economic functions do not enter into this conception."

In the same article the US strategic stockpile is discussed at some length. The author concludes that, because of its small size and composition, the US stockpile "can have only strategic significance and cannot fulfill the functions of an 'economic flywheel.'"

Soviet literature is also quite explicit in defining this nonmilitary "economic flywheel" function of state reserves in the USSR. In achieving the "uninterrupted progress of social reproduction," the Soviet economy utilizes its state reserves as a "material fulcrum for efficient control over plan fulfillment," and to meet various contingencies. These are summarized in a recent article on economic planning :

> Difficulties and partial disproportions in the Soviet economy can be aggravated or further provoked by mistakes in organizational-economic activities and, in particular, in the planning of the national economy. It is impossible to ignore the possibility of stoppages in

> the development of certain branches of the economy due to natural disasters. For example, the importance of weather conditions for raising and harvesting crops is familiar to all. But, as experience shows, individual or partial disproportions arising in the Soviet economy are quickly eradicated on the basis of planning the economy. State reserves are the material means in the hands of the Soviet state which permit the prevention of imminent disproportions and the elimination of existing disproportions.

In working out material balances, for example, it sometimes happens that planned commitments of a material exceed the available supply. "Such divergences call for the supplying of goods from other sources, /such as/ ... release from state reserves, etc."

State reserves are also drawn upon to help overcome seasonal declines in production and particularly for maintaining production levels during the winter months.

An additional reason for maintaining state reserves, at least of grain, was disclosed in a joint decree of the Soviet Council of Ministers and the Central Committee of the Communist Party, dated 7 July 1947. The decree stated in part that

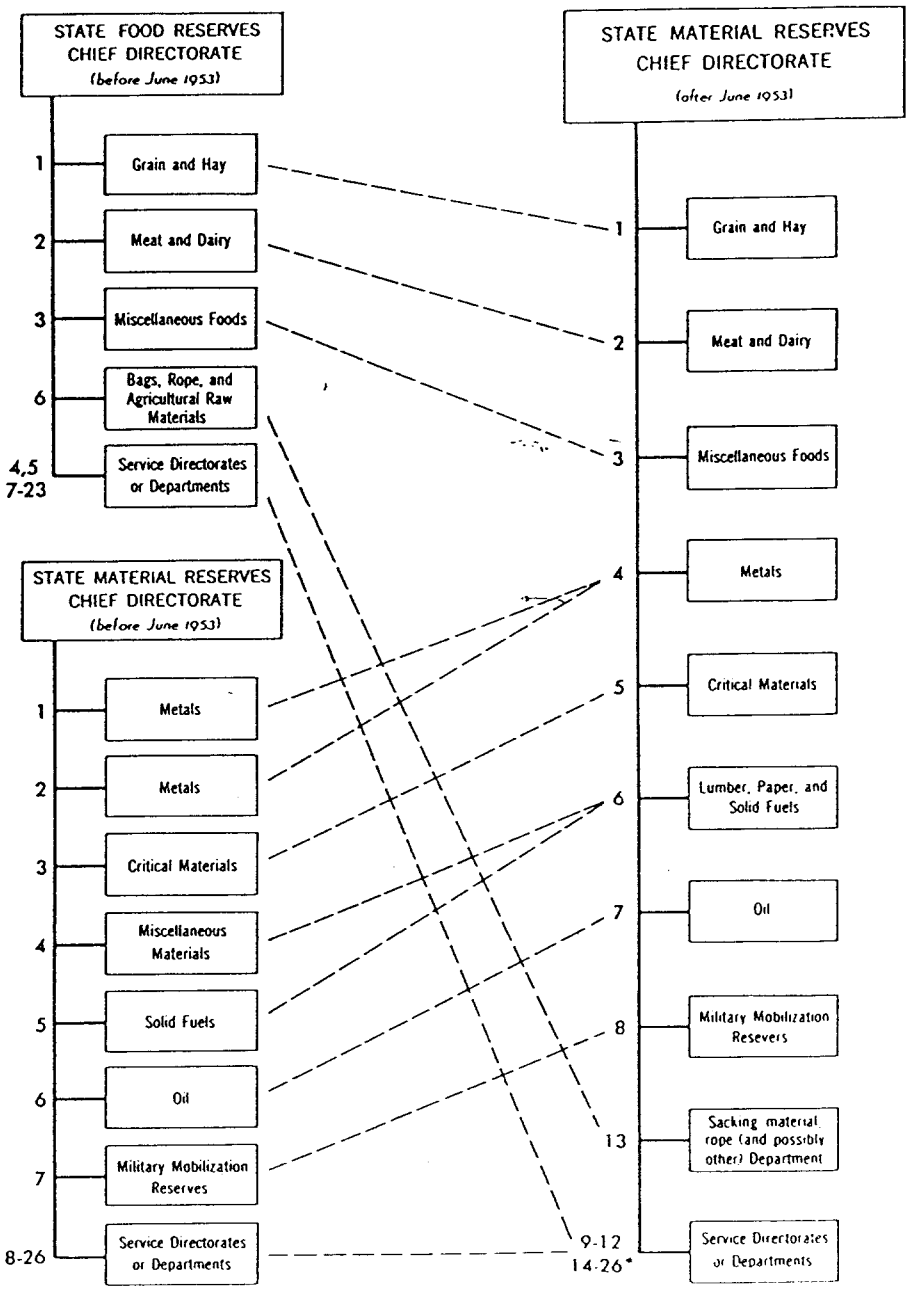
> ... the reserves are necessary for the further strengthening of the economic independence of our state: it has been proved that we are all the more reckoned with, the more grain we have in the state reserve.

This may mean, first, psychological satisfaction: that is, a full granary reassures Soviet leaders as to the stability of their regime. Second, it may mean that large grain reserves could be used by the USSR as a buffer against world price fluctuations.

The chief strategic functions of the state reserves program are indicated by the existence of the so-called mobilization, or conversion, reserves and by the Union-wide distribution of state reserves

USSR

Formation of the Chief Directorate of State Material Reserves



NOTE All numbered boxes are directorates unless otherwise stated

FIGURE 2

bases. In time of war the mobilization reserves would assist in converting the Soviet economy to war production as rapidly as possible. The state reserves stored at state reserves bases in each area of the USSR would be able, in event of war, to sustain production, feed the population, and lend support to local military units for a limited emergency period.

Although the state reserves system has been so constituted that it may serve in any of the situations described above, the use of state reserves in a given situation is not automatic. The decision, in each case, rests with the Soviet Council of Ministers. Furthermore, it appears that the policy of the Council of Ministers in regard to the use of state reserves may vary from time to time.

In February 1955, for instance, the new Soviet premier, Bulganin, spoke of the need to increase state reserves and warned against solving "individual, current problems at the expense of state reserves." Bulganin's words imply that in the past the Soviet leadership has allowed plans for enlarging state reserves to lag in order that other commitments could be met. It is therefore unlikely that state reserves will be doubled in size by the end of 1955, as originally set forth in the Fifth Five Year Plan.

There may be an additional implication in Bulganin's statement. There is evidence that widespread releases of certain state reserves products took place in 1953-54.* During these 2 years, not only were increments to state reserves permitted to fall short of those planned but also the existing level of state reserves actually may have decreased. If this is the case, then the statement of Bulganin may imply a more strict interpretation of the conditions which would warrant a release from state reserves.

There is, however, no evidence of a change in the concept of the functions of state reserves. The state reserves system is designed to play the twofold wartime and peacetime role described

* See III, B, below.

in the preceding pages. In a planned economy, where each branch of production is dependent on the others, a serious disproportion in one branch would affect the plans of all other branches. State reserves are the buffer against such disproportions in the USSR. In the event of war, various regions of the USSR might be cut off from their usual sources of supply. The state reserves bases distributed in each area would furnish the food and materials necessary to sustain the area for a period of at least several months.

B. Organizational Structure.

1. Organization.

The accumulation of all state reserves -- that is, reserves of food and material -- is the responsibility of GOSPLAN (State Planning Committee). The Chief Directorate of State Material Reserves, attached to the Soviet Council of Ministers, is charged with administering the state reserves program. It is through this Chief Directorate that the state exerts the centralized, planned control which is essential to the realization of the goals of the program.

This Chief Directorate was formed in June 1953 by the amalgamation of the Chief Directorate of State Food Reserves and the Chief Directorate of State Material Reserves. Figure 2* illustrates what happened when this merger took place.

Unlike the general reorganization of the Soviet government which followed the death of Stalin, this consolidation was effected with a minimum of confusion, indicating that it represented no basic changes. The responsibilities of both the field and the headquarters levels remained essentially the same, although certain necessary renumbering of departments and directorates occurred. The functions of the new Chief Directorate of State Material Reserves appear to be merely a combination of those of the two previous organizations. Prominent personalities of the earlier food reserves

* Following p. 12.

organization generally assumed equally important roles in the new chief directorate, including that of chief. In 1948, when the state reserves organization underwent a similar consolidation, the official in charge of food was put in the top position as chief. This seems to be reasonable, in view of the fact that food products constitute the largest component of the reserves organization. The Deputy Chief, Vovchenko, was brought in from Gossnab (State Committee for Supply), perhaps indicating the increasingly large-scale distribution problem with which the state reserves organization is faced.

Most of the ministries which were consolidated after Stalin's death have since been subdivided. This is not true of the Chief Directorate of State Material Reserves, although its organization had been divided and consolidated several times before.

It appears that the state reserves program currently is stable, although reductions in force are known to have taken place in several state reserves field offices during 1954. Such reductions have been limited to administrative personnel, in keeping with the present Soviet effort to lower the costs of government administration.

The general extent of reductions in state reserves personnel is not known. In the Irkutsk Territorial Directorate the administrative staff was reduced by 9.5 units in 1954 -- a reduction of approximately 20 percent.

The status of the state reserves organization is open to some question. When the state reserves organization was a ministry its minister enjoyed cabinet rank, if a seat on the Soviet Council of Ministers can be so described. In March 1952, after the Ministry of State Reserves had been replaced by two chief directorates of state reserves, its representation on the Council of Ministers was revoked by a decree of the Supreme Soviet. Although several other organizations not designated as ministries maintain a seat on the Council of Ministers, it appears that the state reserves organization

no longer has this privilege.* It is possible that the head of Gosplan represents state reserves interests on the Council.

There is evidence that state reserves affairs at the Presidium level are a responsibility of Lazar Kaganovich. In view of the increasing complexity of materials flows in the state reserves system, Kaganovich's past experience as chairman of Gossnab would seem to make him a logical choice for top state reserves responsibility.

The Moscow headquarters of the Chief Directorate of State Material Reserves is set up along functional lines with numbered directorates, which are concerned either with the accumulation, maintenance, and release of reserves or with administrative functions (personnel, bookkeeping, construction, and so on). The highly specialized nature of this Chief Directorate is shown by the fact that the Thirteenth Department and the first eight numbered directorates are each responsible for the Union-wide storage and maintenance of a commodity or group of commodities, in accord with qualitative and quantitative levels set by the national economic plan. (See Figure 2.**)

In addition to the Moscow offices, the Chief Directorate of State Material Reserves has a network of regional offices located in various cities throughout the USSR. These subordinate offices, referred to as territorial directorates, are each responsible for conducting state reserves operations and maintaining physical reserves within a particular geographical area. These geographical areas correspond generally to the Soviet administrative divisions. The territorial directorates are believed to be organized along lines similar to the parent organization in Moscow. For example, the approved table of organization for the Irkutsk

* By a decree of the Supreme Soviet of 27 April 1954, the Council of Ministers included, in addition to all Ministers, the chiefs of Gosplan, Gosbank, the State Security Committee, and the State Committee for Construction Affairs.

** Following p. 12, above.

Territorial Directorate in 1954 consisted of six departments: Consolidated Food, Consolidated Industrial Raw Material, Eighth, Ninth, Spetsotdel (Special Department), and Accounting Office These territorial directorates, which cover the USSR, are the primary links in the policy of attaining regional self-sufficiency. Through them the USSR attempts to create a pattern and level of reserves which will guarantee the uninterrupted operation of each regional economy in any eventuality.

Within each geographical area are located storage bases belonging to the Chief Directorate of State Material Reserves. Reserves belonging to the Chief Directorate of State Material Reserves are stored also in facilities of various ministries, requisitioned for the purpose. The enterprises and installations at which these facilities are located are known as "responsible custodians."

State reserves are administered by the appropriate territorial directorate. Operations are carried out through direct orders from Moscow, usually issued by the appropriate directorate or department to the chief or deputy chief of a territorial directorate. In reporting to Moscow, the chief or deputy chief of the territorial directorate reports to the person associated with the directorate or department which originated the order.

2. Categories.

The reserves controlled through the territorial directorates include capital equipment, industrial materials, and foodstuffs. These reserves are divided into three categories.

The first category (designated as Group I) includes reserves of goods held in the responsible custody of plants and warehouses of economic ministries. These reserves are in addition to, and are carefully differentiated from, current and emergency stocks of the enterprise, and are owned and controlled by the Chief Directorate of State Material Reserves. They consist of planned amounts of inputs required under the normal production plan of the enterprise and of its finished products.

The second category (designated as Group 2) consists of mobilization reserves. This category is administered by the Eighth Directorate of the Chief Directorate of State Material Reserves. (See Figure 2.*) These reserves are located at plants and warehouses of economic ministries but are not designed to guarantee continuation of normal production. Instead, they consist of tools, equipment, and materials necessary to convert an industrial enterprise from peace to wartime production in accordance with its mobilization plan.

The third category consists of reserves held at the special state reserves bases which are intended to include those goods required to insure the uninterrupted operation of the regional economy if and when depletion of all other sources has occurred. These reserves are a last line of defense, to be used only after the exhaustion of all others.

3. Operations.

a. State Food Reserves.

Food reserves, which are administered by the First, Second, and Third Directorates** of the Chief Directorate of State Material Reserves, are stored both at state reserves bases and with responsible custodians.

In order to assure adequate food supply under all conditions, food reserves have been established to cover each step of the production and distribution process within a given industry as well as within each area or region. A study of grain as a primary component of the Soviet food supply system reveals that at each step along the line between the production of seed grain and the production of flour for the ultimate consumers, reserves are held which are in addition to the regular, seasonal, and emergency stocks which these distributor and consumer organizations are required to maintain. If food supplies were disrupted at any point in this chain, each of the

* Following p. 12, above.

** The First Directorate handles grain and hay reserves; the Second, meat and dairy reserves; and the Third, miscellaneous food reserves.

links could continue operations to the extent of the state reserves held against this contingency.

The participation of the reserves program in the supply of meat is equally marked. The state reserves organization has superimposed on the regular meat distribution system a special control over a portion of the product at every stage of production, including cattle on the hoof, cattle entering the fattening stage, unprocessed meat, tinplate necessary for canning, and the end products -- cold-storage and canned meat.

The products stored at state food reserves bases appear to be the ultimate reserves of food in the USSR, to be drawn upon only when all other sources have been exhausted or have failed to meet the demands of an emergency situation.

Various emergencies have occurred in recent years. Frequently, where the situation was acknowledged as very serious , reserves of grain apparently were not released. In other instances, unrequited releases may have been made from reserves. For example, the Soviet state reserves system was revealed to be the supplier of grain and feed to the Satellites before the East German riots in June 1953. It is not unusual for seed grain to be released as a loan, conditional upon repayment plus a charge in kind for the loan. It appears that in 1953 and 1954 the USSR used state reserves of grain more freely than in most previous years to satisfy the needs of the economy. *

The qualitative preservation of commodities in storage is an important factor in their instant availability for effective use, and every effort is made to refreshen them on schedule.

* See p. 65, below.

Considerable quantities of products are made available every year through refreshening of the stored food products. These quantities are undoubtedly taken into account in planning. In exchange for the products returned to consumer channels, there is placed in state reserves an equal quantity of the product from current production.

b. State Material Reserves.

The Chief Directorate of State Material Reserves in Moscow includes 5 separate directorates and 1 department currently responsible for the administration of materials in state reserves storage. These are the Fourth Directorate (metals), the Fifth (critical materials), the Sixth (lumber, paper, and hard fuel), the Seventh (oil), the Eighth (military mobilization reserves), and the Thirteenth Department (sacking material, rope, and possibly other items formerly under the Sixth Directorate of State Food Reserves). Under the jurisdiction of these directorates and departments, there is a wide variety of materials in raw, semifinished, and finished forms stored throughout the country at state reserves bases and in the warehouses of responsible custodians.

Storage bases have been observed holding many items of bulk storage such as petroleum products, ferrous and nonferrous metals, rolled steel, ferroalloys, wire, pipes, chemicals, rubber and rubber products, pharmaceuticals, and paper products. Procedural details are similar for both food and materials held at storage bases. It is in connection with commodities in responsible custody, Group 1 or Group 2, that special activities of material reserves show up. The materials held in responsible custody are divided into two specialized categories, Group 1 and Group 2, and the purpose of these categories largely determines the type of commodity included within them.

(1) Group 1.

Group 1 materials are planned amounts of the normal material inputs or outputs of a given plant or enterprise. They are paid for and administered by the state reserves organization and are held at the warehouses of the individual plant or enterprise in responsible custody.

lumber reserves demonstrates several aspects of the operation of the Group 1 category within the state reserves system, such as quality control and loan activities, as well as indicating the place of state reserves in the priority pattern of the Soviet economy.

Lumber mills have been observed holding in Group 1 the types of lumber they would use or produce -- from untrimmed logs and firewood through common and quality lumber to agricultural machine building, ship building, and railroad car lumber. The specifications for Group 1 commodities are quite rigid, and sometimes production is geared especially to these specifications. / When an inferior grade is sequestered in order to fill a quota or to meet a deadline for return, permission must be secured from the chief directorate in Moscow. It is granted only on the condition that the inferior product be replaced with the specified grade at a later date.

The timber industry chronically fails to meet its production quota -- in 1954 it reached only 96 percent fulfillment of its annual plan -- and it borrows frequently from Group I to meet assignments. This borrowing follows the standard state reserves procedure of requiring permission from the chief directorate in Moscow and returning the products within an established time.

Because the timber industry continually has difficulty in meeting its quotas, the demands of consumers on its available resources provide a measure of the relative priority status enjoyed by various sections of the economy at any given period. Throughout the postwar years, state reserves orders have retained a high priority rating, even to the extent of altering the plan.

During the early stages of the new consumer goods program in 1953, a certain relaxation of attention toward state reserves developed within the government bureaucracy.

Although state reserves lumber activities have been described above to illustrate the nature of Group 1, this category of material reserves is not confined to lumber alone. Other materials observed in Group 1 include ferrous and nonferrous metals, chemicals and pharmaceuticals, rubber, hard fuels, leather, rope, and sacking material. *

(2) Group 2.

The second category of material reserves in responsible custody is Group 2, or military mobilization reserves, currently under the jurisdiction of the Eighth Directorate of the Chief Directorate of State Material Reserves. These reserves are for the purpose of converting a given enterprise from peacetime to wartime production in accordance with its own mobilization plan and of maintaining the war production operation for a specified period of time. Accordingly, they are specialized stocks designed for the particular

* Petroleum products are also held in responsible custody, although such storage is not referred to as Group 1. The military depots, storage tanks of the Ministry of the Petroleum Industry, and oil storage facilities of the machine tractor stations, sovkhozes, and other agricultural enterprises hold state reserves petroleum in various special-purpose funds and plans.

enterprise. The tools, equipment, and materials so designated are locked in separate warehouses. Although controlled (and, perhaps, owned) by the Chief Directorate of State Material Reserves, they are under the immediate supervision of the military mobilization director at the individual factory or plant. He, in turn, is jointly responsible to the territorial directorate of the state reserves organization and to the chief of the mobilization department within his own ministry.

The mobilization reserves supplies may be borrowed during peacetime for production needs by the enterprises storing them. This may be done only after securing permission from the Chief Directorate of State Material Reserves in Moscow, and it is, moreover, conditional upon repayment within a few days or within the first or second quarter following the release of the commodity. When a borrower fails to make the required repayment or to get an extension of the time limit for return, the papers related to the transaction are turned over to the public prosecutor.

Items involved in loan transactions authorized by the Eighth Directorate illustrate a variety of commodities under its jurisdiction.* The quantities borrowed from mobilization reserves are varied and follow no set pattern.**

The heaviest and most consistent borrowers from mobilization reserves over the years have been found in communications, transportation, and heavy industrial enterprises -- railroads, communications directorates, coal and metallurgical combines, shipyards, and enterprises of the machine-building industry.

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* For example, sulfuric acid, ethylene dibromide, phenol, pit props, crossties, Babbitt, rails, brass bars, raw aluminum, carbon steel, tinplate, technological coke, electric detonators, soap, tires, drying oil, super-heating steampipe, and cotton wadding have all been borrowed from time to time.

** In separate transactions, there have been observed potassium chlorate -- 4 metric tons (tonnages throughout this report are given in metric tons) and 27 tons; pit props -- 350 cubic meters, 754 cubic meters, 1,250 cubic meters, and 2,207 cubic meters; wire -- 2 tons and 20 tons; steel alloy -- 5 tons and 110 tons; cast iron -- 100 tons and 7,300 tons; starch -- 5 tons; and 1 compressor.

In addition, various medium and light industrial enterprises such as electric power stations and food processing plants also have received loans from time to time.

Second, after Stalin's death in March 1953, his successors embarked on a complete reorganization of the government apparatus, reaching down into every level of the bureaucracy. The administration of economic activity was affected, along with other phases of the administrative system, and the resultant upheaval caused a marked decline in the rate of production increase.* Simultaneous with the slowing down of the rate of growth in production and its consequent interruption in the flow of materials, the peak level of borrowing was observed, indicating the possibility that disruptions in production were being relieved, to a certain extent at least, by loans from military mobilization reserves. There were 110 individual loan transactions noted in 1953, in contrast to 26 for the previous year,

The possibility that supply problems in the economy were being eased through using military mobilization reserves is strengthened by evidence on the level of activity in 19[illegible],

* For further details on the 1953 lag in production, see source

when the total observed borrowings fell to 18

. With the Korean War already terminated, the administrative reorganization completed, and the internal economic flow patterns rearranged, the volume of borrowing appeared to decline toward its pre-Korean level.

It must be emphasized that even while military mobilization reserves apparently were being brought into use on a loan basis to support the Korean conflict and relieve dislocations in the economy caused by the 1953 reorganization, the Eighth Directorate in no way loosened its control over the supplies under its jurisdiction and, while granting loans, was as insistent as ever upon proper return of commodities within the established payment periods.

III. Measures of the State Reserves System.

A. Extent of the System.

As indicated above, it appears that Soviet leaders believe state food and material reserves to be essential for the success of the Soviet economy.

These reserves must be large, varied, and constantly increasing, if they are to fulfill the functions assigned to them. In conditions of an expanding industrial production and a growing population, small, static state reserves would not be effective in meeting large-scale emergencies. Thus the goals of the Fifth Five Year Plan called for "doubling the state food and material reserves."

It is quite probable that the size of state reserves will continue to increase in the future, although there are two important qualifications to this. First, the growth of state reserves will be extremely pronounced in some products, while reserves of other products will be increased little, if at all. For example, it is believed that during the Fifth Five Year Plan the emphasis has been on a sharp increase of food reserves, especially of grain, meat, and butter, although it is doubtful that planned goals were reached.

Second, while the absolute volume of goods in state reserves will probably continue to rise, the size of state reserves relative to Soviet production is not likely to increase. Indeed, the proportion of goods sequestered into state reserves may well be lowered in the long run. As Soviet economic planning is improved, the continuity of the production and distribution processes will become more certain. Also, additional productive and distributive facilities will be developed in the course of time. These factors will probably make it unnecessary to maintain so large a share of Soviet output in state reserves.

In this connection it should be borne in mind that state reserves represent a great expense to the Soviet economy. The flow of goods which is diverted into the state reserves each year would, if directed into productive uses, make a significant contribution to Soviet economic expansion. In addition to having productive resources lie idle, the USSR must bear the high cost of transporting, processing, storing, and maintaining these products. These activities require the use of transport capacity and the construction of suitable storage buildings and living quarters for the guards, inspectors, freight handlers, and other personnel needed to maintain reserves.

It is obvious that Soviet leaders would not lightly incur such costs except for an important purpose. The Soviet leaders must therefore consider the state reserves program to be a vital adjunct to the Soviet economy in war and peace.

This leads to the question of how Soviet planners determine the total size of state reserves. The evidence seems to indicate that this is decided at the apex of the Soviet planning hierarchy on the basis of certain definite criteria, officially stated as follows

> (1) the significance of the product for the economy and for its military capacity; (2) the scarcity (defitsitnost') of the product; (3) the scale of its production; (4) storage conditions; (5) the possibility of quickly increasing its production in case of need; and (6) the distribution of its production in the country and the distance of the production from the centers of consumption.

Furthermore, it appears that the size of state reserves is formulated in terms of the economy's requirements for a particular product over a given period. For example, a Soviet economist has stated that "it is necessary to have a minimum of a two months' /state/ reserve of fuel." Similarly, in a Soviet article on stockpiling in Western nations, it is repeatedly emphasized that the stockpile of a given commodity "makes up /so many/ months' consumption of industry."

This distinction becomes especially important when one attempts to estimate how much of a given product is held in the Soviet state reserves system. At the present time it is axiomatic that, the greater the Soviet economy's requirements for a product, the greater the quantity of that product is in state reserves.* This explains the presence in state reserves of vast quantities of grain, oil, and lumber, all of which are produced in great volume in the USSR and are not generally subject to import. Because the economy uses large amounts of these goods, a correspondingly large amount is held in reserve. On the same basis, it is probable that the state reserves also contain stocks of relatively scarce products, such as molybdenum, in quantities roughly proportionate to the needs of the Soviet economy for a specified period of time.

Estimates of the time period for which state reserves would be able to sustain the Soviet economy vary widely (see Appendix A). It is possible, however, that supplies held at state reserves bases are equal to from 3 months' consumption, in the case of certain standard industrial equipment, up to a year's consumption or more in grain, imported items of military significance, and possibly other products. It is believed that most products are held in the state reserves at a level capable of supplying the economy for a period of at least 3 to 6 months.

* And, also, the greater the wartime consumption of a product, the greater its quantity in state reserves is likely to be.

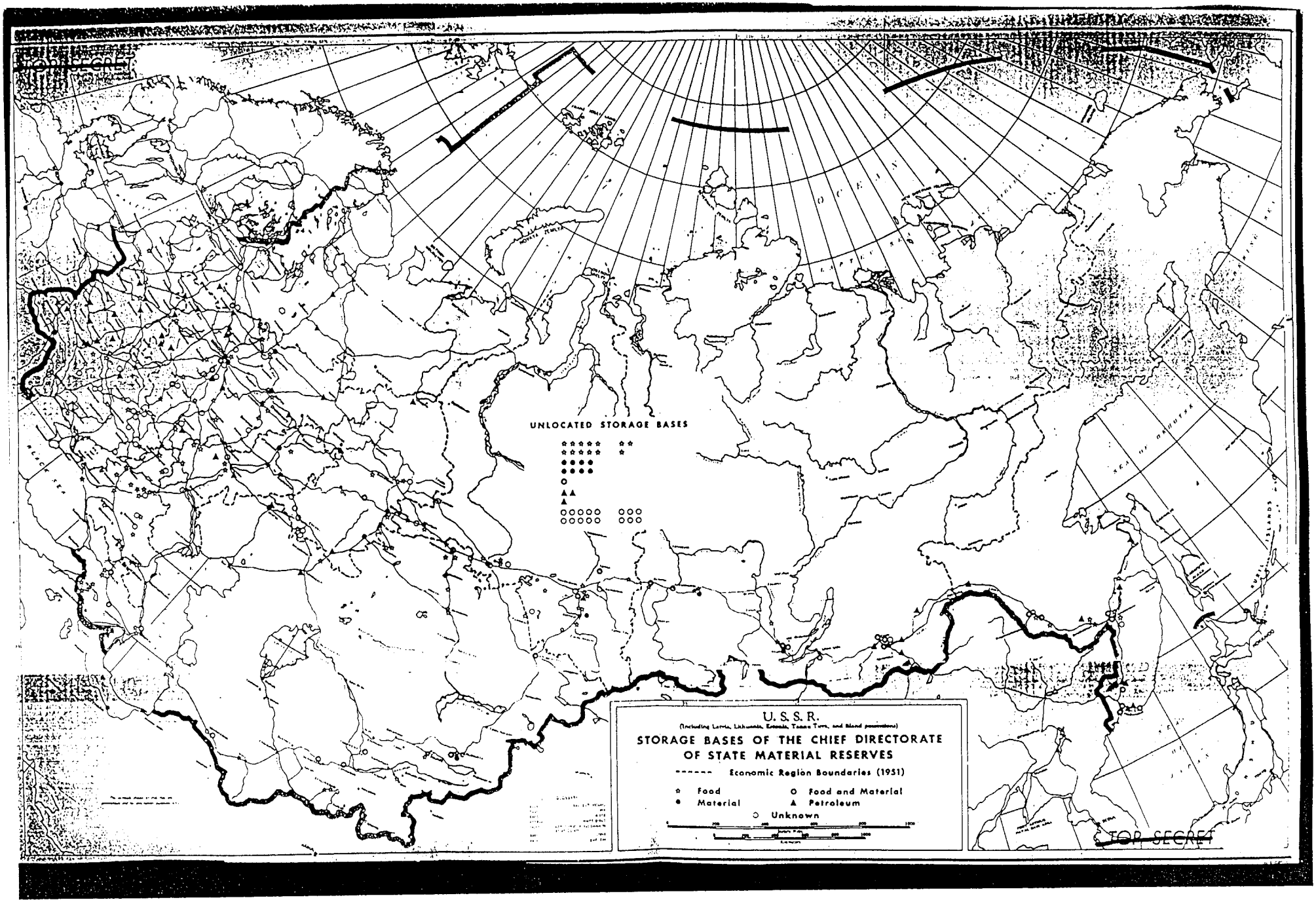
Although there is no precise measure of the volume of goods in state reserves, there are several important facets of the program about which a significant amount of information is available. An examination of these features should serve two purposes. First, it will indicate the scale of the state reserves program, and, second, it will show more clearly the extent of state reserves operations. While all of these activities are discussed in detail below, it may be useful to discuss them here insofar as they shed light on the magnitude of the state reserves program.

The extent of the state reserves system is reflected in the number of state reserves storage bases in the USSR, as shown in Figure 3.* The products stored at these 313 bases, together with those stored at facilities of the Ministry of Agricultural Procurement, Ministry of the Defense Industry, Ministry of the Timber Industry, and other responsible custodians, constitute a vast reserve under the administration of the Chief Directorate of State Material Reserves.

An additional indication of the magnitude of the state reserves program is the wide range of commodities, believed to number around 1,400, which are subject to sequestration into state reserves. These vary considerably in degree of fabrication, in unit value, in manner and place of storage, and in end use. For example, state reserves have contained such bulk raw materials as coarse grain, firewood, and crude oil as well as highly fabricated articles such as delicatessen canned meat, electrical equipment, and aviation gasoline.

The extent of state reserves activity is revealed further by movements of products within the state reserves system, called transfers. The transfers indicate that a large volume of state reserves moves throughout the USSR each year. During 1954, state reserves products were transferred among at least 34 territorial directorates,

* Following p. 28.


TOP SECRET
UNLOCATED STORAGE BASES
U.S.S.R.
(Including Latvia, Lithuania, Estonia, Tannu Tuva, and Mixed possessions)
STORAGE BASES OF THE CHIEF DIRECTORATE
OF STATE MATERIAL RESERVES
Economic Region Boundaries (1951)
Food
Food and Material
Material
Petroleum
Unknown
TOP SECRET

Although a complete picture of transfers in 1954 is not available, the scope of these transfers illustrates the Union-wide scale of state reserves movements and the centralized, top-level planning which they must entail.

B. Accumulation and Withdrawal of Selected State Reserves.

There are no official Soviet statistics available concerning the movements of goods into and out of state reserves. An attempt has been made to determine whether there has been any trend in the relationship between sequestrations** and releases*** in selected commodities for selected years. Grain, meat, butter, and sugar have been included in this report because they constitute the bulk of food products held in state reserves, and sufficient information is available to warrant a study of them.

The long-range goal of the USSR is to increase state reserves. There is a presumption, therefore, that accumulations to reserves over the course of a year will exceed withdrawals from reserves -- that is, sequestrations will exceed releases. If, on the other hand, sequestrations are less than releases, it is to be inferred that state reserves have been drawn down.

** A sequestration is a documentary commitment of a product to the state reserves system.

*** A release is a documentary withdrawal of a product from the state reserves system.

The distribution of state reserves bases by economic region* is set forth in Table 5, below.

Table 5

Soviet State Reserves Bases According to Economic Region and Type of Commodity Stored a/

Economic Region	Oil	Food	Food and Material	Material	Commodity Unknown	Total
I	3	0	1	0	1	5
II	7	5	1	0	2	15
III	8(2)	9(1)	0	1	13(2)	36
IV	0	18	0	0(1)	4	23
V	0	8(2)	3	1(1)	1(2)	18
VI	2	9	0	1	3	15
VII	12	16	3	3(3)	9(2)	48
VIII	4	5	1	2(1)	7(3)	23
IX	1	15(4)	2	2(1)	8	33
X	2(1)	17(1)	8	2(1)	0	32
XI	7	5(4)	8	2	1(1)	28
XII	12	7(1)	8(1)	0	2(6)	37
Total	61	127	36	22	67	313

a. The figures in parentheses represent additional bases of the specified type located in an area but whose exact location is not known. The remaining figures represent bases that have been definitely located. Both figures have been included in the totals.

* The term region in this report refers to the economic regions defined and numbered on CIA Map 12045, 9-51 (First Revision, 7-52), USSR: Economic Regions.

The largest single cluster of state reserves bases -- 48 -- is in the industrial area of Region VII, centered about Moscow. Of these 48 bases, at least 16 contain only food reserves, 12 hold oil reserves, 6 are believed to store only material, and 3 hold both food and materials. This vital area of the USSR, with its heavy concentration of industry and its dense population, is backed up by large, diverse state reserves.

Region XII ranks second, with 37 state reserves bases. This outlying region, in contrast to the highly industrialized and heavily populated Region VII, includes the Far East areas of the USSR, in which economic activity is light and the population is small. There probably are two reasons for the large number of state reserves bases in this region. First, this area is not economically self-sufficient but must receive supplies from other parts of the USSR. Region XII is thus particularly vulnerable to transportation breakdowns or to interdiction. Last, but certainly not least, these bases are needed to support military and naval forces as well as the local population in an area which would be extremely vulnerable to attack in the event of a general war.

Nearly half the known state reserves bases in the USSR lie east of the Urals, in Regions IX, X, XI, and XII. Although this vast territory supports only 20 percent of the total population of the USSR and produces about 21 percent of all Soviet output, it contains 42 percent of the known state reserves bases of the USSR.

Of the 36 bases known to store both food and material reserves, 27, or 75 percent, are located east of the Urals. A base which holds different types of commodities in storage must have on hand the special facilities, personnel, and equipment needed to process each type. A state reserves base storing both food and materials therefore probably would require a greater variety of storage buildings, a larger amount of equipment, and a bigger staff than would a base limited to maintaining only one type of product. The large percentage of diversified food and material bases east of the Urals suggests that state reserves

bases in the east may be larger and more complex than those in the western part of the USSR.

Approximately 43 percent of the state reserves bases believed to store only food also are situated in the 4 eastern regions of the USSR. This figure appears large in relation to the agricultural production of these 4 regions, which supplied only 23 percent of total Soviet agricultural production in 1953. Apparently large state reserves of food products are maintained in these food-deficit areas as a buffer against a break in the flow of food from western regions. A similar relationship exists between the percentage of state material reserves bases located in the eastern regions, and the share of these regions in total Soviet industrial production. Of the total number of state reserves bases believed to store only materials, 36 percent are located in the eastern regions, while these territories contribute about 17 percent of the value of total manufactures.

It thus appears that the number of state reserves bases in a region does not always correspond to the volume of economic activity in that region. While the heavily populated, industrial Region VII is supported by a large number of state reserves bases, the same is true of the relatively unpopulated and low-production territories east of the Urals. The apparent lack of a single criterion for determining the size of state reserves in a given area is actually a reflection of the multiple rationale of state reserves. It was pointed out above that there are various criteria on which the size and composition of the state reserves depend. In Region VII the large volume of state reserves is a function not only of the population density and the high level of industrial activity in this region but also of Soviet determination to maintain control over this industrial and political complex which is centered about Moscow. The relatively high percentage of state reserves bases east of the Urals may be explained by the combined factors of lack of economic self-sufficiency and distance from suppliers. Large state reserves would enable these outlying regions to sustain the regional economic life in case supplies from the rest of the USSR were cut off by war or by some natural catastrophe

(such as earthquake or flood), and would again provide the possibility for support of Soviet Europe in the event of another invasion from the West.

The prevalence of food bases in the total network of state reserves bases is evident from Table 9.* Of the total number of bases observed, 41 percent are believed to store only food reserves and 52 percent are believed to store food in whole or in part. This may be compared with 19 percent known to store materials in whole or in part and 19 percent believed to store only state reserves of oil, although significant state petroleum reserves are believed to be stored at military depots. The large number of food reserves bases is an indication of the relative importance of food products in the state reserves system.

The relatively small number of bases believed to store only material reserves -- 22 in the entire USSR -- is probably a result of two basic factors. First, the share of material reserves in the total state reserves is relatively small; the great bulk of state reserves is believed to consist of food. Second, a large percentage of material reserves is held in responsible custody, in Groups 1 and 2 discussed previously.** An additional factor is the existence of various material stocks outside the state reserves system -- emergency stocks, reserves of the Council of Ministers, and others.

The several bases storing only materials are relatively evenly distributed among the 12 economic regions. Three regions have 3 material bases each, 3 regions have 1 material base each, 2 have 2 material bases each, 1 has no such base, and Region VII has 6 material bases. This distribution of material bases among the several economic regions suggests that these bases may have a common function, such as the storing of certain critical materials (including metals, chemicals, and vehicle tires). The evidence on this, however, is inconclusive.

* P. 45, above.

** P. 15, above.

Petroleum products are stored in at least 61 state reserves bases. These oil bases are chiefly concentrated in three economic regions -- VII, XII, and III. Region VII, with its concentrated industrial activity, itself not a producer of crude petroleum, is a large consumer of oil products, and hence large state reserves of oil are located there. The oil bases in Region XII are clustered about the southern part of Primorskiy Kray, for support of the naval and military forces in that area. The presence of 10 oil bases in the western border area, Region III, is probably due to several factors. First, there are many military airfields in this region. Second, this area has been historically the chief land route for attack upon the USSR. Third, it is the most heavily mechanized agricultural area of the USSR.

The distribution of state reserves bases shown in Figure 3* thus provides an indication of the nature and extent of the Soviet state reserves program. It should be emphasized that the products stored at state reserves bases are only a part, though a large part, of the total state reserves. In addition to these reserves bases, numerous military depots and military units are known to be storing products for the Chief Directorate of State Material Reserves. Also, as previously mentioned, there is a large volume of state reserves held in responsible custody at enterprises of other ministries.

* Following p. 28, above.

IV. Quantitative Estimates of Soviet Reserves.

As indicated above (III, A), there is no precise measure of the size of state reserves. The budget allocations to the state reserves organization, the existence of 313 state reserves bases, the magnitude of state reserves flows , and the intensity of accumulation and withdrawal of state reserves all testify to the importance of the state reserves system in the Soviet economy.

The question of the size of Soviet reserves, in general, has been too vital a problem to be ignored despite the lack of data on which to base an estimate. In attempting to overcome this lack of data, various assumptions have been made and various methodologies have been used to estimate Soviet reserves. The following discussion is a fairly extensive, though by no means complete, sample of these estimates. It must be emphasized that there is no attempt made here to evaluate or reach agreement with the estimates presented. These estimates are summarized in order to illustrate the types of information available to the analyst and the range of estimates and methodologies currently being used. The over-all reserves estimates will be discussed first, and the commodity estimates, second.

periodically include speculations on Soviet reserves, generally in connection with the sporadic activity of Soviet purchasing agents in buying, or attempting to buy, strategic commodities in large amounts on the world market. Such reports can be helpful as indicators of Soviet interests or shortages and in tracing specific commodities, thus having some indirect bearing on the Soviet state reserves program.

The value of information in prisoner-of-war reports is usually negligible. The advantage of their being on-the-spot observations is neutralized by the disadvantages of (1) the prisoners not always being interested or competent observers, and (2) the prisoners being under guard and kept away from restricted areas.

Despite the fact that the state reserves system is a closely guarded state secret, occasional references have appeared in Soviet literature. Sources such as published plan figures, economic journals, and financial texts carry statements that are very helpful in any attempt to assess the size of the Soviet reserves. For example, a chart in a 1949 article on Soviet state income shows 6 percent of the national income going into "reserves."

Plants producing certain specified ferrous, nonferrous, and rare metals, critical materials, and liquid and solid fuels were required to have a quantity equal to 3 months' production in special warehouses.

Plants consuming these items had to have a quantity for from 1 to 6 months' consumption in uninterrupted production.

State reserves bases keep a 1- to 12-month supply of these same items, guaranteeing an uninterrupted supply to industry during the course of this period.

Tools needed for 1 year's uninterrupted production and equipment for a 10 to 50 percent (usually 20 percent) increase over normal production must be maintained.

Certain standard equipment, such as electric motors and light pumps, is kept at state reserves bases in an amount equal to as much as 10 percent of the yearly consumption of industry. Subsequent information dated 1945 raises the total of the materials held by a given industry. These materials are to be sufficient to insure work under wartime conditions for from 3 months to 2 years. The number of machines and amount of equipment is determined at the rate of 10 percent, or sometimes more, of that already mounted in the factory.

The grain reserve is given by as that amount required for a 4-year supply while another report raises this to a 5-year supply. Ten percent of the horses and wagons on a kolkhoz are earmarked for the army's use in mobilization and must be maintained in good condition at the expense of the kolkhoz.

Using such material as can be gained from news accounts and open literature, prisoner-of-war and defector interrogations, and from production and consumption calculations, various intelligence agencies have come up with both general and detailed pictures of the quantitative side of the Soviet current reserves effort. A publication in 1949 included a grain reserves estimate (in million tons) as follows:

1940	17
1946	5
1949	7 to 9

No methodology or basis for these figures was given. In 1951 the Army published a descriptive article on both military and economic reserves but omitted quantities beyond stating that 80 percent of the military reserves was of ammunition and petroleum.

CIA has contributed similar types of general or detailed quantitative statements, either

included in discussions of Soviet capabilities or as part of National Intelligence Estimates. An example of the first is the estimate of a total reserves figure valued at between 10 billion and 15 billion rubles with about 2 billion to 3.7 billion of this representing direct military reserves, found in an analysis of the Soviet military expenditures. The NIE contribution comments on the inability to estimate the magnitude of Soviet reserves but adds that the increase in investment through mid-1955 will support an enlarged program and that the Fifth Five Year Plan called for such an increase -- the doubling of Soviet reserves.

Detailed estimates on the possible reserve stocks of individual commodities have been made from time to time by the commodity branches of ORR, either in the course of individual studies or in response to a requirement. Such estimates have generally been confined to the total amount of a product withheld from current use in the economy, including industrial working stocks and military stockpiles of the Ministry of Defense, as well as state reserves. Given below are representative examples of estimates made by individual ORR commodity branches, accompanied by their methodology and such discussion as might shed further light on the nature of the data.

1. Metals.

a. Aluminum.

Soviet stocks of aluminum are thought to be capable of meeting Soviet war needs for 1 year, and it is estimated that, between 1950 and 1955, 25 percent of the aluminum production of the USSR has been allocated to stocks. This percentage figure is a residual, derived by subtracting estimated consumption from estimated production. The proportion of production assigned to stocks is expected to decline after 1955.

b. Antimony.

Although there is little information, estimates of the amount of antimony held between 1948 and 1953 can be made, which are thought to be accurate within plus or minus 25 percent.

Between 1948 and 1953, a total of about 76,260 tons of antimony is estimated to have been available in the Sino-Soviet Bloc, with consumption estimated to be 55,110 tons. The exact status of the remaining 21,000 tons is not known, but since there is evidence that the large Chinese production does not remain in Communist China but is absorbed instead by the USSR, it may be reasonable to say that a total of at least 20,000 tons has found its way into the strategic stockpiles of the USSR.

Should the Chinese supply be cut off, stocks of 20,000 tons added to Soviet domestic production would be sufficient to last the USSR and the European Satellites for nearly 5 years at current rates of consumption. Loss of the Satellites would represent a net gain to the USSR in this respect, and the 20,000 tons would last the USSR nearly 6 years at current rates of consumption. With no domestic production at all, the 20,000 tons would last a little over 2 years at current consumption rates.

c. Copper, Lead, and Zinc.

An estimate of the size of copper, lead, and zinc stockpiles in 1949 has been made on the basis of prisoner-of-war reports dated 1947-49. Assuming that the annual increment to stocks after 1949 was 10 percent of yearly production, Soviet stocks in 1952 are believed to have contained the following quantities (in thousand tons):

Copper	238.6
Lead	85.7
Zinc	158.5

d. Manganese.

There have been no reports to substantiate the existence of manganese stockpiles within the USSR. In view of its absolute necessity to the iron and steel industry, and of the concentration of 80 to 85 percent of the supply in two producing centers, however, the establishment of a stockpile is entirely plausible.

e. Tin.

In view of the sketchy evidence available, it is extremely difficult, with knowledge of the consumption of tin, to estimate the extent of the Soviet stockpile of tin. It is probable that sufficient amounts have been accumulated to enable the Soviet Bloc to operate, with the same pattern of consumption, for 1 to 2 years without serious difficulties, even if all imports were eliminated. Considering the increasing Chinese Communist production available to the USSR, this quantity can be enlarged over the next few years.

2. Agricultural Products.

a. Canned Food.

A figure for stocks of canned food is arrived at by adding the estimated consumption for civilian, military, and export -- that is, the hypothetical utilization -- and subtracting the result from estimated production. The result for 1951 is an estimated figure of 856 million cans, including 340.5 million cans of meat and 152.5 million cans of fish. This total is converted on the basis of 400-gram cans, and a figure for stocks of 214,000 tons of canned goods is produced.

b. Cotton.

The study of cotton reserves was based on the production of ginned cotton and its consignment to the state reserves in the Middle Asia Territorial Directorate, an area producing 75 percent of the total Soviet cotton

production in 1951, 77 percent in 1952, and about 85 percent in 1953. It is believed that 25 percent of the Soviet cotton production in the fourth quarter for this area was consigned to reserves. Although sequestration takes place throughout the year, it diminishes after the beginning of the fourth quarter. It may be estimated that from 15 to 20 percent of the total Soviet cotton production is consigned to state reserves annually.

c. Grain.

Estimates of changes in grain reserves are made in the course of working out the balance of grain production with utilization for each consumption year (1 July through 30 June). Over the last decade, an average annual accretion of 2 million tons has been made to the reserves. This rate of accretion produces a figure of about 20 million tons in mid-1953. It is estimated that 2.4 million tons were withdrawn from reserves in 1953-54 and another 2 million tons in 1954-55.

3. Critical and Miscellaneous Materials.

a. Antibiotics.

It is probable that antibiotics are stockpiled, though there is no quantitative information. Penicillin in a crystalline form will keep from 2 to 3 years, and, because of the importance of the commodity, it is possible that it is stored this length of time for military needs.

b. Chemicals.

(1) Benzol, Toluol, and Phenol.

benzol, toluol, and phenol are being stockpiled. Benzol and toluol are fairly easy to store, only requiring tankage of the type used for petroleum products. Phenol is corrosive and requires zinc or enamel-lined tanks or drums.

(2) Ethyl Fluid.

estimates production of all ethyl fluids for 1950 to have been around 12,000 tons (equivalent to about 6,600 tons of tetraethyl-lead); and the total distribution, 10,650 tons; leaving a residue of 1,350 tons as the quantity of fluid being stockpiled each year.

(3) Metallurgical Coke and Coking Coal.

The stocks of coking coal and metallurgical-grade coke are confirmed . It is assumed that such strategic stocks would be part of the normal operating stocks maintained at coke plants and blast furnaces. Since both these commodities deteriorate rapidly in storage, such a combination of strategic and normal operating stocks would provide simple procedures for the necessary rotation, and the strategic level (assumed to be a 2-week, or 14-day supply) would simply represent the minimum level below which total stocks would not be permitted to fall.

Other special-use coals apparently are stored separately, but no quantitative estimates are possible.

c. Petroleum.

The method of estimating the possible magnitude of the state reserves of petroleum* is as follows:

has estimated the total available storage capacity for petroleum products in the USSR. Inasmuch as petroleum producing, refining, and distribution to consumers is a flow operation, it is axiomatic that the storage capacity can neither be full nor empty at any given time. It is estimated, therefore, that a storage level of about 75 percent of capacity is about the maximum that could be attained at any given

* State reserves of petroleum are the quantity of petroleum products in storage facilities that is in excess of normal working inventories and designated for future emergency use.

time, and this probably could be accomplished only on the basis of extensive plans. The 25-percent cushion is actually quite small,--in the US, storage levels fluctuate between 45 percent and 65 percent of capacity. Even at the 65-percent level, flow in parts of the system has been jeopardized because of excessive quantities of petroleum in storage tanks. Assuming that storage levels in the USSR normally run about 50 percent of capacity, the possible level for petroleum storage may be considered as the difference between the 75-percent and 50-percent levels of storage capacity. Thus in 1954 estimated capacity for storage of petroleum products in the USSR to have been 19.03 million tons. The maximum quantity of petroleum products that could be stored in this capacity would, therefore, be about 14.27 million tons, while the normal working inventory would average about 9.51 million tons. Following this line of reasoning, the possible magnitude of state reserves of petroleum can be placed at 4.75 million tons.

In view of the large increase in Soviet exports of petroleum to the West in 1954 compared with 1953 and earlier postwar years, it should not be overlooked that these exports could have been made possible by deliberately suppressing domestic demands and exporting the difference to the West. In this way the USSR may well be creating capacity that is similar to "shut-in" capacity in the US. Exports could be diverted at any time to meeting the needs of the Soviet war machine, in much the same way that the US shut-in capacity has been and could again be channeled directly to the military. This possibility suggests that the USSR may be emphasizing petroleum exports rather than petroleum storage, which would alleviate the storage problem simultaneously with acquiring needed foreign exchange and scarce commodities from the West.

An ORR study of Baku for the years 1949, 1950, and 1951 showed the following minimum observed quantities (in tons) of 70-, 74-, and 75-octane aviation gasoline (89-, 92-, and 95-octane when ethylated) going to state reserves:

1949	195,776
1950	182,215
1951	110,495

Based on production estimates for the Baku refineries, these minimum observed quantities are 36.3 percent of Baku production for 1949 and 25.2 percent for 1950. There was no production estimate for 1951.

d. Rubber and Tires.

(1) Rubber.

Only natural rubber is stockpiled, and this has to be imported from outside the Soviet Bloc. Accordingly, the amount in storage is estimated on the basis of the total imports over consumption with the residue treated cumulatively. This adds up to a total of 248,000 tons as of 1952. In 1953 and 1954, reported rubber imports have been too low to permit stockpiling on this assumed residual basis.

(2) Tires.

Soviet tire production is sufficient to supply domestic needs of China and of some of the European Satellites. Stockpiles of tires are known to exist but there are no quantitative data available.

4. Transportation.

a. Locomotives and Freight Cars.

The USSR plans standby reserves of both locomotives and freight cars, but the size of such reserves is not now known. In 1940, 18.1 percent of the locomotives were in the reserves of the railroad system, and post-World War II trip reports by Western observers have indicated relatively large reserves at the present time.

The MPS (Railway Ministry) allocates freight cars in good condition to be kept in reserve and used only in an emergency

on instructions from the Ministry. Calculations based on official pronouncements show that as much as one-third of the total car park may be either laid up for repairs or held inactive. By Western standards this would be excessive, but it is known that at least some sort of storage reserve of cars in good condition does exist.

b. Merchant Shipping.

There is no known reserves fleet of maritime or river vessels. One report indicates that under mobilization plans set up following World War II, a certain number of vessels in current operation in the central river fleets which could be rapidly utilized without special additional refitting were designated as a "stockpile." They were not taken out of service nor were there any known plans to do so.

The preceding commodity estimates constitute a cross-section of estimates currently in circulation, from brief statements to complex methodologies and with wide ranges of error due not only to the lack of information on stockpiling, but often to inadequate production and/or consumption statistics. Accordingly, these individual commodity estimates are not comparable and cannot be added together to form an estimate of total Soviet stockpiles. Instead, each must be treated individually, weighed, and measured according to its own merits, and used in this same manner in the production of finished intelligence until further information and further research make more general applications possible.

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APPENDIX A

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APPENDIX B

METHODOLOGY FOR TABLE 3

The only known source of financing for the purchase of goods to be placed in state reserves is the Union budget, in the residual ("other expenditures") under "financing the national economy." In the published breakdown of this residual in the 1941 budget, given in Table 8, the state reserves organization received the largest single allocation of funds, over two-fifths of the total. The next largest allocation, to the Ministry of Finance, Chief Directorate of Precious Metals, for the purchase of the domestic output of gold, amounted to about one-quarter of the total. The other allocations listed, to a miscellaneous group of organizations, were all quite small. The principal allocation in the "undisclosed" category was to housing and the municipal communal economy.

Table 8

State Budget of the USSR: "Other Expenditures" Within the Category "Financing the National Economy" 1941

	Billion Current Rubles
State Reserves	3.5
Chief Directorate of Hydrometeorology	.2
Ministry of Motor Transport	.1
Ministry of Finance, Chief Directorate of Precious Metals	2.0
Chief Directorate of Geodosy and Cartography	.2
Chief Resettlement Directorate	.3
Undisclosed	1.8
Total	8.1

Since 1941 the USSR has published no breakdown of the residual under "financing the national economy." It has been determined, however, which organizations have been financed in this residual at one time or another during the postwar period. The announced totals spent (or budgeted) in the years 1948-55 are given in Table 9,* together with a listing of organizations believed to have been financed therein in 1948 and probable subsequent changes. It has been established that the large increase in the residual after 1950 reflects the inclusion of atomic energy expenditures, and there is a presumption (for which there is as yet no direct support) that the similarly large reduction in 1955 reflects the transfer of these expenditures to another subcategory. Otherwise, only minor changes are believed to have been made in the activities financed in the residual. The Chief Directorate of Precious Metals and the four miscellaneous organizations listed by name in the 1941 budget all appear to have been included throughout, together with the allocation to housing and the municipal communal economy (in the years for which announcements have not been made).

For 1948-50 -- years in which atomic energy expenditures were not included -- it is possible to set limits to the state reserves allocations as a residual within the item "other expenditures." The allocation to housing and the municipal economy is known for 1948-50. Gold purchases in 1949 by the Ministry of Finance have been estimated at 5 billion rubles. They are believed to have been considerably less in 1948 and slightly more in 1950. A tentative estimate can be made also for the four miscellaneous organizations carried since 1941, by adjusting the allocation of 0.8 billion rubles in 1941 to allow for the postwar rises in wages, giving a figure of 1.5 billion rubles. This figure is probably low, since the scale of specific activities may well have increased, and since one or more other organizations are also included under this item.

The resulting breakdown, given in Table 10,** indicates that the allocations to state reserves in 1948-50 probably ran at two to three times the prewar level of 3.5 billion rubles.

* Table 9 follows on p. 93.

** Table 10 follows on p. 94.

Table 9

State Budget of the USSR: "Other Expenditures" Within the Category "Financing the National Economy" 1948-55

Billion Current Rubles

Year	Amount Allocated	Organizations Included
1948	16.6 b/	Ministry (subsequently Chief Directorate) of State Material Reserves Chief Directorate of Hydrometeorological Service Ministry of Motor Transport and Highways Ministry of Finance, Chief Directorate of Precious Metals Chief Directorate of Geodesy and Cartography Chief Resettlement Directorate Chief Directorate of Hunting Chief Directorate of Organized Recruitment of Manpower Chief Directorate of Hydrolysis and Alcohol Spirits Housing and the Communal Economy
1949	23.2 b/	Same as 1948, except that Chief Directorate of Hydrolysis and Alcohol Spirits is excluded
1950	18.2	Same as 1949
1951	36.5	Same as 1950, except that atomic energy activities were added
1952	37.5	Same as 1951
1953	42.1	Same as 1952, except that Chief Directorate of Hydrometeorological Service, Chief Directorate of Hunting and Chief Directorate of Organized Recruitment of Labor were dropped and MVD correctional Labor Camps were added.
1954	38.5	Same as 1953
1955	20.7	Same as 1954, except that atomic energy activities presumably were dropped

b. Actual expenditures.

Table 10

State Budget of the USSR: Estimated Breakdown of "Other Expenditures" Within the Category "Financing the National Economy" 1948-50

Billion Current Rubles

	1948	1949	1950
Total "Other Expenditures"	16.6 a/	23.2 a/	18.2
Housing and the Communal Economy b/	4.4	5.9	5.6
Residual	12.2	17.3	12.6
Gold purchases c/	3.5 - 5.5	4.0 - 6.0	4.0 - 6.0
Miscellaneous activities d/	1.0 - 2.0	1.0 - 2.0	1.0 - 2.0
State reserves e/	7.7 - 4.7	12.3 - 9.3	7.6 - 4.6

a. Actual expenditures.
b. Figures are announced plan figures.
c. The range of error for the years 1948-50 is 25 percent -- that given for domestic production in physical terms.
d. Inflation of the 1941 budget figure of 0.8 billion rubles to allow for the same activities with postwar wage increases.
e. Residual figures representing a range (rounded to the nearest unit) indicated by margins of error in the other figures in each column.

Information available in the published budget on revenues from state reserve operations is even less satisfactory; it is included here chiefly for purposes of completeness. Planned revenues of which state reserves were a part are shown in Table 11.* Until June 1951, revenues from sales of products released from state reserves were entered into the**

* Table 11 follows on p. 95.
** Continued on p. 97.

Table 11

State Budget of the USSR: Category of Planned Revenues Which Includes Payments to State Reserves 1949-55

Year	Amount (Billion Current Rubles)	Budget Category	Sources of Revenue a/*
1949	12.5	Collections and various nontax income	State reserves, receipts from fines, receipts of water supply payments from state irrigation system, receipts from sale of state property, collections for violating established prices, various collections including: payments for passports, receipts from sale of domestic books, re-entry blanks and leaflets, receipts of special funds, fines collected for nonfulfillment of obligatory deliveries to the state, receipts of non-demand deposit sums of institutions existing on Union and Republic budgets, and other receipts.
1950	13.3	Collections and various nontax income	Same as 1949
1951	13.6	Collections and various nontax income	Same as 1950

* Footnotes for Table 11 follow on p. 96.

Table 11

State Budget of the USSR: Category of Planned Revenues Which Includes Payments to State Reserves 1949-55 (Continued)

Year	Amount (Billion Current Rubles)	Budget Category	Sources of Revenue
1952 b/	14.0	Collections and various nontax income	Same as 1951
	19.4	Other revenues	Returned loans and repayment of miscellaneous expenditures, timber revenue, tuition payments for advanced schooling, return of funds received and not used by institutions and organizations during the previous year, receipts from revaluation of noncredited and credited balances of goods, payments of enterprises and institutions into the budget (including payment for work done by military units), grants and other receipts from the Union budget, revenue from revaluation of liabilities, income of planning organizations.
1953	66.4	Other revenues	Same as 1952 plus Union budget revenues from additional profit resulting from cancellation of turnover tax on potatoes and fruit.
1954	84.6	Other revenues	Same as 1953
1955	78.3	Other revenues	Same as 1954

b. The Chief Directorate of State Food Reserves contributed to Collections and Various Nontax Income while the Chief Directorate of State Material Reserves contributed to Other Revenues.

"collections and various nontax income" category of the Union budget. In 1952 and 1953, revenues from food reserves operations remained in the above category while revenues from materials were reported under "other revenues." Since the consolidation of the Chief Directorate of State Food Reserves and the Chief Directorate of State Material Reserves in mid-1953, it appears that all revenues have been entered under "other revenues." Several sources in addition to state reserves contributed to both of these categories. The "collections and various nontax income" item included items such as water supply payments from the state irrigation system, receipts from sale of state property, and payments for passports and fines for nonfulfillment of obligatory deliveries of agricultural products. "Other revenues" in 1954 included timber revenue, tuition payments for advanced schooling, receipts for credited and noncredited balances of goods, payments of enterprises and institutions, and the income of planning organizations as well as state reserves revenues. The planned total thus only places an upper limit below which state reserves revenues can be presumed to lie.

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APPENDIX E

SOURCE REFERENCES

Evaluations, following the classification entry and designated "Eval.," have the following significance:

Source of Information	Information
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

All sources used in this report are evaluated RR 2.