SECRET
US OFFICIALS ONLY

[redacted]

ch/c

PROVISIONAL INTELLIGENCE REPORT

ELECTRIC POWER IN EAST GERMANY

CIA/RR PR-64
15 July 1954

DOCUMENT NO. 1
[redacted]
0489
4-10-79

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

[redacted]

US OFFICIALS ONLY
SECRET

JUL 22 1954

WARNING

This material contains information affecting the National Defense of the United States within the meaning of the espionage laws, Title 18, USC, Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500150001-7

~~S-E-C-R-E-T~~

US OFFICIALS ONLY

PROVISIONAL INTELLIGENCE REPORT

ELECTRIC POWER IN EAST GERMANY

CIA/RR PR-64

(ORR Project 27.204)

NOTICE

The data and conclusions contained in this report do not necessarily represent the final position of ORR and should be regarded as provisional only and subject to revision. Comments and data which may be available to the user are solicited.

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

US OFFICIALS ONLY

~~S-E-C-R-E-T~~

~~SECRET~~

CONTENTS

~~SECRET~~

Appendixes

Tables

Illustrations

CIA/RR PR-64
(ORR Project 27.204)

S-E-C-R-E-T

ELECTRIC POWER IN EAST GERMANY*

Summary

The electric power industry of East Germany is of primary importance in the economy of the country. The industrial development of East Germany is largely dependent upon the chemicals, synthetic fuels, metallurgical, and mining industries, all of which depend upon electric power. In 1953 these industries alone required about 45 percent of East Germany's total production of electric power. There is, in East German industry, no economically feasible substitute for electric power.

The electric power** output of East Germany is the largest of the European Satellites and is about equal to that of Czechoslovakia and Poland combined. In 1953 the estimated production of electric power in East Germany, 25.6 billion kwh (kilowatt-hours), was equal to about 19 percent of that of the USSR and 5 percent of that of the US.

With the exception of a few privately owned plants and "communal," or "municipal," plants, which constitute only a minor part of the total national capacity, the industry is nationalized. The operation of the plants and transmission systems, the allocation of output, and the planning and implementation of the expansion of facilities are under the control of the East German government.

Because of the topography of East Germany, the water power resources are relatively small. As a result, about 98 percent of the total electric power is produced by thermal electric plants, most of which use various forms of indigenous brown coal. There are adequate reserves of this fuel in East Germany.

* The estimates and conclusions contained in this report represent the best judgment of the responsible analyst as of 15 May 1954.
** The term electric power as discussed in this report is limited to the production and delivery of electric power and to the facilities which are involved in production and delivery.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500150001-7

World War II seriously affected the East German electric power industry, less by direct war damage than by large-scale Soviet dismantling and removals following the war and continuing to 1948. Nearly 40 percent of the 1945 capacity was thus taken out of service, and obsolescence resulted in further reductions. These losses have been partially offset by rehabilitation and new construction, but complete recovery of production capacity has not yet been accomplished.

In spite of lost capacity, however, production of electric power in East Germany has increased in each of the postwar years. Results were accomplished by increasing sharply the hours of utilization of power-plant equipment and by pressing equipment to excessive load limits. Estimated production of 25 billion kwh in 1953 and of 30.5 billion kwh at the end of the Five Year Plan in 1955 represents increases of 66 percent and 100 percent, respectively, over 1948. Even with this increased production, shortages and some form of restrictions are likely to continue for at least the next 5 years.

It is estimated that in the last two years of the current Five Year Plan, 1954 and 1955, there will be an increase in East German electric power capacity of about 1 million kw (kilowatts), bringing the total to about 6 million kw, an increase of 20 percent over 1953.

Expansion of facilities for the production of electric power will continue to be hindered by dependence on outside sources for material and equipment. East Germany is not capable of meeting its own requirements for production facilities. Therein lies one of the principal vulnerabilities of the industry.

I. Introduction.

A. Description of the Industry.

The electric power industry of East Germany involves the electric generation, transmission, and distribution facilities of public-owned systems, industry-owned systems, and a small number of privately operated plants. Collectively, it is a highly technical

industry, with great economic and social influence, which has been broken out of the over-all integrated system of prewar Germany as it existed prior to the establishment of Soviet zonal boundaries. This redivision required technical adjustments to the system and placed the industry indirectly, though effectively, under Soviet political and economic control, which had major effects on the conduct, operation, efficiency, and capability of the industry.

B. Importance of the Industry.

The electric power industry of East Germany, through the medium of its generation, transmission, and distribution components, plays a most important role in the industrial economy of the country. East Germany is one of the most important industrial components of the European Satellite group and is primarily concerned with the manufacture of finished products. To a considerable degree, these products depend upon the importation of raw materials from outside areas. Formerly East Germany received a large portion of these imports from the West, but under present conditions greater emphasis is placed on obtaining raw materials and electrical equipment requirements from the USSR and from the other Satellites.

The consumption of electric power by domestic consumers received some favorable emphasis in mid-1953, but it still plays a minor role in the economy of East Germany, and its needs are subordinate to those of industrial consumers.

East Germany has a large and important chemical industry which includes the production of synthetic fuel, a major mining industry, and a number of manufacturing industries vital to the nation's economy. All of these are users of electric power and many have their own generating plants. The importance of electric power to an economy that is striving to expand both its industrial output and the base of that output is obvious. An effort of the magnitude imposed by the USSR has placed a tremendous requirement upon the electric power industry.

C. Historical Development.

To understand the East German electric power industry as it exists today, a brief historical review is important. From 1932 to World War II, a period of industrial activity highly accelerated by the rise of the Nazi regime, production of electric power increased very rapidly in Germany to approximately 75 billion kwh in 1943.

(See Fig. 1.*) This was a period of rearmament, and it included a tremendous industrial expansion, with special emphasis on chemical and synthetic fuel developments. It should be noted that as early as World War I the electric power expansion program began to lean heavily toward the use of brown coal for thermal generation of electric power. This desire to use an abundant and cheap local fuel, even though it was less efficient technically than imported coal, led to the development of the generating plants close to the brown coal fields, where large industrial users of power were also located. This development gave rise to a transmission net of considerable magnitude, designed to provide power to the areas outside the coal fields and to interconnect the various sources of power generation. This transmission net provided Germany with a relatively highly integrated industrial economy.

The electric power industry was a basic part of that economy, and by the close of hostilities in World War II the industry had reached an estimated production of 70 to 80 billion kwh. 1/** What was later to be known as East Germany accounted for about 25 to 27 billion kwh. 2/ (See Fig. 1.) Some loss of capacity resulted from war damage, and with the end of the war came the dismantling and removal of about 40 percent of the newer and more efficient plants 3/ from Berlin and East Germany to the USSR. This left East Germany with major problems of reorganization, technical operation, reconstruction, and new construction of electric power facilities. Needless to say, the imposition of a Soviet-planned industrial economy of great magnitude placed a heavy burden on the electric power facilities of East Germany. Even under these handicaps the electric power industry raised production some 45 percent in the period from 1946 through 1950. 4/ This was accomplished by cannibalizing, importation of spare parts, balancing boiler and turbine capacity, regulating consumption, operating generating units far beyond safe limits, and deferring maintenance. There were few new plant installations.

D. Administration and Organization.

The ministries concerned with the administration of nationalized industries in East Germany have been reorganized repeatedly. Until

* Following p. 58.

** Footnote references in arabic numerals are to sources listed in Appendix E.

early November 1953 the State Secretariat for Coal and Power was established as the administrative control of the energy economy of East Germany. This department was divided into the Main Administration for Coal and the Main Administration for Power. The Main Administration for Power was divided into five subordinate functional departments, each covering specific spheres of responsibility.

Geographically, East Germany was at first organized as five operational areas described as Energy Districts, and it is assumed that the functional organization carried down through the districts. 5/

The Energy Districts were as follows:

Energy District	Supply Area
North	Mecklenburg and Brandenburg
South	Thuringia
East	Saxony
West	Saxony-Anhalt
Central	East Berlin

These districts were organized around the framework of the former large companies operating in the respective areas.

Information indicates that on 1 January 1952 the Main Administration for Power was reorganized. 6/ It appears that as a result of this reorganization the Main Administration for Power was divided into five areas, or districts, known as VVB's (Vereinigung Volkseigener Betriebe -- Association of People-Owned Enterprises), very similar to the former areas but with somewhat different boundaries. The principal change seems to be the establishment of a new north area and the combining of the Brandenburg area with Berlin. These areas are outlined below.*

Energy District		Supply Area
North	(Schwerin-VVB)	Mecklenburg
South	(Weimar-VVB)	Thuringia
East	(Dresden-VVB)	Saxony
West	(Halle-VVB)	Saxony-Anhalt
Central	(Berlin-VVB)	Brandenburg and East Berlin

* There appears to be some question about the correct titular description of the individual areas or districts.

About midyear 1952 the 5 Laender (political divisions) of East Germany were abolished, and the area was organized into 14 Bezirke (political districts). 7/ Eventually the power system will be reorganized to conform to these political divisions, and there probably will be 15 VEB (Volkseigene Betriebe -- People-Owned Enterprises) Nationalized Distribution Sections consolidated under the Berlin Power Administration VEB. 8/ It is not clear whether or not the intentions are to abolish the five energy districts at that time. As a functional group, they probably could continue to serve as the generation and transmission organization, leaving the distribution function to the smaller unit. It is very probable that the organization plans are not sufficiently well advanced to permit a clear definition.

It must be pointed out that until 1 January 1954 there existed a group of Soviet-owned industrial corporations, SAG's (Sowjetische, and later Staatliche, Aktiengesellschaften) which were the largest electric power producers in East Germany. They were producing from 35 to 40 percent of East Germany's total electric power. 9/ These plants were not under the Main Administration for Power but did contribute energy to the general supply. By 1 January 1954, however, all the SAG power plants had reverted to German operation and control as nationalized properties.*

It now appears established that the organizational structure of East German industry, from the ministerial level down, has been changed. 10/ It is indicated that the structure is composed of a new Ministry of Heavy Industry, which has absorbed the functions of the former Ministry of Metallurgy and Mining, of the State Secretariat for Coal and Power, and of the State Secretariat for Chemicals, Stones, and Earth. This change was made retroactive to 1 November 1953, but all planning measures bearing on the activity of the new ministry in 1954 were to have an effective date of 1 January 1954. 11/ Subordinate to the Minister of Heavy Industry are four deputy ministers, one of which is the Deputy Minister for Gas and Power. Under the Deputy Minister for Gas and Power are the respective Main Administrations for Gas and for Power. The Main Administration for Power is divided into five VVB's corresponding to the previously described Energy Districts.

The so-called "captive" electric power plants of industries under the control of other ministries, deputy ministries, or secretariats apparently still function under those controlling authorities.

* Espenhain I and II may have been exempt from the turnover. Some observers state that these two power generation units are being retained by the USSR as a power supply for the Wismut uranium mines.

These plants are, of course, outside the general sphere of "public supply," but through the national power network they do contribute to the public supply.

II. Resources and Facilities.

A. Natural Resources.

The economy of East Germany like that of any region, is, to a large measure, adjusted to its natural resources. Further, any attempt to accelerate the industrial activity of a region must include increased production of electric power. Increased production of electric power must be accompanied by increased fuel supply when the primary source of energy is coal. The dependence of electric power in East Germany on the coal supply is apparent when it is realized that nearly 98 percent of the production is by thermal electric plants. The primary energy resource in East Germany is brown coal, and the bulk of thermal electric power generation is based upon that fuel, of which there is a supply sufficient to meet the demands of the area in the predictable future. 12/ A small amount of hydroelectric power is generated, but it is an insignificant factor in the total production of electric power in East Germany.

Although there is a wide variation in the heating quality and other characteristics of brown coal and in the physical forms in which it is used, this report treats it as a single class of solid fuel. It may be briefly described as a fuel having a high ash and moisture content, low calorific value, and poor storage qualities, all of which make it a less desirable fuel for the production of steam than the so-called hard (Stein) coal.* Its ready availability in large quantities and relatively short transportation hauls, however, compensate for its deficiencies, and it will continue indefinitely as the principal fuel for the generation of electric power.

About 12 power-generating plants in East Germany were classified as hard coal plants, the fuel for which was imported mainly from Poland.13/ It appears that these plants have been in the process of being converted to the use of brown coal, but the status and extent of the conversion are not known.

* In European terminology, "hard coal" is a general term used to indicate grades of coal superior to brown coal.

The use of brown coal also affects the location of the generation plants, for transportation and storage problems usually make it advisable to place the generating plant as close as possible to the mine. A second determining factor is that some very large industrial consumers of electric power are also heavy users of brown coal and are therefore located close to the fuel supply.

There is evidence to indicate a coal shortage in East Germany during the winter of 1952-53, 14/ but the shortage does not appear to have seriously affected the production of electric power. The severe winter of 1953-54, however, created a fuel shortage which was reflected in the electric power industry, and there are indications that there was a definite power shortage throughout East Germany.

Although several important rivers pass through East Germany, they do not represent large hydroelectric resources. 15/ An added deterrent to the use of hydropower is the much longer time required for the development of hydroelectric facilities, time which the accelerated plan does not provide. A hydroelectric pump-storage plant is used at Niederwartha to provide power at times of high demand (peaking power). This type of development is generally not very economical and usually is feasible only in special cases. This installation is the only one of its kind in East Germany and is of minor importance to the over-all power-production goals.

B. Electric Generating Plants.

By the end of World War II, Germany had developed a highly integrated electric power generation and transmission system. This system had a capability sufficient to meet the war needs of the country. East German electric power facilities had not suffered extensively from war damage, 16/ although they did experience considerable disruption and were in need of rehabilitation, primarily as a result of the heavy wartime production loads they had carried. The estimated 1945 installed capacity* of the portion included in the zonal boundaries of East Germany was over 8 million kw. 17/

* In this report, capacity is used as a general descriptive term and refers to the production potential of the facilities available for the generation of electric power. Installed capacity is usually defined as the total of the manufacturer's intended productive capacities of the equipment concerned. Installed capacity also is known as rated capacity or nameplate capacity.

The real loss in capacity in East Germany was a result of the extensive dismantling program carried on by the USSR following the war. Soviet removals included much of the newest and most efficient equipment and represented a production capacity of about 3 million kw, 18/ nearly 40 percent of the total East German capacity.

During the period following the war, 1945-49, the electric power industry appears to have been in a highly confused state. The wide variance in many source figures indicates that dismantling, nationalization, and reorganization placed the industry in a position where a determination of the actual installed capacity of the various plants was virtually impossible. Moreover, the condition was far from static; the USSR was still engaged in dismantling up to 1948. This dismantling was coupled with such factors as long operating cycles, badly maintained equipment, and material and equipment shortages, and all contributed to the continuing capacity loss. In addition, reporting systems and channels that had existed during the war were completely disrupted. The capacity remaining in 1948 existed in about 1,439 power plants 19/ and reportedly amounted to some 4.2 20/ to 4.8 21/ million kw. A study of the 1947 operating report 22/ indicates that in 1946 there were some 740,000 kw 23/ of capacity in power plants that were not connected to the public network or were of less than 1,000 kw of capacity.* Annex 18 of the 1947 operating report 24/ contains a graphic portrayal of plant capacity indicating that at the early part of 1947 capacity had been reduced to 2.8 million kw. This is a capacity that can best be described as "usable capacity," and it must be made clear that, because of the great imbalance between boiler capacity and generating machine capacity, there is no direct method of establishing, from sources or from totals of estimated plant capacities, the real installed plant capacity for the area. It is significant that the greater portion of the source material represents the average annual productive capacity of East Germany for the period 1947 through 1950 as 2.8 million kw. 25/ One source 26/ indicates that 42 percent of the generating machine capacity and 23 percent of the boiler capacity was not being used in 1950.

* See Appendix A for a tabulation of reported electric power plants with individual capacities of more than 1,000 kw, with CIA estimates of those capacities.

The total estimated East German installed capacity for the year 1950 is as follows:

	Kilowatts
Thermal electric plants	3,695,500
Hydroelectric plants	104,500
Total	3,800,000

Although it is possible that, because of the lack of identifiable information, some plants with capacities of more than 1,000 kw are not included, it is believed that this estimate is within a range of accuracy of minus 10 percent and plus 20 percent. In addition, there is approximately another 700,000 kw of capacity 27/ in small units which are not necessarily connected to the grid. In general, these units are connected with industrial plants and furnish electric power to those plants. There is little detailed information available on the size or location of these units, but the aggregate of 700,000 kw has been mentioned in published sources, and there is no reason to doubt the magnitude of the group estimate. Although these units do not, in the majority of cases, represent a contribution to the public supply network, they do represent an addition to the industrial economy of the region. To be consistent with published sources, which report primarily only on the public supply network, the capacity of these units is not included in the estimate of total East German capacity.

Through 1952, a great amount of effort appears to have been expended on improvisations and repairs to existing equipment, with some attempts to balance boiler capacities with generation capacities.

C. Transmission and Distribution Lines and Networks.*

After World War I, Germany progressively developed its transmission system to a point where it was adequate to supply the demands placed upon it during World War II. During the between-wars period, it was a well-integrated system and developed beyond the somewhat localized requirements of World War I, for by its extension and integration it provided for considerable diversification of industry. Although it suffered some war damage in World War II, it was, to a large degree, quite readily repaired and was more than able to meet requirements at the close of the War in 1945.

* See the map, East Germany: Major Electric Power Generating Stations and Transmission Lines, following p. 58.

After 1945 the East German electric power transmission system experienced appreciable dismantling (about 30 percent 28/) by the USSR. Among the major facilities dismantled were 4 out of 10 circuits to Berlin, the line between Trattendorf and Berlin, and the lines between Finow and Pasewalk, and between Finow and Strausberg. Many double-circuit lines were reduced to single-circuit lines, and the experimental direct-current, high-voltage line from Elbe (Vockerode) to Berlin was removed. 29/ It appears that even with the increased activity in power production and the emphasis on power requirements, there has been relatively little construction of new transmission lines and circuits. This indicates that there are other more serious requirements facing the industry. Some activity, however, has been noted:

1. Construction of a transmission line from Hohenwarte to the uranium mines in the Saalfeld area. 30/

2. Construction of a transmission line from Loesnitz to Hartenstein. 31/

3. Tapping of the Hennigsdorf-Strausberg transmission line, avoiding the French sector at Lindenberg, and building from there a double-circuit, 100-kv (kilovolt) transmission line to Friedrichsfelde. 32/

4. Construction of a transmission line to the Upper Silesian coal fields. (This transmission line formerly extended into Lauta but was dismantled.) 33/

5. Construction of a 220-kv north and south transmission link, Bohlen to Espenhain to Berlin. 34/

6. Reported completion of a 220-kv transmission line, Espenhain to Zwoenitz. 35/ (Only one circuit had been completed in November 1952.) 36/

7. Increase of the voltage to 110 kv on the transmission line from Pasewalk to Griefswald to Stralsund. 37/

8. Plans to restore the 110-kv transmission line, Berlin to Trattendorf. 38/

9. Construction of a 110-kv transmission line from Altenberg to Dresden. 39/

10. Reported construction of a substation, "Marke," which has double-circuit 220-kv transmission line connections to Dieskau-Susigke and Magdeburg and double-circuit 110-kv transmission line connections to Zschornewitz and Vockerode. 40/

The fact that reliable sources report that some additions to generating plants have been completed or are under construction, without reference to connections to the transmission system, indicates that there are some additional lines, either planned or completed, which are not known at present. These additions may, of course, be accommodated by relatively short, low-voltage circuits. It is also apparent that shortages of materials, especially copper, are a serious deterrent to the transmission construction program. In the main, however, the transmission net is satisfactory.

On 5 March 1952, the discontinuance by East German authorities of all power connections between the Soviet Zone of Berlin and the other sectors created a serious transmission problem. This action involved cutting the transmission line connections with the West and rearranging the circuits in such a way as to bypass Spandau and run directly into Hennigsdorf. 41/ The East German government was apparently well prepared for this step, although it probably created some minor power shortages in areas outside of Berlin. The action also made available to East Berlin some additional power which it badly needed.

In August 1953, some transmission of electric power from West Germany to East Germany was resumed. 42/ The available information indicates that at present the power is flowing over two transmission-line circuits, the Rettmer-Hagenow circuit and the Hallendorf-Lehrte-Helmstedt-Magdeburg circuit. This exchange is discussed in greater detail under III, A, 2, below.

The electrical distribution systems* of East Germany were adequate during the war years. Since the Soviet occupation, however, very little information about them is available. It is probable that within broad limits they are able to meet reasonable demands.

* A distribution system is that part of an electrical power system that lies between the high-voltage transmission system, usually starting at a substation on the latter system, and the consumer. It essentially is concerned with the functions of distributing the energy to the individual customers and is operated, in a general way, at lower voltage levels.

It can be expected that there are transformer shortages, but it is doubtful if the effect on the electrical distribution systems is of serious consequence at this time. Industry, the consumer of the great majority of East Germany's electric power, is generally located relatively close to sources of power or to transformation centers, and distribution functions involve relatively short lines. The needs of domestic consumers, ordinarily requiring extensive distribution systems, have been subordinated in East Germany to the requirements of industrial consumers.

After mid-year 1953 the "New Course" initiated a shift in emphasis more favorable to the domestic consumer. Although this will eventually bring some increased electric power supply to the domestic consumer, it is very doubtful if the quantitative change will be significant, and the new policy is not likely to change the electric power balance.

III. Production and Consumption.

A. Production.

1. Generation.

The program of plant dismantling in East Germany, so energetically pursued by the USSR prior to 1948, certainly made it difficult for East Germany to accept and implement the new economy built around the exploitation of the industries and the resources of the area. Thus the imposition of a planned economy with production targets set purposely high created a major problem. Before the advent of the Five Year Plan (1951-55), East Germany was able to increase its electric power output steadily to a point where it attained a 1950 production of 18.9 billion kwh. 43/ The preliminary plan objective for 1955 was 31.4 billion kwh. 44/ Later, when the full plan* was announced, it was evident that the goal had been raised

* Hereafter referred to as the original Five Year Plan. Frequent source references to "National Economic Plan" and "Economic Plan" are concerned with annual plan adjustments for a given current year. These adjustments, apparently, are not limited to single revisions but are designed to permit a state of fluidity. They remain within the scope of the long-range Plan (Five Year), however, and probably are based upon a current capability estimate. This situation appears to be a basic element involved in many statistical inconsistencies.

to 33.4 billion kwh. 45/ In mid-1953, possibly reflecting the "New Course," the target for 1955 was lowered to 31.5 billion kwh. 46/

Production of electric power is so closely related to such factors as generation capacity, hours of operation, and operable capacity that a brief discussion of these relationships will be of benefit.

From 1945 through 1950, production of electric power was accomplished with few, if any, new plant additions. At least it can be stated that new plant additions did not result in net capacity gains. It is evident, however, that production was progressively increased during this period, as shown in Figures 1 and 2.*

This increase in production was achieved by the extensive exploitation of such devices as repairs to existing equipment, the use of many forms of improvisation, and the increase of the hours of operation of the generating units to the very maximum. The latter method probably can be considered the most important and, in some ways, the most significant. The 1947 figure of 2.8 million kw of operable capacity produced 13.7 billion kwh during that year. This was the result of approximately 5,000 hours of equipment operating time for the year. In 1950 the operable capacity was relatively the same, but the production had increased to 18.9 billion kwh. Thus it becomes apparent that the primary aid to production was the increase in the annual operating time to 6,600 hours per year. Such unusually long operating cycles are subject to some doubt. The fact remains, however, that considerable positive information seems to point to this method of increasing production. Further, it appears to be the most likely and practical way of increasing the productivity with the available equipment. Such extreme production efforts can be considered dangerous to future production capabilities. They result in deferred maintenance and excessive wear on equipment, and they are considered poor operational risks. What the end result of such operating practices will be is a debatable matter, as there are few yardsticks for comparison. In the US no such demands are ever placed on equipment. Hence it is impossible to say how far or for how long power-system equipment can stand that kind of treatment. There can be no doubt, however, that if the practice is continued, it will certainly be costly, and it may be disastrous.

* Following p. 58.

In order that the situation may be clearly understood, it is repeated that the 2.8 million kw is the average capacity that was available for operation during the period from 1945 to 1950. It is not installed capacity, and it must be remembered that units were constantly being repaired and brought into service, but that other units were being lost and removed from service. It is not reasonable to expect the industry to continue to accelerate its production rates without extensive new plant additions. That can be accomplished only if expansion plans remain on schedule and new plants are brought into being. This condition appears doubtful, for material and equipment schedules are not being met. 47/ It is believed that the electric power industry in East Germany will produce only about 30.5 billion kwh in 1955, a billion kwh less than the reduced plan goal announced in July 1953. It is significant, however, that the predicted requirement is in consonance with the estimated achievement of production in 1955, as shown in Figure 3.*

Production of electric power in East Germany from 1948 through 1955 is given in Table 1.**

2. Import and Export of Power.

Electric power is a commodity only in the broad sense that it is bought and sold. It must be realized, however, that it cannot be stored and thus lacks a very important component of market barter. Usually, its sale to the ultimate consumer is of the nature of a monopoly trade. Another important factor is that the consumer can ordinarily exercise a right to call for any quantity at any time, within the physical limits of the supply system. He may call for quantities several times his normal requirements and may expect immediate delivery, except in cases where the seller has placed fixed limits on the demands of the buyer.

Thus there is an element of service injected into the supply sequence, and the electric power industry becomes functionally divided into service areas that are represented by some corporate form of organization. These corporate units have relatively large investments in generation, transmission, and distribution facilities designed to provide electric power to consumers in a specific geographic area.

* Following p. 58.
** Table 1 follows on p. 16.

Table 1

Production of Electric Power in East Germany
1948-55

Million Kilowatt-Hours

	1948	1949	1950	1951	1952	1953	1954	1955
Plan	14,000 a/	14,300 a/	18,000 a/	21,177 b/	22,642 b/	24,485 b/	29,196 b/	33,414 b/
Production Estimate	15,400 a/	17,300 a/	18,900 c/	21,362 d/	23,462 e/	25,600 f/	28,000 f/	30,500 f/
Production Estimate, by Thermal Electric Plants	N.A.	N.A.	18,400	20,750	22,800	24,900	27,300	29,700
Mid-1953 Plan Revision g/								
Requirement						25,600	28,600	30,500
Plan Production						24,700	27,800	31,500
Difference						- 900	- 800	+1,000

a. 48/
b. 49/
c. 50/
d. 51/
e. One source quotes probable production as 23,200 52/; another estimates electric power for 1952, based upon data known as of 30 September 1952, at 23,100 53/; and another has field comment that states "the plan for production of 23,462,000 kwh was fulfilled." 54/
f. Graphic extrapolation.
g. This revision is dependent upon a schedule of capacity additions that to date do not appear probable; hence it is not believed that 1955 production will be capable of exceeding the revised requirement. 55/

These corporate units have found that they can achieve large benefits, improve their ability to serve, and reduce their plant investments by interconnecting their systems and trading freely among themselves. This power exchange between two or more systems is frequently (although not necessarily) netted at the end of a settlement period, leaving the actual financial transaction a one-way affair. The benefits are, of course, not limited to any two systems, and they tend to increase with such related factors as the addition of larger systems, coverage of greater geographic areas, diversity of generation sources, and diversity of the character of load.

Thus it becomes obvious that, from a technical viewpoint, political boundaries become very artificial when they restrict the free flow of power. It is desirable to provide agreements that will permit a relatively free flow of power across national frontiers.

Prewar Germany had an electric system integrated on a much larger geographic and industrial scale than had the postwar zonal areas, and the free flow of electric power across the new boundaries was most important. Although East Germany could benefit considerably by such an exchange, the East German officials seemed determined to attempt independence from the West. To accomplish this, various forms of exchange harassment were employed, the most noteworthy being the 5 March 1952 curtailment of power exchange with the West, 56/ primarily aimed at West Berlin, although other areas were affected.

The problems of an economy plagued with a deficit of electric power forced East Germany again to permit the flow of power across its boundaries, and on 24 August 1953, after an interruption of about 18 months, transfers from West Germany to East Germany were resumed at least on a limited basis. 57/ These transfers are made at two exchange points. One provides for 45,000 kw of firm power over the Rettmer-Hagenow line, a 110-kv connection feeding a loop 58/ circuit that is the principal supply to Energy District North (Mecklenburg) and also ties into the Berlin area at Hennigsdorf. Mecklenburg has been mentioned as the agricultural area that suffered most as a result of the 5 March 1952 power interruption. It may be significant that this power exchange was initiated at the start of the harvest season, when Mecklenburg requirements could be expected to increase. The second exchange point provided for 45,000 kw, on a "when available" basis, from Hallendorf (West) to the Magdeburg area. This exchange

point must involve the circuits through the Helmstedt-Harbke area, which was one of the principal exchange points under the old agreements.

Thus it appears that the present power exchange is a one-way arrangement, insofar as power flow is concerned: power goes to East Germany, and West Germany obtains direct fiscal gains from the transfer.

There are other points of interchange of power, with Poland and Czechoslovakia. The transmission lines involved are not of major importance, and available information indicates that the power flows are not of significant quantities. 59/

B. Consumption.

The power consumption pattern for East Germany for 1951-52 appears to be reasonably consistent with that established in 1947, the chemical industry being the largest single user of power. The power consumption pattern for East Germany in 1947, 1951, and 1952 is shown in Table 2.*

It is interesting to note, as shown in Table 2, that there appears to have been a percentage reduction in the 1951 domestic consumption of 1.3 percent from the 1947 percentage, and an additional drop of 0.5 percent by 1952. This percentage decrease from 1947 to 1952, translated in terms of kwh, represents a reduction of about 420 million kwh and probably reflects the various restrictive programs aimed at domestic consumption prior to the announcement of the "New Course" in mid-1953. It is possible that this falling trend in domestic consumption may be arrested or even reversed; it is the declared intention of the "New Course" to increase the power supply to the small consumer. No information has become available, however, which supports this intention. It is apparent that the industrial consumption of electric power in East Germany is over 60 percent of total consumption, and it is probable that this proportion will not change materially.

The per capita electric power consumption in East Germany does not present a very meaningful statistic. Although the population trend is not well defined, it may be assumed that the population of

* Table 2 follows on p. 19.

Table 2

Power Consumption Pattern in East Germany
1947 and 1951-52 a/

Industry	1947 60/	1951 61/	1952 62/
	Percent		
Chemical	16.5	16.9	16.8
Mining	14.1	14.5	15.3
Liquid Fuel	9.2	12.0	11.8
Other Industries	19.9	17.0	17.1
Occupation Power	9.9	8.6	8.3
Transport and Public Use	6.3	7.1	7.3
Agriculture	2.9	2.5	3.5
Domestic	12.2	10.9	10.4
Plant Use and Losses b/	16.0	10.5	9.4
Total c/	100.0	100.0	100.0

a. There is no indication that the pattern in 1953 was materially different from that in 1951 and 1952.
b. The figures 10.5 percent for 1951 and 9.4 percent for 1952 appear to be disproportionately small. The figure of 16 percent for 1947 appears to be closer to reasonable limits. Experience in the US indicates a range of from 15 to 20 percent for this category.
c. Total production (not including imports) in terms of million kwh was as follows: 1947, 12.8; 1951, 21.3; 1952, 23.4.

East Germany will hold fairly even at about 18.5 million. Considering the continued and changing domestic use restrictions and the disproportionate emphasis on industrial requirements, this population figure related to electric power production figures would not establish a very reliable set of values. The following comparison, however, serves as a relative indicator.

Although an estimate based upon known values would indicate about 713 kwh per capita in East Germany, one source quotes 620 kwh per capita (over-all) for 1947. 63/ The over-all per capita use in

the US for 1952 was 2,940 kwh (as derived from Federal Power Commission production data and the US Census estimate). If East Germany attains its 1955 probable production of 30.5 billion kwh and the population holds at 18.5 million, the per capita use in 1955 will be 1,650 kwh.

C. Consumption Controls.

The officials of East Germany are in a position to exercise two most effective power-use controls.

The first of these is the spreading of industrial use patterns 64/ by adjusting the industrial requirements to a 24-hour use basis. This is the most satisfactory method of reducing system demands and of stretching the system capability. Technically, it could be classified as a method of improving the system-load factor, for it permits a given system capacity to produce a greater quantity of kilowatt-hours. This, in turn, increases industrial production, reduces system reserve requirements, and improves system utilization (without added investment). Indirectly, it also improves the domestic load pattern; when work shifts are spread, the normal use habits of the populace are also disturbed, with a consequent lowering of peak demands. This system was used with considerable benefit in the US during World War II. In normal times, however, it is not acceptable to the populace and is either actively or passively resisted.

The second power-use control is the establishment of limiting controls on consumption. 65/ These involve the actual restriction of the amount of power that may be used and the establishment of specific time limits when power may be used. Rigid penalties for infractions are imposed, and there is apparently no hesitancy to "black out" circuits to domestic consumers. Under that system the industrial consumer has positive priority on the power generated. It is effective within the limits of the amount of power ordinarily made available to the domestic user. As shown in Table 2, the amount has ranged from 12.2 percent in 1947 to 10.4 percent in 1952.

Following the 17 June 1953 strikes and disturbances in East Germany, the officials promised a relaxation of the domestic electric power restrictions. Some information indicates that these measures may originally have been only promises which were not to be kept. 66/ Later information indicates, however, that there has been an effort to reduce power cuts. In the face of a power deficit, it appears that it will be some time before the measures being taken can be fully evaluated.

IV. Expansibility.

A. Increase in Capability.

After the termination of the dismantling phase, near the end of 1947, East Germany was faced with the problem of how to revitalize and implement its electric power industry sufficiently to keep abreast of the requirements. Although there was evidence that the technicians within the electric power industry were aware of the problem facing the industry, reconstruction and expansion of facilities lagged seriously, even though they were outlined in broad form. 67/ For some time the planning did not appear thorough, and there was no real evidence of coordinated effort. To a large degree, requirements were met by long hours of operation, improvisation, and repairs of a more or less temporary nature. This type of effort carried the industry through 1950.

In such a situation, an improvement in plant efficiency would have been a help. Improved efficiency, in effect, releases more kwh for useful work with the expenditure of the same quantities of fuel, supplies, and labor. Data on plant efficiency are too fragmentary to permit a firm evaluation, but continuing efforts to raise efficiency are doubtless being made. Such factors as conversion from hard coal to brown coal, neglect of preventative maintenance, excessive hours of operation, and material and equipment shortages, however, are not conducive to high operating efficiencies. 68/ Consequently, it may be expected that the operating efficiencies of the East German plants will remain below normal during the period of the First Five Year Plan (1951-55). 69/

The Plan called for the addition of 340,000 kw of generating capacity during 1952 70/ and announced the expansion of support facilities such as those industries manufacturing generating and turbine equipment. 71/ This 340,000 kw included both the construction of new facilities and the rehabilitation of existing facilities. Such important projects as Elbe (Vockerode), Calbe-West, Fuerstenberg East, and Trattendorf were involved in this Plan. 72/ A new plant, Berzdorf,* of 350,000 kw, was also mentioned, but provision for actual construction of this plant does not appear to have materialized.

* Apparently to have been constructed in two phases, the first to have been 150,000 kw initiated in 1952.

The Plan called for a capacity improvement of 655,000 kw for the year 1953. 73/ By mid-year, however, this goal was reduced to 604,000 kw, 74/ a decrease of 8 percent. The same Plan document indicated that of the 604,000-kw increase, only 55 percent, 336,000 kw, would actually be accomplished in 1953. 75/ The 8-percent reduction from the original Five Year Plan goal appears to be inconsistent with the stated intention of the "New Course" to eliminate power cuts and improve future power supplies, but it may reflect an attempt to jockey a bad plan into a more realistic position.

An even more significant factor appears when the Plan figures pertaining to capacity additions for 1954 and 1955 are reviewed. The original capacity expansion goal for the 1951-55 period was 2.78 million kw, but about the time the "New Course" realignment was being felt, the objective was raised to 3 million kw. This was done in the face of the fact that statistical performance data for three-fifths of the Plan period had indicated an accomplishment of only 23.9 percent of the Plan goal. At the same time, the official document expressed the probability that the new goal would be realized by about 88 percent.* This sort of double-objective planning is not only confusing but would appear to be tantamount to an expression of lack of confidence in the expansion possibilities of the Plan.

Planned and estimated additions to electric power plant capacity in East Germany from 1951 through 1955 are shown in Table 3.**

* A later document 76/ with an information date of December 1953 (received May 1954), indicates that only 196.7 megawatts would be put in operation in 1953, instead of the expected 336 megawatts. This document states, however, that the carryover into 1954 would be 137.25 megawatts and that 25.4 megawatts not planned had been completed. This indicates that the Plan had again been revised, apparently to values similar to those listed as probable (Table 3), and that this revised Plan was likely to be unfulfilled. This document continues with a Plan figure for 1954 of 741.0 megawatts. At this point it is not clear whether or not the carryover (137.25 megawatts) is to be in addition to the 741.0 megawatts. From all this, one fact emerges: the capacity additions are repeatedly falling behind objectives in a manner that will certainly hamper the Five Year Plan goal.

** Table 3 follows on p. 23.

Table 3

Additions to Electric Power Plant Capacity in East Germany 77/
1951-55

Thousand Kilowatts

	1951	1952	1953	1954	1955	1951-55
Original Five Year Plan	270	340	655	750	765	2,780
Revised Target	160	171	604	1,010	1,060	3,005
Probable or Actual	160	171	336	863	940	2,470

B. Deterrents to Expansion.

There appears to have been considerable lost effort in the failure of the responsible officials in East Germany to recognize the importance of coordinating the reconstruction program and establish priorities on material and equipment for the electric power industry. 78/

Because East Germany had not previously constructed large turbines, boilers, and generators, 79/ time was lost getting industry organized and expanded to build such equipment. The East Germans had originally anticipated the importation of much of this equipment and material from the West. When this failed, relatively unsuccessful efforts were made to obtain equipment from Czechoslovakia, 80/ and more recently a concerted effort has been made to organize and establish priorities for the procurement of material and equipment for the electric power industry. 81/

Even with this implementation of the program for the construction of new facilities, there still remains considerable doubt as to the probable quantitative net gain in capacity that will materialize. There is a considerable amount of daily attrition of available production capacity, some of it temporary in character and some of it more serious and permanent. This attrition of capacity is not directly predictable. Because of the long hours of operation and the poor condition of maintenance, however, it is a significant factor. As such, it offsets an equal amount of new-capacity additions, and it is believed that before real capacity improvement can be realized, a greater effort will have to be directed toward rehabilitation.

C. Expansion Estimate.

The expansion effort has been estimated by graphical projection of the historical kwh-production curve and by translating that in terms of capacity. Source statements, although in general agreement that the production objective will not be attained, are in wide disagreement as to the planned capacity additions (kw) that can be accomplished by 1955. These statements of additions vary from 2.3 million kw 82/ to 4 million kw. 83/ It is estimated, however, that capacity additions of about 2.3 million kw will have been built during the Five Year Plan. This compares favorably with the official East German figure of 2.5 million kw as a probable addition. (See Table 3.) Added to the 1950 estimate of 3.8 million kw, this additional capacity of 2.3 million kw would give an estimated total capacity of 6.1 million kw for 1955, as shown in Table 4.

Table 4

Estimated Total Electric Power Production Capacity in East Germany a/
1950-55

Million Kilowatts					
1950	1951	1952	1953	1954	1955
3.8	4.2	4.6	5.1	5.6	6.1

a. For graphical representation of estimated total capacity, see Figure 3, following p. 58.

V. Input Requirements.

In 1950, some 104,500 kw of principal plant capacity in East Germany was represented by hydroelectric power plants and 3,695,000 kw by thermal electric plants. About 97.4 percent of the requirement was met by thermal electric power. With the exception of a very small amount (less than 2 percent of the total) attributed to gas and diesel sources, this thermal electric power was produced from various forms of coal. Because of a lack of available statistical information covering all of the power plants in East Germany, the development of

a pattern of use of these various forms is difficult. A 1949 fuel-use breakdown for the centrally controlled plants has, however, been provided by a documentary source. 84/ This breakdown is shown in Table 5.*

Since the centrally controlled plants in 1949 accounted for about 35 percent of the total production, Table 1 may be reasonably used as a basis for Table 6,** which gives the estimated amounts of coal required by the electric power industry during each year of the Five Year Plan.

In Table 6 it will be noted that a number of forms of brown coal have been combined into one item, "Other Forms of Brown Coal." This grouping is justified because the specific heat rate of these forms (kg/kwh) is considerably higher than that of raw brown coal, and in comparable time periods there will probably be a rather wide variation of the "mix" of all these forms of coal. This mix will depend on such variable factors as available supply, transportation, heat, and moisture content of the fuel, as well as on the manner in which the system load is assigned to the various interconnected plants.

It is estimated from Table 6 that, although the percentage is declining, the quantity of hard coal consumed annually in the production of power remains about constant. The decline in percentage is in conformity with the stated intention 85/ to reduce and, eventually, to eliminate the use of hard coal for the production of electric power. Conversion, however, will probably be slow, for plants designed for the use of hard coal are difficult to operate on brown coal and efficient operation can be attained only by the conversion of boiler equipment to permit use of brown coal. As such conversion is made, it can be expected that an equivalent thermal input of the appropriate forms of brown coal will be required. To date, specific evidence of success in this effort is meager; at least one plant, Peenemunde, seems to be using brown coal, and it is possible that others have made the conversion.

* Table 5 follows on p. 26.
** Table 6 follows on p. 27.

Table 5

Fuel Consumption for Power Production in East Germany
by Centrally Controlled Plants a/
1949

Fuel	Thousand Metric Tons	Specific Kilograms per Kilowatt-Hour	Million Kilowatt-Hours	Percent of Production of Centrally Controlled Plants
Hard Coal	133	1.18	113.2	1.85
Raw Brown Coal	11,899	2.59	4,600.0	75.17
Dry Coal	73	1.22	59.7	0.97
Brown Coal Briquettes	1,332	1.29	1,027.0	16.80
Brown Coal Dust	10	0.94	9.9	0.16
Brown Coal LT Coke	310	1.15	269.3	4.40
Brown Coal Briquette Chips	35	1.79	19.5	0.32
Gas Coke Breeze	3	1.40	2.05	0.03
Gas			11.0	0.18
Diesel			7.7	0.12
Total			6,119.35 b/	100.00

a. The fuel (tons) quantities shown above may not reflect total deliveries to plants, as they represent only the quantities used for the production of electric power and exclude inputs to steam heat or process steam.
b. Centrally controlled plants included virtually all of the large power plants, except the SAG's, and accounted for about 35 percent of total East German production in 1949.

Table 6

Estimated Inputs of Fuel for Thermal Power Plants
in East Germany a/ b/
1950-55

Thousand Metric Tons

	1950	1951	1952	1953	1954	1955
Raw Brown Coal	33,900	38,200	42,520	46,715	51,700	56,460
Other Forms of Brown Coal	5,012	5,644	6,222	6,794	7,438	8,075
Hard Coal	1,260	1,850	1,803	1,803	1,803	1,803
Total Fuel Requirement	40,172	45,694	50,545	55,312	60,941	66,338

a. Range of error, plus or minus 10 percent.
b. This table is derived from the estimate of thermal electric power production (shown in Table 1), reduced by the East Berlin production (5.8 percent) and prorated on the basis of the ratio established by Table 5, except that the hard-coal inputs are a composite figure. The latter includes an additive for East Berlin but shows no consumption increase after 1950, with the proportionate increase included as raw brown coal.

VI. Location.

A. Generation Facilities by Geographical Areas.

Because the pre-World War II German electric power industry was constructed for a united Germany, East Germany was confronted with the problem of the adaptation of an electrical generating and transmission system constructed for a different geographical base. As a practical matter, this in itself would not have been serious if the free exchange of power across political boundaries had been permitted. This free exchange would have assisted in a balancing of area deficits, on both a local and a national basis. Through savings in coal shipments and better loading of the more efficient plants, it would also have permitted considerable economic advantage. Politically imposed barriers not only have hampered such exchange of power but also have severely reduced imports of electrical equipment and materials from the West.

In the immediate postwar years, the East German electric power industry was adversely affected by the severe dismantling program of the USSR. Then came the effort to revitalize industry and the electric power components of industry. It is difficult to see that this effort followed any logical plan, for to a large degree it seemed to be an attempt to do everything at once with but little over-all success. This effort was followed by a period showing evidence of more logical planning, and by 1953 it appeared that considerable progress was being made in getting together the components of a workable electric power industry.

There is now a large concentration of power plants in the Saxony and Saxony-Anhalt mine areas. Before the war the Berlin area of Brandenburg was also well developed, primarily because of its centralized economic and political importance, but the loss of major generating stations to the West Berlin area created some serious deficits for East Berlin and adjacent areas. This area had depended heavily on imported hard coal. This dependence again created supply problems, and an effort was made to convert the plants to brown coal use. Upper Thuringia contained a large number of thermal electric plants designed primarily to support the chemical industry in the Halle area. Southern Thuringia contained a considerable number of lesser hydroelectric installations on such rivers as the Saale, the Werra, and the Weisse Elsier. Mecklenburg was of lesser importance insofar as generation facilities were concerned.

B. Transmission Facilities by Geographical Areas.

Prewar Germany had a well-integrated transmission network and was able to transport large blocks of power to the many load centers of its system. Most elements of the economic life of Germany centered on Berlin, and to a considerable degree this was also true of the electric power network. Many transmission lines were designed for the transmission of power to and from Berlin and were thus known as radial circuits. The power network was far from simple, however, and there developed many other circuits and load centers concerned with large industrial areas and mining centers. Thus the network became a very complex pattern of transmission lines to and from all the principal industry and population centers.

The creation of the several postwar Zones, of course, was not based upon the operation requirements of the electric power system, but upon political boundaries. The dismantling program of the USSR

was also felt in the transmission network, as many elements of logical circuit arrangement were destroyed or removed. Later efforts were made to rebuild many former circuits and restore the network to a functional operating capability. Again, these efforts were limited by equipment and material shortages. There is, however, evidence of considerable success, for when the exchange agreements were discontinued with the West at Berlin in 1952 it was apparent that the rearrangement of the circuits to bypass West Berlin had been completed well in advance. There are, however, many evidences that East Germany has an over-all net power deficit, and also it is believed that the transmission net capability is not sufficient to eliminate all area shortages.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500150001-7

APPENDIX A

ELECTRIC GENERATING PLANTS IN EAST GERMANY

This appendix provides a list of electric generating plants divided into two general groups, thermal electric and hydroelectric. The list is limited to those plants with a capacity of at least 1,000 kw. The 1950 capacity shown is that described in detail in Appendix C and is an estimate of individual installed capacities as of 31 December 1950. For the year 1950, a considerable amount of excellent information is available in sufficient volume and detail to permit a reasonably accurate determination of the individual plant capacities which, aggregated, can be considered as the basis for the determination of the productive capacity of the East German power industry. It must be pointed out that the information is of 1950 date and the estimates represent the analyst's opinion of the 1950 capacities of the referenced plants as those capacities were deduced from the screening of a mass of reports.

Since 1950, and especially during the last 6 months of 1953, a large volume of good source information on the electric power industry in East Germany has become available. This information has been confined largely to such aspects of the industry as the political, general economic, organizational, planning, and over-all requirements for material and equipment. It has contained very little statistical information on individual electric plant capacities or on operational data. There were, however, two reports received in late 1953 which listed purported 1952 capacities of a number of important plants and indicated changes for those plants, mostly increases over the figures in the 1950 list. This more recent information is shown in the 1952 column, with a few isolated additions, to reflect the latest reported plant capacities. The figures should be used with caution, as sufficient supporting material is not available to establish the stated capacities firmly. The apparent increase in capacity from 1950 to 1952 should not be accepted as actual, for it is believed that some of the reported 1952 capacities were planned but not accomplished. In addition, there is little available information on capacity losses, such as those caused by failures of equipment, retirement of old equipment, or the abandonment of the smaller, inefficient plants. Determination of these doubtful elements can be made only as further information is received.

Thermal Electric Plants	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-~~Hours~~) 1950 (Estimated)	Installed Capacity (Thousand Kilowatt-~~Hours~~) 1952 (Reported)
Agfa-Seide (see Premnitz)				
Alten-Dessau	51°49'	12°12'	6.3	12.0
Ammendorf	51°26'	11°59'	5.0	7.6
Amsdorf (near Ammendorf)	51°28'	11°24'	3.5	
Anna-Mathilde (mine)	51°29'	14°10'*	5.7	
Apolda	51°01'	11°30'	1.5	12.0
Arnsdorf	51°06'	13°59'	5.0	
Aschersleben	51°45'	11°28'	2.5	
Auma	50°42'	11°56'	1.5	
Bad Blankenburg (see Vollrath und Sohn)				
Bad Sulza (see Doebritschen)				
Beeskow (see Finkenheerd)				
Berlin (see Klingenberg and Rummelsburg)				
Bergwitz (see Wittenberg)				
Bischofferode	51°30'	10°27'	3.9	
Bismarck Hall	52°40'	11°34'*	3.9	4.6
Bitterfeld	51°37'	12°19'	190.0	218.0
Bleicherode East	51°26'	10°35'	18.0	18.0
Bleicherode (potash works)	51°26'	10°35'	5.7	9.4
Boettcher (Porstendorf)	50°58'	11°39'	1.5	
Bohlen (Otto Grotewohl)	51°12'	12°23'	190.0	196.8
Borna (mine)	51°07'	12°30'	7.0	
Borna (see Deutzen, Dora Helene, and Witznitz)				
Bramow (Rostock)	54°05'	12°08'	8.0	
Brandenburg	52°25'	12°33'	3.5	
Breitungen	50°46'	10°20'	35.0	50.0
Breitungen-Regis (to be enlarged to 120)	51°05'	12°26'	5.0	
Briesen	52°20'	14°17'	1.5	

* Approximate coordinates.

Thermal Electric Plants (Continued)	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-~~Hours~~) 1950 (Estimated)	Installed Capacity (Thousand Kilowatt-~~Hours~~) 1952 (Reported)
Brigitta (mine) (near Grube Brigitta)	50°30'	14°21'	7.6	
Brotterode-Mommel	50°50'	10°26'	1.5	
Bruckenberg III (near Zwickau)	50°44'	12°30'	2.5	
Bubiag-Emanuel (mine)	51°31'	13°43'	23.0)	37.2
Bubiag-Marie Anna (mine)	51°31'	13°43'	24.0)	
Bubiag-Milly (mine)	51°31'	13°43'	3.0	
Buchenau (see Solvaywerke)				
Buna (see Schkopau)				
Calbe (see Eisenhuetten Kombinat West)				
Casar (see Westeregeln /mine/)				
Chemnitz	50°50'	12°55'	39.0	
Chemnitz (railroad)	50°50'	12°55'	4.5	
Chemnitz (see Oberlungwitz)				
Clara III (mine)	51°20'	14°20'	13.8	
Clara IV (mine) (near Werminghoff)	51°33'	14°22'	4.4	
	51°33'	14°22'	4.4	
Concordia (Nachterstedt) (mine)	51°49'	11°29'	48.0	49.3
Coswig (see Fertilia)				
Cottbus	51°46'	14°20'	2.4*	
Dessau	51°50'	12°15'	2.0	
Dessau (see Alten)				
Deuben (near Zeitz)	51°07'	12°04'	63.2	63.6
Deutschland-Oelsnitz (mine)	50°25'	12°10'	3.5	
Deutzen (near Borna) (mine)	51°07'	12°30'	16.8	
Doebritschen (near Bad Sulza)	51°05'	11°40'	1.0	24.0

* Includes some diesel and/or hydro generating capacity.

Thermal Electric Plants (Continued)	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-Hours) 1950 (Estimated)	Installed Capacity (Thousand Kilowatt-Hours) 1952 (Reported)
Dora Helene (Borna)	51°07'	12°30'*	2.5	
Dresden West	51°03'	13°35'	28.0)	126.0
Dresden (railroad)	51°03'	13°35'	3.1)	
Eilenburg	51°28'	12°37'	2.0	
Eisenach (automobile factory)	50°59'	10°19'	2.8	
Eisenach (yarn factory)	50°59'	10°19'	1.5	
Eisenhuetten Kombinat West (Calbe) (Magdeburg-Rothensee)**	51°54'	11°46'		
Eisenhuetten Kombinat East (Fuerstenburg) (Josef Stalin)**	52°09'	14°41'		
Eisleben (near Querfurt)	51°33'	11°26'	7.8	
Elbe (see Vockerode)				
Elisabeth (near Mucheln) (mine)	51°18'	11°49'	9.0	
Elise (near Nucheln) (mine)	51°18'	11°49'	5.5	
Erfurt	51°00'	11°02'	44.0	44.0
Erfurt (see Gispersleben)				
Erika (Ilse) (Jonny Scheer) (mine)	51°13'	13°29'*	2.0	
Ernst Thalmann (see Leipzig South)				
Eva Renate	51°35'	13°58'*	2.0	
Espenhain I and II	51°11'	12°28'	365.0	288.0
Fabrik Hirsch (near Gera)	50°52'	12°05'	1.0	
Fertilia (Coswig)	51°53'	12°27'	4.0	
Finkenheerd (near Beeskow)	52°15'	14°34'	75.0	78.0
Finow (Mark)	52°50'	13°42'	31.0	
Fleming (near Weida)	50°46'	12°04'	1.0	

* Approximate coordinates.
** Reconstruction planned.

Thermal Electric Plants (Continued)	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-Hours) 1950 (Estimated)	Installed Capacity (Thousand Kilowatt-Hours) 1952 (Reported)
Floha (Gruenheinichen Paper Mill)	50°46'	13°09'	3.5	
Forst	51°44'	14°38'	2.6	
Forst (see Friedrich-schain)				
Fortschritt (near Meuselwitz)	51°03'	12°18'	2.0	
Freital (see Zaucherode, Freital Hydro)				
Friedrichschain	51°44'	14°38'	2.0	
Gardelegen	52°32'	11°22'	3.5	
Genthin (see Henkel)				
Georgiy Dimitroff (see Leipzig North)				
Gera	50°52'	12°05'	9.9	
Gera (see Fabrik Hirsch)				
Gertrude (mine) (near Meuselwitz)	51°00'	12°20'	9.9	
Gispersleben (near Erfurt)	51°02'	10°59'	31.8	31.8
Glauchau	50°49'	12°32'	2.6	
Glauchau (see Schweinsberg)				
Gluckauf (see Sonderhausen)				
Goelzau (Kothen)	51°45'	11°58'	5.6	
Gotha	50°47'	10°43'	2.0	
Gottessegen (near Lugau and Oelsnitz)	50°44'	12°45'	4.0	
Greiz	50°39'	12°12'	6.0	
Greiz (see Schleber)				
Gross Grimmia (see Hedwig)				
Gross Kayna	51°17'	11°56'	68.0	
Grossrohrsdorf	51°09'	14°01'	2.2	
Guenther (near Guenther Kolonie)	50°39'	12°12'	1.5	

Thermal Electric Plants (Continued)	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-Hours) 1950 (Estimated)	Installed Capacity (Thousand Kilowatt-Hours) 1952 (Reported)
Halberstedt	51°53'	11°04'	1.9	
Halle-Trotha	51°30'	12°00'	39.6	
Hansa Troebitz (mine) (near Kirchhain)	51°38'	13°34'	5.0	
Harbke	52°11'	11°03'	147.0	141.5
Hedwig (Gross Grimmia) (mine) (Hohenzellerhall)	52°06'	10°35'*	17.0	
Heiligenroda	50°51'	10°16'	8.5	9.8
Helmstedt (new plant opposite West Zone plant)	52°14'	11°00'	8.5	
Henkel (Genthin)	52°24'	12°10'	2.8	
Hennigsdorf	52°38'	13°12'	15.0	
Heye III (near Hoyerswerda) (mine)	51°26'	14°15'	2.5	
Hirschberg	50°24'	11°49'	1.0	
Hirschfelde	50°57'	14°55'	132.0	137.7
Hoyerswerde (see Heye III)				
Jena (see Zeitz-Burgau)				
Jonny Scheer (see Erika)				
Kaiseroda (near Studtlengsfeld) (Kalikombinat)	50°49'	10°07'	36.4	48.6
Kamenz (see Lauta)				
Karl Liebknecht (see Leopold)				
Kirchhain (see Hansa Troebitz)				
Klettwitz (see Wilhelminengluck)				
Klingenberg (Berlin)	52°31'	13°34'	160.0	248.0
Kochuette (Mansfeld)	51°34'	11°28')	28.0	28.0
Krughuette (near Mansfeld)	51°32'	11°33')		
Kothen (see Goelzau)				
Kriebstein (near Kriebethal)	51°03'	13°01'	6.3	
Krupp-Gruyson (Magdeburg)	52°06'	11°38'	9.5	
Kyritz	52°57'	12°24'	3.0	
Lauchhammer	51°30'	13°48'	12.0	20.0 (West)
Lauta (near Kamenz)	51°27'	14°04'	80.0	85.0
Kulkwitz (near Leipzig)	51°17'	12°14'	55.0	

* Approximate coordinates.

Thermal Electric Plants (Continued)	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-Hours) 1950 (Estimated)	Installed Capacity (Thousand Kilowatt-Hours) 1952 (Reported)
Leipzig, North (Georgiy Dimitroff)	51°20'	12°23'	28.0)	
Leipzig (yard factory, probably Lindenau)	51°18'	12°20'	6.1)	135.0
Leipzig, South (Ernst Thalmann)	51°18'	12°20'	23.0)	
Leopold I and II (near Taucha) (Karl Liebknecht near Bitterfeld)	51°30'	12°30'	49.0	
Leuna (Merseburg)	51°22'	12°00'	97.0	98.2
Luckenwalde	52°05'	13°10'	1.0	
Lugau (see Gottessegen)				
Lutzkendorf	51°18'	11°51'	54.0	
Magdeburg	52°10'	11°40'	45.0	45.0
Magdeburg (see Krupp-Gruyson)				
Mansfeld Helbra	51°34'	11°28'	13.1	
Mansfeld (see Kochuette and Krughuette)				
Marga (mine) (near Senftenberg)	51°31'	14°01'	13.6	
Marie (mine)	51°36'	14°27'*	1.2	
Mariannengluck (near Spremberg)	51°35'	14°25'	4.5	
Maxhuette (Maximilian-shuette factory)	50°40'	11°24'	7.7	
Meissen	51°09'	13°29'	1.4	
Merseburg (see Leuna)				
Meuselwitz (see Fortschritt and Gertrude)				
Michelwerke Gute Hoffnung (mine) (near Rossbach)	51°55'	11°54'*	4.0	
Michelwerke Leonhardt (mine) (near Zipsendorf)	51°03'	12°16'*	3.5	
Michelwerke Michel (mine) (near Naumburg)	51°09'	11°49'	8.5	

* Approximate coordinates.

Thermal Electric Plants (Continued)	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-Hours) 1950 (Estimated)	Installed Capacity (Thousand Kilowatt-Hours) 1952 (Reported)
Michelwerke Vesta (mine) (near Naumburg)	51° 09'	11°49'	3.5	
Mittweida	50°59'	12°59'	5.1	
Mucheln (see Elisabeth and Elise)				
Muehlhausen (Diesel)	51°13'	10°27'		25.0
Mumsdorf (see Phoenix and Rositz)				
Nachterstedt (see Concordia)				
Naumburg (see Michelwerke)				
Neukirchen (mine)	50°58'	12°28'	5.0	
Neustassfurt (near Stassfurt)	51°52'	11°35'	5.0	
Niederlausitz (see Plessa)				
Nienburg (see Osternienburg)				
Oberlungwitz (near Chemnitz)	50°50'	12°50'	4.0	
Oelsnitz	50°25'	12°10'	5.1	18.0
Oelsnitz (see Gottessegen)				
Osternienburg (near Nienburg)	51°48'	12°02'	13.0	12.0
Peenemunde	54°08'	13°47'	15.0	40.0
Pfaennerhall (mine) (near Querfurt)	51°23'	11°36'	15.0	8.0
Phoenix (mine) (near Mumsdorf)	51°04'	12°19'	2.5	6.3
Plauen	50°30'	12°08'	2.2	32.0
Plessa (Niederlausitz)	51°28'	13°37'	34.0	
Porstendorf (see Boettcher)				
Potsdam I and II	52°24'	13°04'	16.0	

Thermal Electric Plants (Continued)	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-Hours) 1950 (Estimated)	Installed Capacity (Thousand Kilowatt-Hours) 1952 (Reported)
Premnitz (Agfa-Seide)	52°32'	12°20'	8.3	
Prenzlau	53°19'	13°52'	2.3	
Probstzella	50°32'	11°23'	3.2	
Profen (mine) (AKW)	51°08'	12°13'*	1.0	
Pulsnitz	51°11'	14°01'	6.6	26.0
Querfurt (see Eisleben and Pfaennerhall)				
Radebeul	51°06'	13°39'	2.0	
Reichenbach	50°37'	12°18'	13.9	
Remptendorf (see Burgkhammer Hydro)				
Riebeck (see Deuben)				
Rodleben (near Zerbst)	51°56'	12°08'	4.0	
Rositz (near Mumsdorf)	51°01'	12°23'	12.0	
Rositz (coal) (near Mumsdorf)	51°01'	12°23'	2.5	
Rossbach (see Michelwerke)				
Rostock (see Bramow)				
Rummelsburg (Berlin)	52°31'	13°31'	53.0	78.0
Saalfeld	50°39'	11°21'	2.9	
Schkopau (Buna)	51°24'	11°59'	193.0	192.7
Schleber (textile plant) (near Greiz)	50°39'	12°12'	1.5	
Schoenbeck	52°01'	11°45'	1.2	
Schwarza (Zellwolle)	50°41'	11°19'	14.0	
Schwarzenberg	50°33'	12°47'	8.0	
Schwarzheide (Trieb-stoffwerk)	51°28'	13°32'	20.0	22.0
Schwerin	50°38'	11°23'	4.3**	
Schweinsberg (near Glauchau)	50°45'	12°30'	4.5	34.0
Senftenberg (see Marga and Viktoria)				

* Approximate coordinates.
** Includes some diesel and/or hydro generating capacity.

Thermal Electric Plants (Continued)	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-Hours) (Estimated)	Installed Capacity (Thousand Kilowatt-Hours) (Reported)
Sollstedt (potash works)	51°19'	10°30'	2.1	2.9
Solvaywerke (Buchenau)	51°04'	10°16'	1.0	
Sonderhausen (potash works)	51°22'	10°52'	7.5	10.7
Stassfurt (see Neustassfurt)				
Steudnitz	51°00'	11°40'*	2.0	
Stralsund	54°18'	13°06'	8.0	
Studtlengsfeld (see Kaiseroda)				
Theissen (near Zeitz)	51°05'	12°06'	33.2	
Threna (mine)	51°15'	12°32'	3.0	
Torgan	51°34'	13°00'*		38.0
Torgelow	53°38'	14°01'	1.0	
Trattendorf I and II**	51°33'	14°22'		
Triebes	50°41'	12°02'	1.0	
Triebstoffwerk (see Schwarzheide)				
Troebitz (see Hansa)				
Troglitz (see Zeitz)				
Viktoria II (near Senftenberg)	51°30'	13°52'	6.0	
Viktoria III (near Schwarzheide)	51°28'	13°52'	6.5	
Vockerode (Elbe)**	51°51'	12°21'		
Volkenroda (potash works)	51°15'	10°34'	3.8	5.2
Vollrath und Sohn (near Bad Blankenberg)	50°41'	11°16'	1.5	
Wahlitz	52°06'	11°47'	2.4	
Weimar (railroad)	50°59'	11°19'	2.5	
Weimar	50°59'	11°19'	1.0	
Weissenfels West	51°12'	11°58'	4.0	
Weissenfels South	51°12'	11°58'	9.4	
Werminghoff East	51°24'	14°19'*	39.8	

* Approximate coordinates.
** Reconstruction planned.

Thermal Electric Plants (Continued)	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-Hours) 1950 (Estimated)	Installed Capacity (Thousand Kilowatt-Hours) 1952 (Reported)
Westeregeln Solvaywerk	51°51'	11°24'	7.6	
Westeregeln (Casar Mine)	51°58'	11°24'	2.0	
Wilhelminengluck (Klettwitz)	51°33'	13°54'	23.0	
Wittenberg (Bergwitz) (mine)	51°52'	12°39'	2.5	
Witznitz (mine)	51°09'	12°29'	6.6	
Wolfen (film)	51°40'	12°17'	66.8	67.2
Wolfen (dye)	51°40'	12°17'	32.0	41.3
Wolgast	54°03'	13°46'	4.8	
Zaucherode (Freital)	51°01'	13°39'	3.5	
Zeitz II	51°03'	12°09'	12.6	
Zeitz (Municipal)	51°03'	12°09'	5.0	
Zeitz (Troglitz)	51°04'	12°12'	68.0	68.7
Zellwolle	53°00'	11°45'	3.5	6.5
Zerbst (see Rodleben)				
Zigenruck (see Zeiss Hydro)				
Zipsendorf (see Michelwerke)				
Zittau	50°54'	14°50'	2.5)	22.3
Zittau II	50°54'	14°50'	3.5)	
Zschornewitz	51°43'	12°24'	176.5	174.5
Zwickau	50°44'	12°30'	14.3	21.0
Zwickau (see Bruckenberg III)				
Total			3,695.6	
Hydroelectric Plants				
Aue	50°35'	12°42'	1.6	
Auehammer	50°34'	12°40'	4.0	
Bleiloch (Talsperre)	50°32'	11°43'	40.0	40.0
Burkhammer (near Remptendorf)	50°34'	11°42'	2.2	
Canitz (see Wurzen)				

Hydroelectric Plants (Continued)	Coordinates North	Coordinates East	Installed Capacity (Thousand Kilowatt-Hours) 1950 (Estimated)	Installed Capacity (Thousand Kilowatt-Hours) 1952 (Reported)
Doebritschen (near Bad Sulza)	51°05'	11°40'	1.0	
Eichicht	50°37'	11°26'	3.0	
Freiberg	50°55'	13°22'	7.4*	
Freital	51°01'	13°39'	5.6**	
Hohenwarte	50°36'	11°30'	5.5	
Hydrierwerk (near Zerbst)	51°58'	12°05'	6.3	
Kriebstein (near Kriebethall)	51°03'	13°01'	6.3	
Meiningen	50°33'	10°25'	1.5**	
Mihla Werra	51°05'	10°20'	1.5	41.0
Mittweida	50°59'	12°59'	0.9	
Muehlhausen	51°13'	10°27'	1.5	
Spichra	51°01'	11°40'***	1.0	
Themar	50°30'	10°38'	1.5	
Torgelow	53°38'	14°01'	1.0	
Unterpreilipp (near Schwarza)	50°44'	11°20'	1.5	30.0
Wurzen (Canitz)	51°22'	12°44'	3.1	
Zeitz-Ziegenruck	50°37'	11°39'	2.5	
Zeitz-Burgau (near Jena)	50°56'	11°35'	1.1	
Zeitz-Wisenta (near Ziegenruck)	50°37'	11°33'	4.5	
Total Hydroelectric			104.5	
Total Thermal Electric (figures rounded)			3,695.5	
Total Installed Capacity (figures rounded)****			3,800.0 86/	

* Indicated capacity includes more than one plant in the vicinity.
** Includes some deisel and/or thermal generating capacity.
*** Approximate coordinates.
**** Range of error, minus 10 to plus 20 percent.

APPENDIX B

TECHNOLOGY AND TERMINOLOGY

The term electric power, as used in this report, covers the generation of electric energy and its delivery to the consumer. These two objectives are accomplished by means of facilities for generating, transmitting, and distributing electric power. Collectively, these facilities are usually referred to as a power system. Grouped on a national basis, the facilities constitute a nation's electric power industry. A brief description of the processes involved and definition of some of the terms used is provided in the following paragraphs.

Generation of electric power is accomplished by three general plant types: Thermal electric, hydroelectric, and internal combustion. Thermal electric plants are those which obtain their energy from the combustion of solid, liquid, or gaseous fuels. The energy obtained is used to generate steam, which serves to motivate a mechanical device, usually a turbine, which, in turn, drives an electric generator. Hydroelectric plants are those which, by means of mechanical devices, convert the energy of falling water into electrical energy. Internal combustion plants make use of either liquid or gaseous fuels to energize reciprocating engines or turbines that drive electric generators. Of this group of plants the most common is the diesel electric.

To understand measurement of the output and consumption of electric power, an understanding of a few terms of standard definition is necessary. The term kilowatt (kw) refers to the instantaneous measurement of energy and is frequently used to express the capacity of a plant, which is, then, the level of the power output at the time of maximum production. The multiplication of the capacity (kw) by the units of time (hours) during which the capacity is applied results in kilowatt-hours (kwh), which is the standard unit of measurement of electric production. Therefore, the capacity of a plant may be quoted in kilowatts (kw) and its annual output in kilowatt-hours (kwh).

Transmission lines are the electrical "pipelines" used to ship power from a source, a generation station or substation, to some distant point. The termination of a line may be either a consumer's premises or a point of redistribution. Transmission lines are usually classified by their voltage, which is somewhat analogous to hydraulic

pressure and is one of the factors in the determination of the distance the energy may be transmitted. The voltage is usually expressed in kilovolts (kv); 1 kilovolt equals 1,000 volts.

Substations, or transformer substations, are used to change the voltage of an electrical line or circuit. Usually there will be at least two substations to a line, one to raise the generator voltage to the transmission voltage and the other to lower the transmission voltage to the distribution voltage. "Distribution voltage" is the voltage of a portion of an electrical system at the consumer's end and is generally lower than that described as transmission voltage. It is designed to serve a limited distribution area, generally the customer's premises.

It is desirable to point out that every power system is a complex individual design and will have a great variety of combinations of the elements discussed.

A particular electric power plant may be described as having a specific capacity in kw. That is an expression of instantaneous capacity which is, to a large extent, theoretical and is probably arrived at by taking the arithmetical sum of the rated capacities of several generating units in that plant. In order to approach a more factual determination of the capacity of the plant as a unit, several other factors must be known and considered: boiler capacity, character and availability of fuel, operating efficiency, condition of equipment, operating requirements, and others. When these are all considered and evaluated, some estimate of plant capacity may be expressed. It is also probable that for any one plant technicians will produce estimates of considerable variation, depending upon the assumptions used in preparing the estimate upon and the extent of the available knowledge of the operating requirements involved. Such terms as operable capacity and available capacity are found in references. These may have shaded meanings in the thoughts of the user, and unless the facts and assumptions upon which they are based are clearly defined, they are very apt to create confusion. About all that can be gleaned factually from such references is that the basic, or installed, capacities are being qualified.

This applies to the broad grouping of electric facilities often referred to as a power system, the assembly of generating plants, transmission facilities, and distribution facilities into the operating unit. Although this grouping is a practical and necessary functional

arrangement, it tends to increase the complexity of the situation, to multiply the variables, and to reduce the accuracy of the estimate. For this reason an effort has been made in this report to summarize capacity in terms of an installed capacity estimate and to derive production estimates by considering both capacity and historical production trends.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500150001-7

APPENDIX C

METHODOLOGY

An economic analysis of the electric power production of East Germany presupposes that a determination or a reasonable estimate of production capacities can be made as of a definite time; that certain production trend relationships can be established from as many known elements as can be determined, estimated, or reasonably resolved; and that these trends can be compared with known plans for development of facilities and of production.

On the basis of the information that was available, this report covers capacity and production values through 1953. This information was complemented by estimates through the Plan period terminating in 1955. The objective of this procedure was the establishment of certain concrete information:

1. A dated list of generating plants.
2. The capacity of those plants in terms of kw as of 1953.
3. An historical fix of system capacity for as many years as practical.
4. An historical fix of system production from World War II to the latest available information.
5. Graphical projection of 3 and 4, above, over the Plan period and compared with the Plan.
6. Rationalization of Plan effects by review of construction of facilities and efforts to accomplish the Plan.
7. The influence of factors such as fuel, material, and equipment supplies on Plan effects.
8. The significance of economic, political, and regulatory factors in terms of the Plan.
9. Establishment of ranges of error of estimates.

In the development of the statistical data for this report, it became apparent that a graphical comparison of the electrical production accomplishments of prewar Germany and of East Germany would serve to present a picture of the relative magnitudes of those accomplishments (see Fig. 1*). As this graphic presentation progressed, it also became obvious that such factors as rates of growth, World War II effects, and the Five Year Plan relationship were brought into focus.

* Following p. 58.

In charting production for prewar Germany the data were plotted from 1900 to 1943. The curve clearly shows the steady climb of electric power use to 1929, the economic chaos of the early 1930's, and the industrial rise initiated by the Nazi regime, climaxing in the war and the 1945 collapse. The estimate for the period 1939 through 1945 is a wartime estimate taken from a 1947 operating report and is not confirmed in detail. East German production from 1936 through 1945 has been estimated in source material and is also subject to some qualification. From 1946 through 1952, production figures are reasonably well established.

It is also noteworthy that the plotting of the production data develops a relatively smooth curve. Although there was some deviation in source data, it is believed that the curve is representative well within a reasonable range of error. The estimated achievement was derived by projecting the historical curve through 1955. To translate the relative values, this projection was detailed in a blown-up section (see Fig. 2*). In projecting the same relative rate of production increase, several factors were considered, and it was assumed that the area could not further accelerate its production rate, in view of the physical condition and long operating periods of plant equipment; that the new construction program was well behind Plan through 1953; and that critical material and equipment shortages were not becoming less critical. The projection indicated an estimated production for 1955 of 30.5 billion kwh.

A plot of the original Plan figures was superimposed on this curve. The plot originates on the production curve. The Plan curve drops below the 1952 and 1953 production-curve points, then rises above the production curve in 1954 and 1955. This is explained partially when it is realized that preliminary Plan figures did not appear until well into 1951 and the full Plan was not announced until 1952. So it appears that preliminary Plan figures started with accomplishments for 1951; then when it became apparent that production was going to be better than Plan in 1952, the balance of the Plan (1954 and 1955) was raised to more ambitious goals. Other factors probably contributed to the raising of the Plan goals. Acceleration of the construction of electrical equipment building facilities was needed, and there was an added time element necessary to construct new generating and transmission facilities. The result was a Plan increase for 1954 and 1955 that is considered beyond the indicated capability of the industry. Thus, the estimated production achievement for 1955 was projected to 30.5 billion kwh.

* Following p. 58.

In an effort to estimate the installed capacity of the electrical power industry, a generating plant list was compiled. The data of this list were compiled for the year 1950, which seemed to be the latest year for which the available data were sufficient to permit a reasonable capacity estimate by individual plants of capacities of at least 1,000 kw. This tabulation produced an estimated installed capacity of 3.8 million kw. (See Appendix A.)

Various sources have reported installed capacities for the period 1946 through 1950; when the data were plotted the dispersion was too great to permit any factual determination of a trend. (See Fig. 3.*)

It is evident that these data were affected by many factors, one of which was the poor condition of equipment, which made summarized capacities subject to wide variance from day to day. To predict the probable 1955 capacity installation, the estimated production of 30.5 billion kwh was translated in terms of 5,000 hours of use (announced Plan base), which gave a probable capacity of 6.1 million kw. This, plotted on the capacity curve (log)*, was connected by a straight line with the 3.8 million kw estimated capacity for 1950. (See Fig 3.) This curve was then used to establish capacity estimates for the intervening years. It is worth noting that this curve, extended backward, lies within the various reported capacity values.

* Following p. 58.
** Log curve was used for this development, as historical evidence indicates that capacity improvements for the electric power industry generally develop an exponential type of curve.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500150001-7

APPENDIX D

GAPS IN INTELLIGENCE

Lack of recent information on the installed capacities of individual electric power plants in East Germany is at present one of the most significant gaps in intelligence. Some specific data on individual plants have been filtering in, but plant capacities are often not given or are inconsistent. Since 1949 there have been little firm data on the operation, production, and fuel consumption of the electric power industry as a whole.

Plans for transmission line additions of over 50 kv are fairly well known, but information on completed lines is meager. In some instances information exists on new generating plants, but there is little information on their connection, or proposed connection, to the transmission net.

The former organization of the Land government was related to the control and administrative organization of the Energy Districts. Since the abolition of the Land governmental units in August 1952 and the inauguration of the 15 Bezirke, little information has been received which shows adaptation of the electric power administrative units to that change in the lower echelons.

The short period since the introduction of the "New Course" has not produced clear information as to its effects on the electric power industry, on other industrial production, or on benefits to the domestic consumer.

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500150001-7

APPENDIX E

SOURCES AND EVALUATION OF SOURCES

1. Evaluation of Sources.

In searching the field for the various types of information needed to produce a study of the electric power industry in East Germany, a great number of reports and documents were reviewed. Most of the information required was technical and specific. The bulk of the useful information was contained in a relatively small number of reports. The sources can be roughly grouped as follows:

a. Documentary reports obtained through unknown sources. These were most valuable, for they were apparently prepared by German statisticians with a natural bent for detail.

b. State Department despatches were valuable and, in most instances, current sources of information.

c. A number of Army G-2 reports were factual and valuable sources. The basic data for the G-2 information, of course, came from a variety of sources, many of which were former German technicians in the electric power industry.

d. Some spot information came through publications, generally non-technical ones. These were frequently obtained through FBIS.

e. Numerous SO and CS reports were useful and valuable sources. This is especially true of the more recent reports.

f. A large number of reports prepared from defector interrogation were valueless, but a few originating from technical personnel (primarily German engineers) were excellent sources. It is believed that often better information could have been obtained in these cases if technical interrogation had been possible.

2. Sources.

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.

25X1A2g

Next 3 Page(s) In Document Exempt

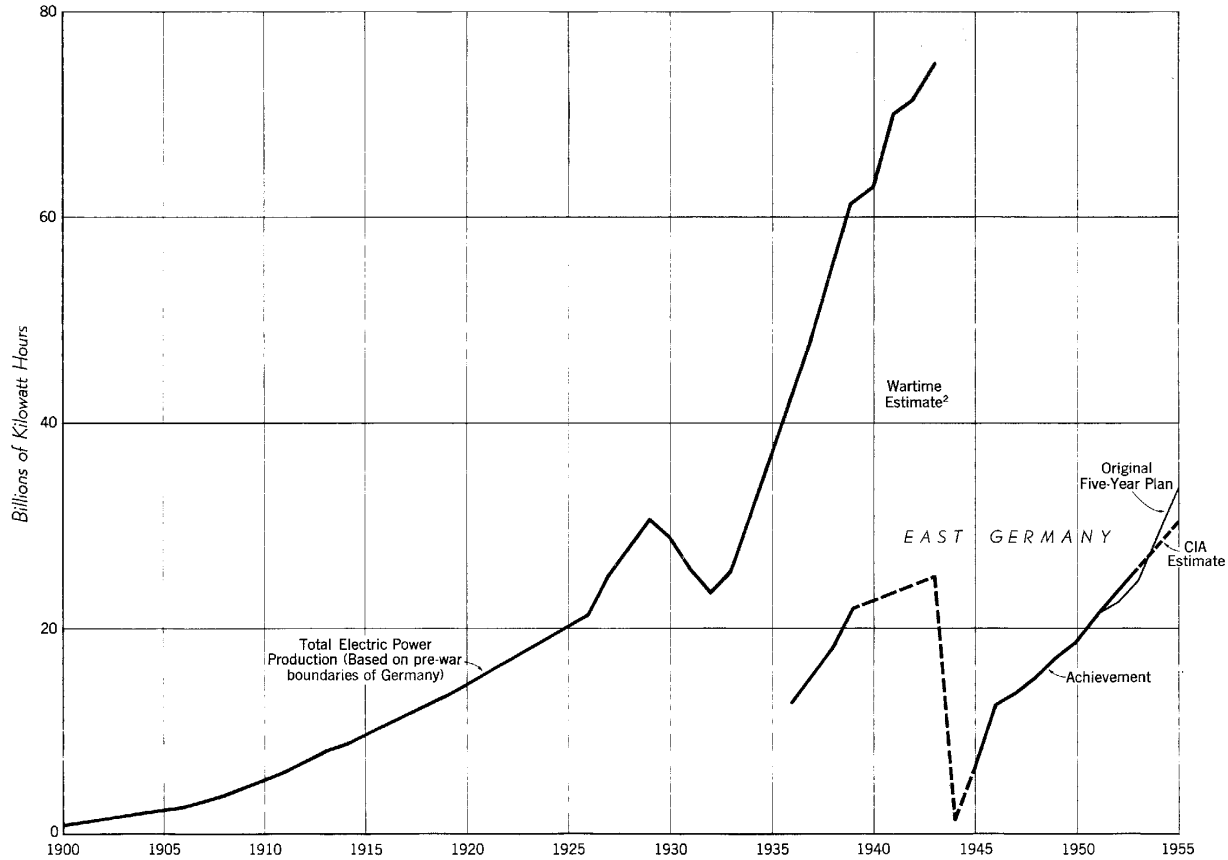
Approved For Release 1999/09/02 : CIA-RDP79-01093A000500150001-7

SECRET

Figure 1

EAST GERMANY

ELECTRIC POWER PRODUCTION[1]



[1] Comparison of Electric Power Production of East Germany with the historical production of Germany (With World War II boundaries)

[2] Data during this period must be qualified in view of World War II

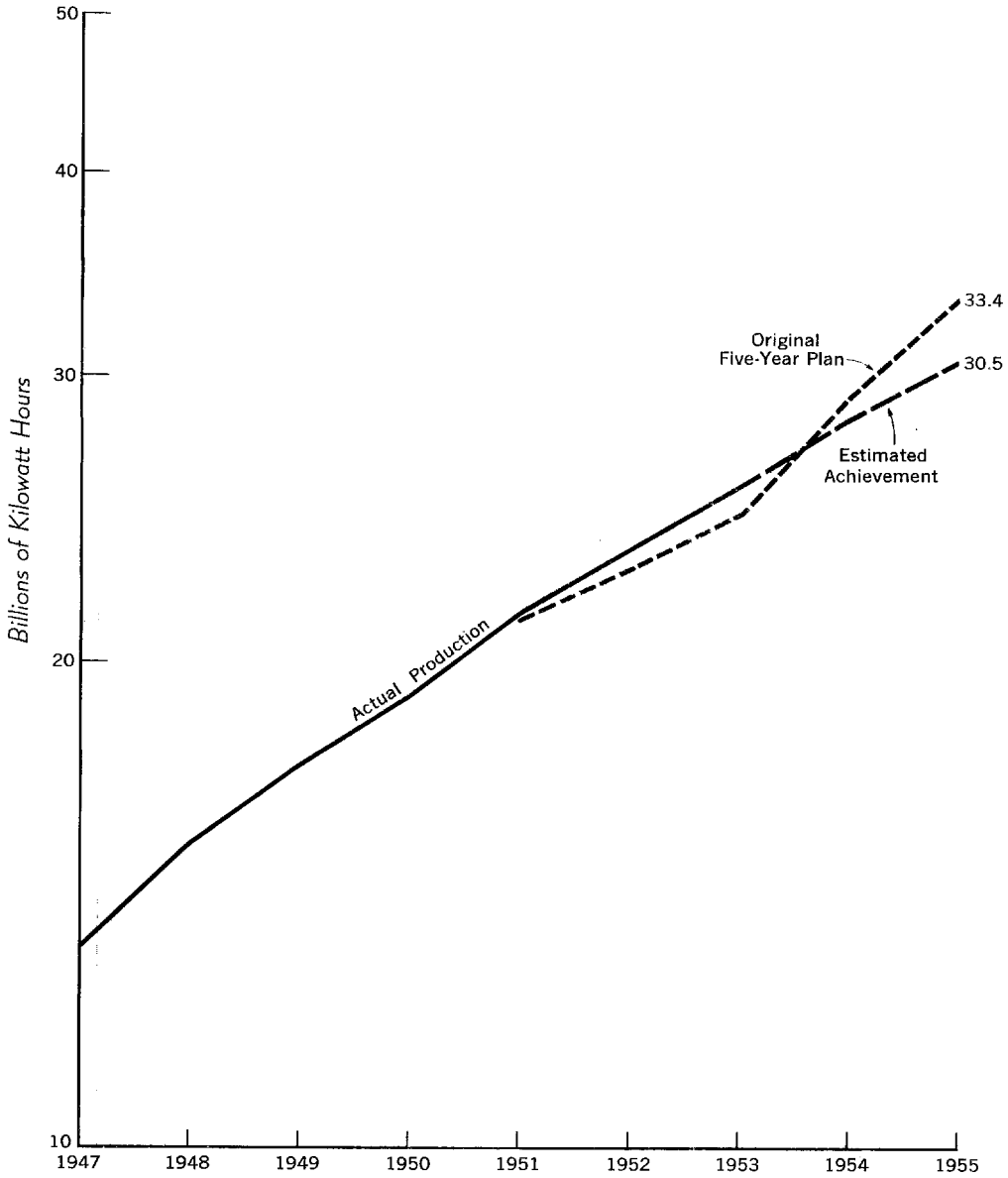
13272 CIA, 6-54

SECRET

SECRET

Figure 2

EAST GERMANY
ELECTRIC POWER PRODUCTION



13273 CIA, 6-54

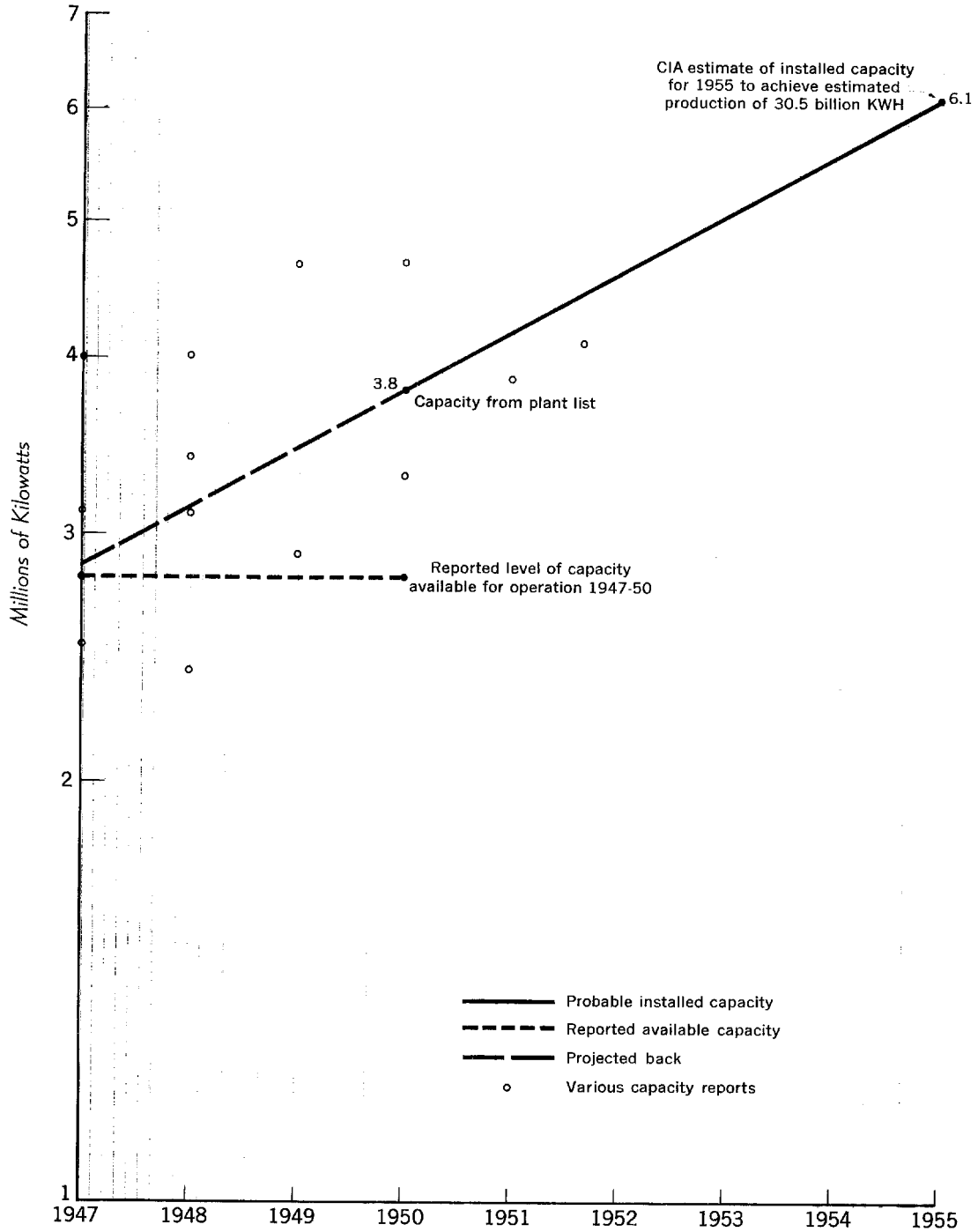
SECRET

Plotted on semi-logarithmic grid

Approved For Release 1999/09/02 : CIA-RDP79-01093A000500150001-7

Figure 3

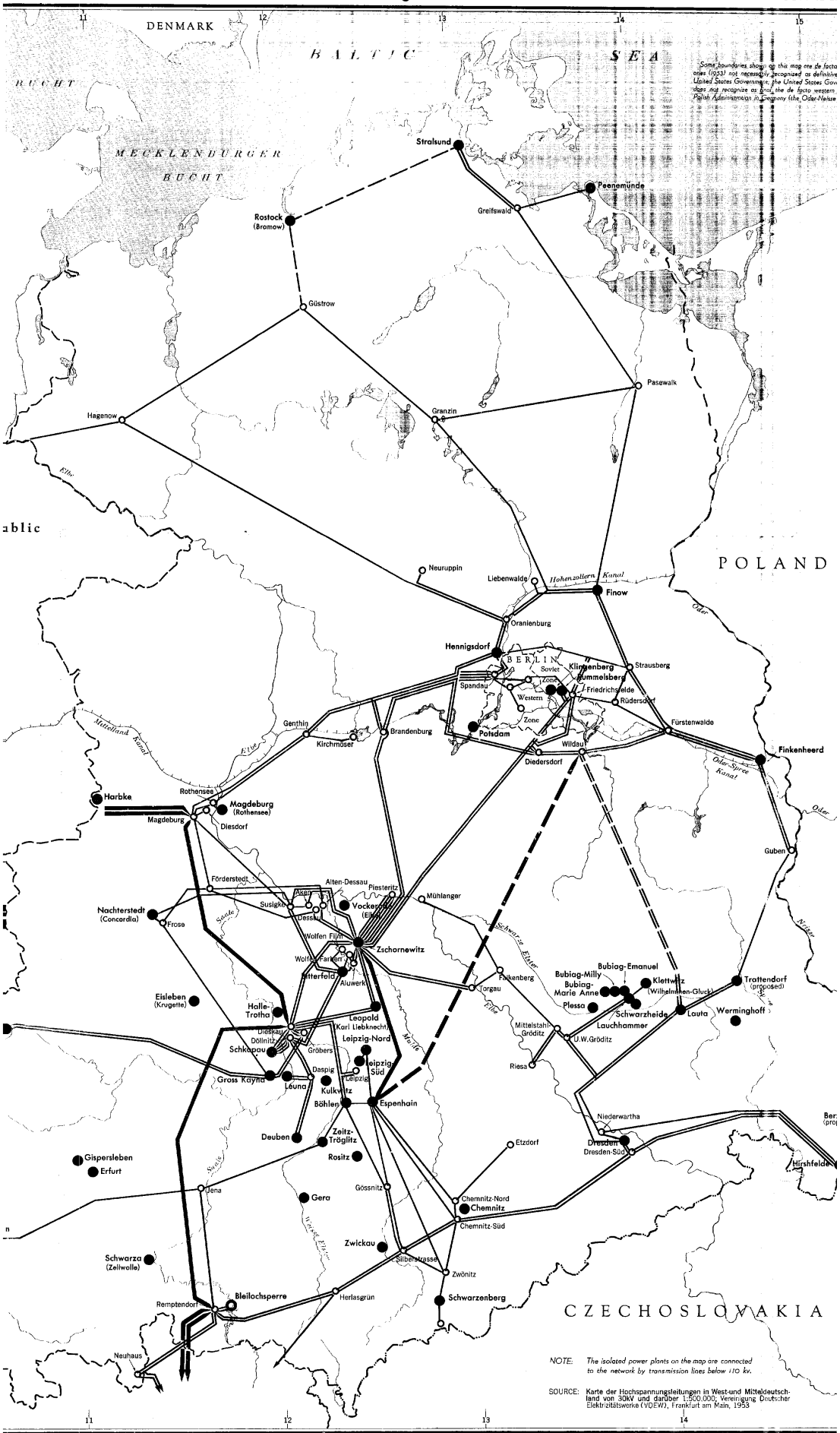
EAST GERMANY
ELECTRIC POWER PLANT CAPACITY



13274 CIA; 6-54

Plotted on semi-logarithmic grid

many: Major Electrical Power Generating Stations and Transmission Lines



- Thermal-electric generating station
- Hydroelectric generating station
- Substation (selected)

TRANSMISSION LINES

- 220 kv.
- 220 kv. (proposed)
- 110 kv.
- 110 kv. (proposed)

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO :

DATE:

FROM :

SUBJECT:

SECRET

US OFFICIALS ONLY

US OFFICIALS ONLY

SECRET