MR-110

110

[redacted]

MR 340 – Military Information –

MR 340 GERMANY (1[1]) - "Trends in the German Economic Potential."
"Axis Capabilities in Spain and Portugal."
"Axis Capabilities in the Former Unoccupied Zone of France."
"Italy in the Present Stage of the War."
"Axis Capabilities in Southeastern Europe."

MR 340 GERMANY (1[1]) - German capabilities

340

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Map Room
Box 110
Folder 6

DECLASSIFIED
State Dept. letter, 1-11-72
By [illegible] Date APR 17 1972

[redacted]

BOARD OF ECONOMIC WARFARE
~~ECONOMIC DEFENSE BOARD~~
WASHINGTON, D. C.

[redacted]

January 15, 1943

To: Lieutenant W. C. Mott, Office of the Naval Aide to the President, White House.

From: Captain W. D. Puleston, U.S.N.

Subject: BEW Report EP-119 - TRENDS IN THE GERMAN ECONOMIC POTENTIAL

1. As requested in your conversation with Lieutenant Gould of a week or so ago, there is attached a report on "Trends in the German Economic Potential".

2. The graph showing the trend of the economic potential is summarized in Chart No. 1 being the graph of the production indices for Germany and German controlled Europe. It is believed that this is most representative of an over-all picture which cannot be put in graph form for lack of a common denominator between such factors as changes in administrative structure, public reactions and other intangible factors.

W. D. Puleston

[redacted]

Copy No. 1

BOARD OF ECONOMIC WARFARE
Enemy Branch

TRENDS IN THE GERMAN ECONOMIC POTENTIAL

Preliminary

[redacted]

January 14, 1943

TRENDS IN THE GERMAN ECONOMIC POTENTIAL--EP-119

Coal and steel are the bases of modern industrial economy and particularly war economy. Therefore their production has been selected as most representative of the German war effort, though it is necessary to underline the limited validity of any conclusions to be derived from an analysis of selective curves. By a combination of the data on coal and steel production a single curve has been plotted to reflect a common trend. 1935 has been chosen as the base year because it may be regarded as a critical year in German rearmament.

In order to check the assumption that the combined coal-steel index characterizes the German economy, it has been compared with the official German index of production for seventeen major industrial branches. Both curves have been plotted on a ratio scale so as to show the percentage growth from year to year (Chart 1). Down to 1939 the curves correspond to a striking degree. Official production figures are lacking for the years thereafter, but it is assumed that the subsequent development in general production likewise has followed closely the trend of the coal-steel index.

For control purposes coal, steel, and electric power were charted as separate curves (Chart 2). Because of their importance for an over-all picture of the war economy the same has been done for zinc, lead, copper, and aluminum (Charts 3-6). Nickel, manganese, and the other ferro-alloys are believed to find indirect representation in the coal-steel index. The trend of these curves confirms the choice of the coal-steel index as best indicating the changes in the German war economy. It should be kept in mind, however, that the increase both in productive capacity and in production since 1940 is due chiefly to the incorporation of the conquered countries within the Nazi economy.

The peak of production and supply was apparently reached between 1940 and 1941. Since then there has been a tendency for the curves to flatten out and even to decline. In evaluating the importance of any further decline that may occur in German coal and steel production it is worth noting the experience of the last war, when there was a marked decline in the later stages of the conflict (Chart 7).

Many of the factors which enter into a determination of a nation's war potential cannot be expressed quantitatively. These include changes in administrative structure, popular resistance against administrative authorities, and future development of resources acquired by conquest. A recent B. E. W. analysis which took into account all factors, including those which cannot be expressed quantitatively, came to this conclusion in respect to the German potential:

> Germany has reached and passed the point of maximum exploitation of the resources of men and materials at its command.

Further economic expansion could only be achieved if the rate of German military activity were permitted to decrease substantially. However, the present economic decline in Germany is not rapid nor will it lead to economic disintegration unless a higher rate of military activity or a higher rate of bombing damage is imposed upon Germany.

Generally speaking, the quantitative expression of the German potential in the coal-steel index corresponds to the conclusion of this independent study. The principal distinction between the coal-steel production index and the generalized statement of the German potential is that the potential did not rise quite as rapidly as the coal-steel production curve indicates, nor was the peak of total German economic potential reached quite as soon as the peak of coal-steel production.

INDEX OF
HARD COAL AND STEEL PRODUCTION
IN GERMANY AND GERMAN CONTROLLED EUROPE

1935 - 1942
1935 = 100

YEAR	COAL	STEEL	COMBINED INDEX
1935	100	100	100
1936	111	119	115.0
1937	129	120	124.5
1938	130	144	137.0
1939	141	148	144.5
1940	211	200	205.5
1941	240	230	235.0
1942	239	225	232.0

INDEX OF

ELECTRIC POWER (GREATER GERMANY)

1935 - 1942

1935 = 100

1935	100.0
1936	115.8
1937	133.5
1938	147.1
1939	163.4
1940	182.6
1941	190.8
1942	200.0
	300 (For Axis Europe)

INDEX OF

PRODUCTION FOR GERMANY INCLUDING

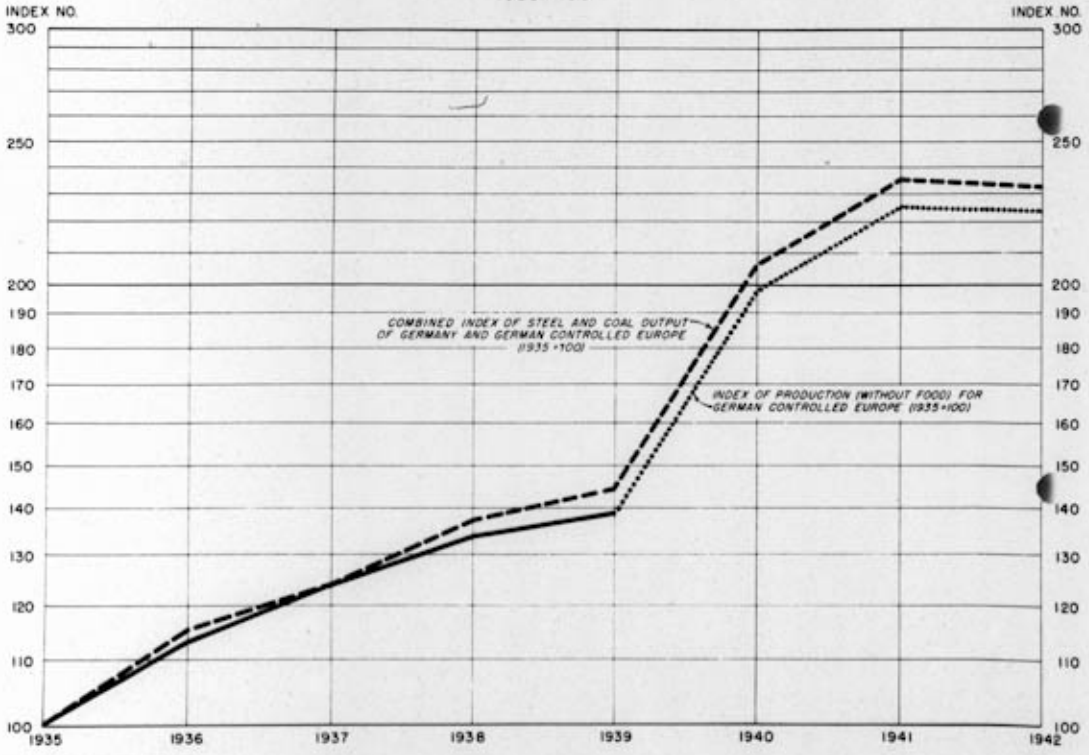
17 INDUSTRIAL BRANCHES (EXCLUDING FOOD)

1935 = 100

1935	100
1936	113.1
1937	124.7
1938	134.3
1939	139.1
1940	197.8 (estimate)
1941	226.2 "
1942	223.3 "

Chart 1

PRODUCTION INDICES FOR GERMANY AND GERMAN CONTROLLED EUROPE
1935 = 100



BOARD OF ECONOMIC WARFARE
ENEMY BRANCH

DRAWN IN THE CARTOGRAPHIC SECTION, B. E. W., NO 326

Chart 2

INDEX OF HARD COAL AND STEEL PRODUCTION IN GERMANY AND GERMAN CONTROLLED EUROPE
1935=100

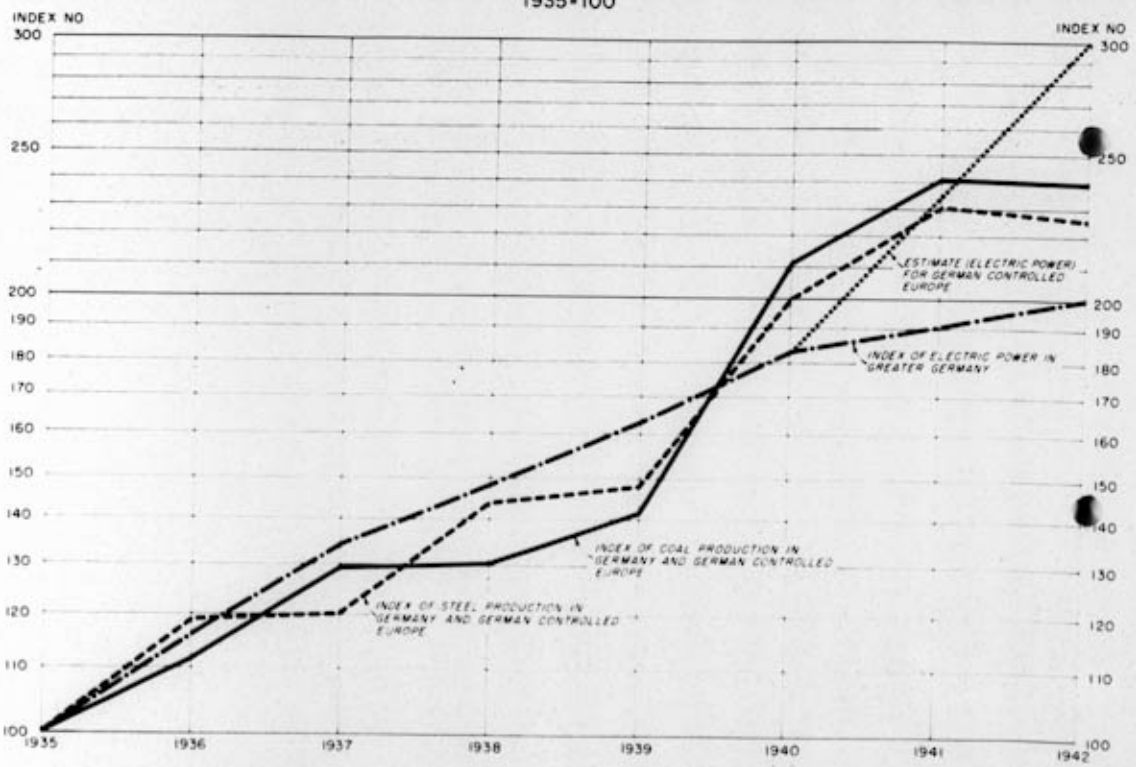
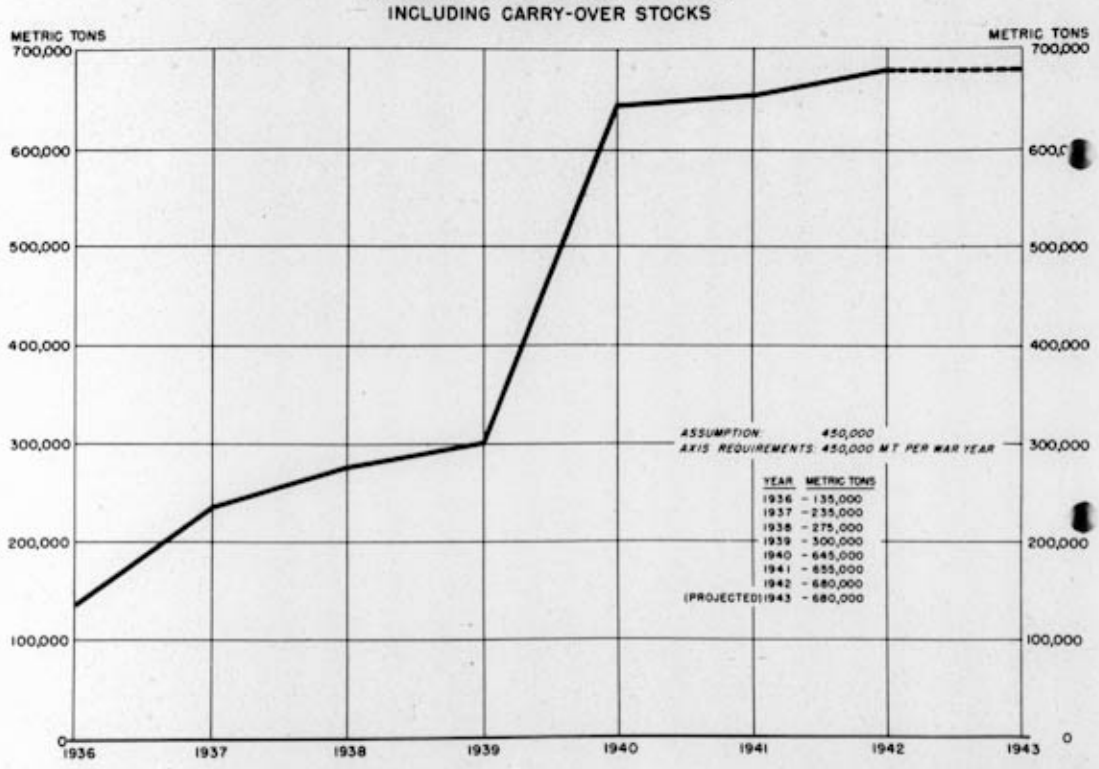


Chart 3

GERMANY'S SUPPLIES OF ZINC
INCLUDING CARRY-OVER STOCKS

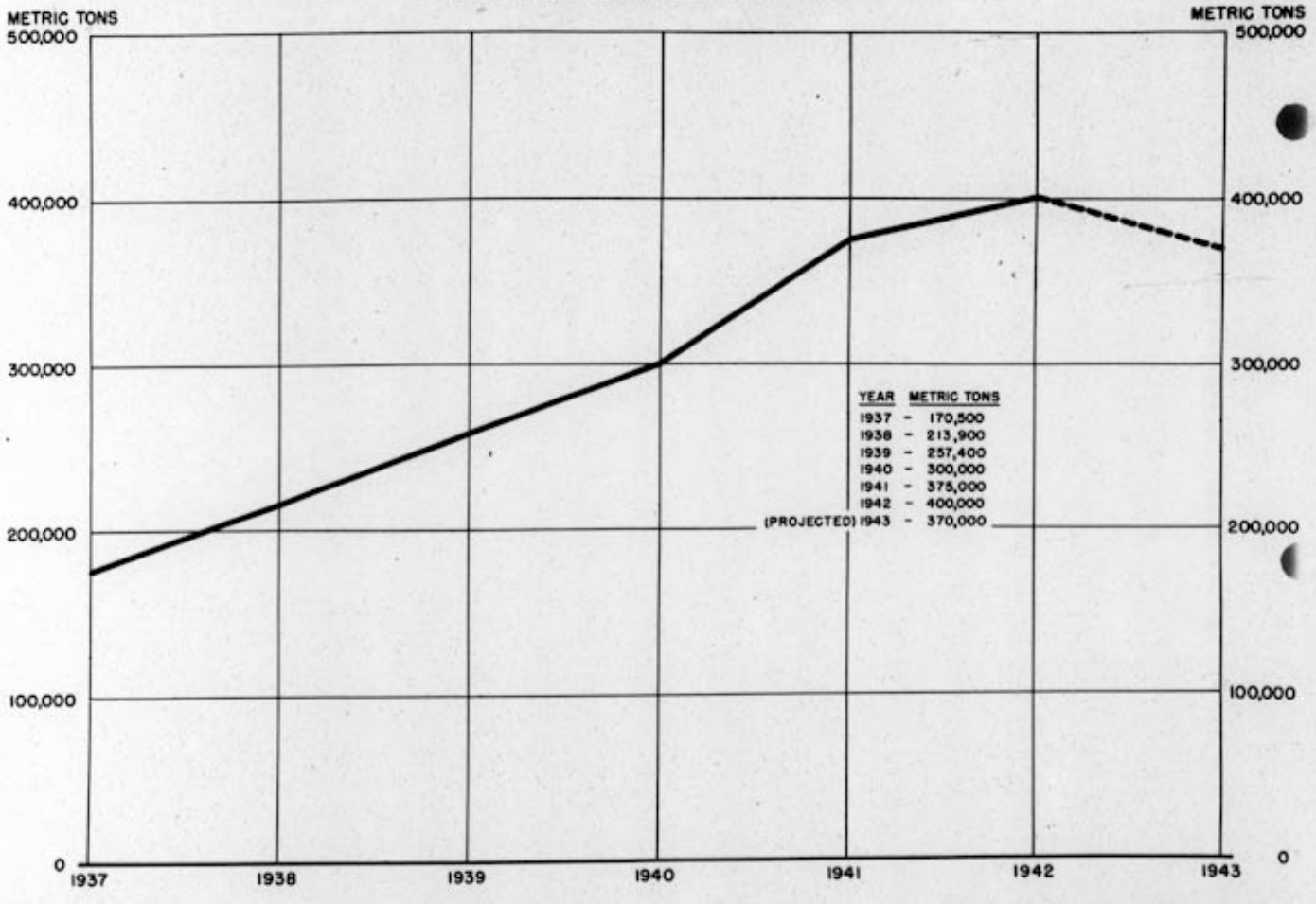


BOARD OF ECONOMIC WARFARE
ENEMY BRANCH

DRAWN IN THE CARTOGRAPHIC SECTION, B.E.W., NO. 523

Chart 4

GERMANY'S SUPPLIES OF LEAD
INCLUDING CARRY-OVER STOCKS

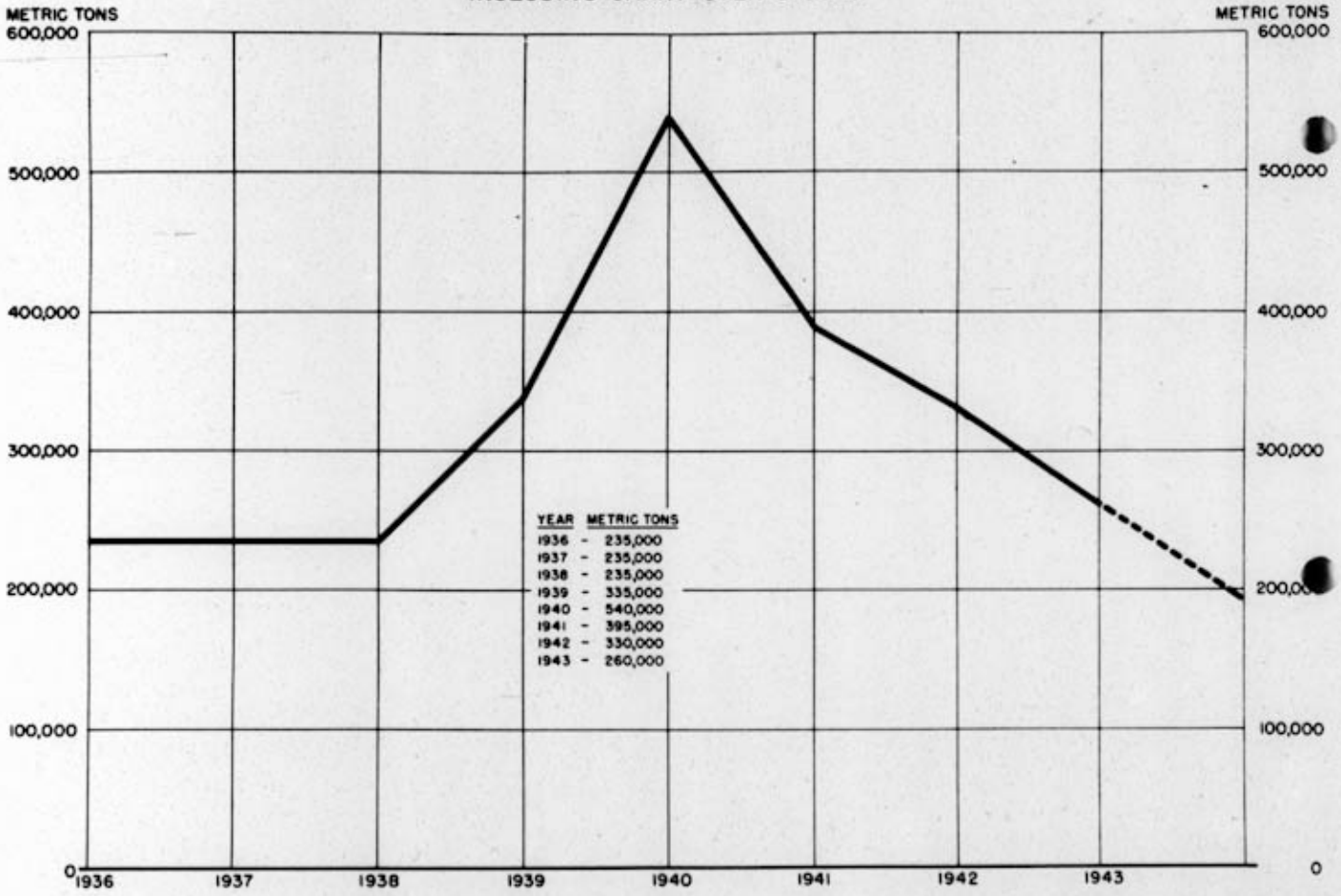


BOARD OF ECONOMIC WARFARE
ENEMY BRANCH

DRAWN IN THE CARTOGRAPHIC SECTION, B.E.W., NO. 322

Chart 5

GERMANY'S SUPPLIES OF COPPER
INCLUDING CARRY-OVER STOCKS

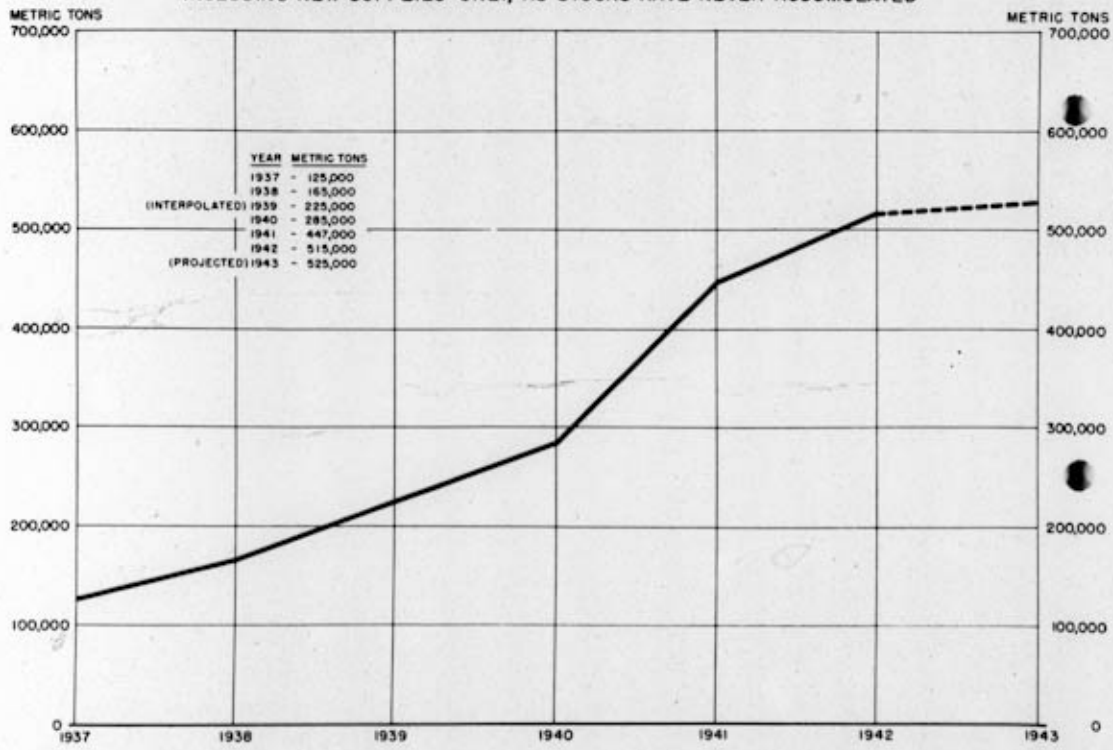


BOARD OF ECONOMIC WARFARE
ENEMY BRANCH

DRAWN IN CARTOGRAPHIC SECTION, B. E. W., NO. 325

Chart 6

GERMANY'S SUPPLIES OF ALUMINUM
INCLUDING NEW SUPPLIES ONLY, AS STOCKS HAVE NEVER ACCUMULATED

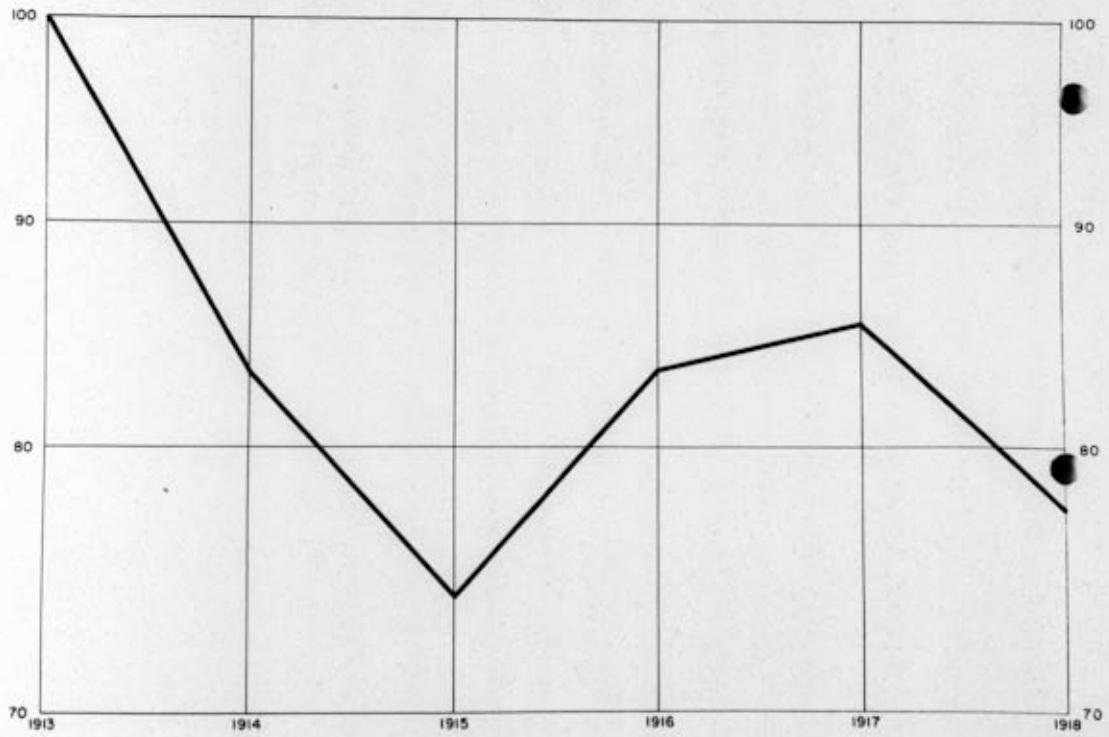


BOARD OF ECONOMIC WARFARE
ENEMY BRANCH

DRAWN IN THE CARTOGRAPHIC SECTION, R. E. W., NO. 524

Chart 7

COMBINED COAL AND STEEL INDEX FOR GERMANY
1913-1918



BOARD OF ECONOMIC WARFARE

[redacted]

MEMORANDUM

TO: Lieutenant W. C. Mott,
Office of the Naval Aide to the President, White House

DATE: November 21, 1942

FROM: Captain W. D. Puleston, Naval Liaison Officer

SUBJECT: BEW Reports on Axis Capabilities in Spain and Portugal

1. It is believed that these reports might be of interest.

2. They supplement the reports previously requested and furnished.

3. Copy is attached. Please retain or destroy.

W. D. Puleston

memo for Mr. Hopkins:
I thought you might like to glance over this. There was no more news.
very respectfully
W C Mott Lt USNR.

BEW 121

BL 32a
[redacted]
Copy [redacted]

[redacted]

BOARD OF ECONOMIC WARFARE
Blockade and Supply Branch

AXIS CAPABILITIES IN SPAIN AND PORTUGAL

a. PORTUGAL

November 18, 1942

AXIS CAPABILITIES IN SPAIN AND PORTUGAL

PORTUGAL

1. Transportation

Railroads

There are five chief points at which railways enter Portugal from Spain. The tracks are of the same gauge so that no reloading of goods is necessary. The routes are as follows:

1. Furthest to the north, the line from the seaports Vigo, La Coruna and El Ferrol del Caudillo crosses the border at Tuy-Valencia Do Minho on its way to Oporto and Lisbon.

2. The main line from the French frontier, San Sebastian and Madrid, crosses the Portugese border at La Fregoneda-Barca D'Alba on its way to Oporto.

3. Another main line from the French frontier is San Sebastian with connections from Madrid via Salamanca crosses the border at Fuentes de Onoro Villa-Formoso.

4. The main line between Madrid and Lisbon crosses into Portugal at Valencia de Alcantara Marvao.

5. From the south, railways from Huelva, Seville, Malaga, Cadiz, and Cordoba pass through Badajoz-Elvas on their way to Lisbon and Oporto. The line from Oporto to Lisbon is the only major north-south rail route in Portugal.

The condition of the railroads in Portugal is better than in Spain but lubricants are critically short and repair parts, especially for engines, are badly needed.

Roads

Portugal has several fine roads in a good state of repairs. Chief among them is the road which runs from Vigo in Spain, crosses the border at Valencia do Minho and follows the sea as far as Lisbon. This road passes through Viana do Castelo and Porto. Another important highway comes from Madrid and Salamanca in Spain, enters Portugal, passes through Viseu and meets the highway first mentioned at Albergaria in Avelha.

It is likely that mechanized forces invading Portugal would move south from La Coruna in Spain, from the west and from Central Spain along the Salamanca-Viseu Highway, thus effecting a pincers movement.

Whereas the railroad mileage of Portugal totals 2,150 miles, highway mileage totals about 8,700 miles.

Except for these two roads and three supplementary national highways (one going to Braga, one to Vila Real, and the third to El Ferrol) road connections in the interior of Portugal are inadequate. There are few garage facilities, little gasoline and almost no repair parts available in the smaller towns. Furthermore, the proximity of the main highways to the sea would make them easy targets for bombers based in the Azores or Cape Verde Islands.

Some traffic could be carried by way of the Rio Tejo, and the Guadiana and Duero Rivers. The Duero River is navigable all the way to Oporto. There is a large air base at Lisbon where planes can land.

a. Raw Materials

An invasion of Portugal would require that the invaders establish a means of supplying themselves with food from outside the area since no important food surpluses are available in the country. The food situation in Portugal is less critical than that of Spain, and less dependent upon imports, but Portugal is not capable of supporting a major occupying force without being stripped of its supplies. Axis control would cause imports from the Western Hemisphere to be cut off and particularly would result in serious disturbance to the fish supply. The surpluses of olive oil, wine, fish oil, and fruits and nuts would be welcome to the Axis, but the loss of the supply of sardines would, on balance, far outweigh these economic advantages.

Petroleum supplies in Portugal are extremely short and have been prevented from becoming large by the United Nations, whose policy it has been to allow only imports sufficient to provide for minimum needs. The small Portugese merchant marine and the large fleet of fishing boats, however, would be welcome gains to the Axis.

In Portugal, as well as in Spain, large shares of our preclusive purchases have been warehoused pending the receipt of export licenses. The seizure of these stocks by the Axis would greatly wipe out the fruits of our preemptive program and add materially to the supplies of tin, tungsten, hides and skins, leather, woolen goods, etc., available to the enemy.

It must also be noted that the Axis could utilize Portugese industry to supply large quantities of cotton textile manufactures,

woolen manufactures, leather goods, shoes, and other articles needed for military and civilian supply. The raw materials for these manufactures, however, would be cut off, and the Axis could count only on the small existing stocks.

The Portuguese Atlantic Islands, which might be occupied by the United Nations, would be of little economic advantage to us and cause only a slight economic injury to the Axis, cutting off small quantities of fish oil, etc. Of greater economic importance are Portugal's African possessions which, if occupied by the United Nations, would increase the flow of critical materials to them and decrease supplies now flowing to the Axis via Portugal (particularly skins, sisal, vegetable oils, etc.)

The principal yearly exportable surpluses of Portugal are listed below:

Commodity	Metric tons
Tungsten	5,000
Tin	1,800
Cork	100,000
Olive Oil	8,800
Wool	1,200
Ergot of Rye	100
Antimony ore	300
Argols	700
Sardines	50,000
Rosin	38,000
Turpentine	7,200
Fish livers	8
Hides and Skins	700
Copper Pyrites	370,000

Germany would obtain substantial stocks of foodstuffs in Portugal: large supplies of sardines and fish of other classes, citrus fruit, dried figs, almonds, and wine would fall into her hands. Also, production of these goods could probably be maintained sufficiently to supply an army of occupation. But the Axis would have to supply wheat and fodder both to the occupying troops and to the civilian Portuguese population. Stocks of certain colonial products, such as cocoa and coffee, would also be acquired.

Germany's net gains in the acquisition of the mineral resources of Portugal would depend upon her ability to supply gasoline and lubricants for the mining industry and for railroads. She would gain enough tungsten to meet all her requirements and enough tin to relieve her present shortage. The other mineral gains would not be important. Net Axis gains as to forest products such as rosin, turpentine, and cork would be negligible since Germany now obtains all of these materials from Portugal which she now requires.

Small amounts of wool, cotton textiles, and goat skins would also become available for the army of occupation.

Since Portugal must import all coal supplies, Germany would have to furnish coal for the Portuguese railroads, the fishing fleet and for heating purposes. The shipment of these coal supplies from Germany would further encumber the already burdened French railway system and the precarious coastwise shipping facilities of Portugal.

3. Productive Facilities

Portugal is primarily an agricultural and mining country and has limited facilities for other economic activities. Automobile assembly plants (including Ford Lusitania) tire factories, limited facilities for the repair and maintenance of motor vehicles, and some railroad repair centers exist but the facilities are in great need of equipment and would be of limited value to the enemy. Portugal's chief industries are cement plants and the manufacture of steel files, small hand tools, and electrical equipment. These plants are located mainly in Lisbon and Oporto.

Shipbuilding and repair facilities are relatively good and would be of great value to the enemy.

Arsenals for the manufacture and repair of military equipment exist but they would not be adequate for the needs of a large invading army.

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[redacted] Cy. No. 2

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BOARD OF ECONOMIC WARFARE

Office of Economic Warfare Analysis

DECLASSIFIED
State Dept. letter, 1-11-72
By [signature] Date APR 17 1972

AXIS CAPABILITIES IN SPAIN AND PORTUGAL

b. SPAIN

November 18, 1942

AXIS CAPABILITIES IN SPAIN AND PORTUGAL

SPAIN

1. Transportation

Conquest of Spain by troops entering from the north would be made difficult by the lack of highways and the necessity to transfer supplies because of the difference in gauge. Whereas the standard European gauge is 4'8½", the Spanish gauge is 5'6". In order to facilitate the transfer of commodities, the Germans have built a track of Spanish gauge between Bordeaux and Hendaye.

There are four lines which enter Spain from France:

(1) A double track of line runs from Paris to Irun-Hendaye frontier and thence to Madrid.

(2) The main line from Switzerland and Paris comes from Lyon passes the frontier at Cerbere-Port Bou and continues to Barcelona. There is a tunnel and a railroad bridge at this point, which could be incapacitated by effective bombing. It is a mountain pass, and the railroad bridges a high chasm just outside the town of Cerbere. If this were destroyed, the eastern railroad approach to Spain would be effectively blocked.

(3) The French railways from Foix and Toulouse connect with the Spanish railways at La Tour de Carol-Puigcerda Junction. This line is a small one which cannot handle much traffic. It winds in and out of the Pyrenees and could probably be destroyed by bombing at several points.

(4) The Madrid, Valencia and the Barcelona-Saragossa-Bilbao-San Sebastian line meet the French frontier in the Somport Tunnel at Canfranc.

The Spanish railways system centers in Madrid. Along the northern coast, a line extends from the French frontier to Oviedo and Gijon. From there to Pontevedra there is no railroad. The transverse Lyon-Orense-Vigo line is the only link between Coruna and the rest of Spain. The most important strategic railroad runs through the Ebro valley from Bilbao through Zaragoza to Barcelona. Another important southern line runs from Estorga south to Salamanca and Plasencia (where it joins a line from Madrid) and continues southward to Huelva at the mouth of the Rio Tinto. Along the Mediterranean, a line runs from Cerbere to Cartagena, but in most places this is a single-track line.

It is estimated that there are about 2,500 locomotives, about 7,500 freight and baggage cars, and approximately 6,000 passenger cars in service today. The maximum train load is 25 four-wheel cars per train, and it is estimated that a trainload would carry only 250 metric tons of military materials. Thirty trains a day in each direction is estimated to be the maximum capacity for single track main lines.

An army invading Spain from the north would encounter serious difficulties in railway transportation. The lack of lubricants and coal, of trained personnel, and of repair engine parts would be difficult to overcome. It is possible that the railway system of Spain would break down under the strain involved in transporting food and equipment for an invading army.

Roads

Spain has many excellent, well-paved highways and secondary roads. Chief among them are the highways leading from Madrid to Irun, from Madrid to Barcelona, from Madrid to Valencia, from Madrid to Seville, and from Madrid to Badajoz and Portugal. However, because of mountains and other natural obstacles, travel between the provincial capitals of Spain is usually via roads which run through Madrid.

The Pyrenees offer a natural barrier to the passage of troops, and the bulk of an invading army would probably enter at Irun; possibly other detachments might come down via La Junquera and Figueraz, and strike at Barcelona. Once installed in Madrid, the Germans could fan out on highways via Lerida to Barcelona to Valencia to Cartagena via Albacete and to Seville and Malaga. All these routes are served by well-paved roads, chiefly macadam.

The major difficulties which would be encountered would be lack of gasoline, and gasoline pumps, (which are widely scattered), lack of garage facilities, lack of automotive repair parts and of lubricants. An army invading Spain would have to supply the bulk of its needs in all these factors. Of particular military value would be the route from Madrid to Zaragoza and Valencia, because of its proximity to important railroad lines and its interception of roads from France at its eastern and western termini.

Air Transport

There are hangars and airports at Badajoz, Tudela, Jerez de la Frontera, Sabadell, Huesca, Madrid, Sevilla, Zaragoza, Barcelona, and Valencia. The largest airports are in Sevilla, Valencia, and Barcelona. Ala Littoria has maintained a service through Spain from Italy, and the Spanish line, Iberia, which has a monopoly of commercial aviation, operates a network of air routes between the main cities of Spain. It is staffed largely by German technicians.

Control of air bases at Jarez de la Frontera would permit an occupying force to bomb Gibraltar. Control of other bases near Murcia will endanger shipping to Algiers, and in the north, air bases near Santander would permit allied shipping in the Bay of Biscay region to be bombed.

2. Raw Materials

No invading or occupying army can hope to "live off the country" in Spain. The Civil War and the years of restricted trade and production since 1939 have combined to keep production and stocks of foodstuffs in Spain at a very low level. A ruthless policy of stripping the country might provide some foodstuffs but such foraging would have to be on a very wide scale throughout the rural areas because only small hoards are available. The large urban centers have found it difficult to maintain a flow of food for their populations, so that normal stocks in cities are not now available. An invasion by the Axis would not only require food for the invaders but would also cut off food now reaching Spain from the Western Hemisphere. The effect would be to worsen considerably the food situation in the urban centers and cause strong feeling against the invaders. Nor could general production, already suffering directly from the food shortage be maintained even at present levels if food supplies were reduced. On the other hand, the flow of Spanish labor to Germany from Spain might be encouraged by the desperate conditions in Spain. A large stock of olive oil, estimated at about 300,000 metric tons, would be a great prize and constitute an important gain because of the Axis need for fats and oils. The other great food surpluses--fruits and nuts and wine--would also be welcomed by the Axis but are not as important as the olive oil. Increases in crop production in Spain could only be accomplished by importation of large quantities of fertilizer and farm equipment, neither of which can be spared by the Axis.

The number of cattle, hogs and goats has been drastically reduced in the last six years although the application of a ruthless policy without regard to the future or to local resentment would yield small quantities of meat for the Axis.

Petroleum and fuel supplies are small since the policy of the United Nations has been to supply only minimum quantities and not to allow the building up of large stocks. Of great importance to the Axis would be the chance to secure a fair sized merchant marine and many smaller craft, including fishing boats.

United States' and British governmental agencies have purchased many commodities which have been warehoused in Spain pending export. The effect of the seizure of these stocks of rabbit fur, hides and skins, woolen goods, tungsten, mercury, pyrites, etc. would be to effect much of the preclusive effort we have made in Spain in the last six months and at the same time increase the loot of the enemy. The light industries of Spain could be utilized to provide many articles needed for German military and civilian consumption, such as cotton textiles, leather goods, shoes, woolen goods, etc.

The chief yearly exportable surpluses of Spain are listed below:

Commodity	Metric tons
Iron ore	400,000
Tungsten	600
Tin	100
Olive oil	100,000
Kid and goat skins	3,300
Wool (apparel)	1,000
Copper	2,000
Cork	19,000
Lead	32,000
Zinc concentrates	58,000
Potash	40,000
Ergot of rye	200
Argols (tartaric acid)	1,000
Mercury	2,000
Iron pyrites	800,000
Turpentine	8,000
Rosin	27,000
Oranges	250,000

The inducement to the Axis represented by these exportable surpluses is not great. The oranges and other citrus fruits and nuts can be used to feed the army. The olive oil surplus would not only take care of all army requirements but would leave large supplies to be sent back to the rest of Axis Europe. In addition, canned fish, dried fish, small quantities of rice and a small number of draft animals could be secured for military uses. On the debit side, however, the lack of grains, fodder, vegetables, and meat would be a serious handicap in the provisioning of troops quartered in Spain.

The gains to the Axis represented by Spanish mineral production would not be substantial since Germany now receives as much iron ore, zinc concentrates, mercury and iron pyrites from Spain as she requires. In fact, unless Germany could supply mining equipment, lubricants and gasoline, it is likely that her net receipts in minerals and such forest products as cork would be less than they are at present.

3. PRODUCTIVE FACILITIES

Spain is not a major industrial center and her usefulness to the Axis is limited in this sphere of economic activity. There are several automobile assembly plants, tire factories, vehicle service and repair installations, and at least one factory reported to be making tanks, including the three large plants in Barcelona, General Motors, Ford and Hispano-Suiza. Reasonable facilities for servicing the vehicles of a large modern army can be said to exist. There are at least five aircraft factories. The entire industrial system suffers from obsolescence, lack of repairs, and a shortage of labor. Although many of the losses in rolling stock during the Civil War have been replaced, the repairs and maintenance facilities are probably inadequate to cope with the growing needs for rolling stock and general road-bed and rail repair.

Shipbuilding facilities exist and are currently active. About 20 firms are engaged in this industry, and the building and repair of vessels for merchant, marine and naval service would be of great aid to the enemy.

There are several important arsenals where military material can be manufactured and repaired, and many industrial plants whose facilities are or can be used for military purposes. Of great advantage to the Axis is the fact that the great bulk of the industrial capacity of Spain lies in the small area adjacent to France--that is, from Santander and Bilbao to the Mediterranean and north of the Ebio River. This area has its raw materials, iron and coal, nearby.

BOARD OF ECONOMIC WARFARE

MEMORANDUM

[redacted]

TO: Lieutenant W. C. Mott, DATE: January 2, 1942
Office of the Naval Aide to the President, White House
FROM: Captain W. D. Puleston, USN, Naval Liaison Officer

SUBJECT: BEW REPORTS: EP-69a - Axis Capabilities in the Former Unoccupied Zone of France.
EP-69b - Italy in the Present Stage of the War.
EP-69c - Axis Capabilities in Southeastern Europe.

1. Information of a similar character to the above but on other areas of Europe have been sent to you as requested.

2. It is thought that these reports on additional areas might be of interest.

W. D. Puleston

DECLASSIFIED
State Dept. letter, 1-11-72

By 91 Date APR 17 1972

BEW 121

EP-69a [redacted]

Copy No. 10

BOARD OF ECONOMIC WARFARE
Enemy Branch

AXIS CAPABILITIES
IN THE FORMER UNOCCUPIED ZONE OF FRANCE

[redacted]

December 7, 1942

Table of Contents

I. TRANSPORTATION

Summary

With the exception of a shortage of rolling stock, rail facilities, in, through, and out of the area are very good, as are also motor roads. Inland waterways are less satisfactory. Port facilities are excellent and there is an abundance of shipping now in the ports.

Railways

The railway lines of Southern France are very good. From Northern France and Germany numerous roads reach Lyon from which a double track route runs southeast to Italy, and two lines south to Marseille. From the north two double track lines also are available to the Spanish border, one going via Bordeaux and Hendaye, the other reaching the border south of Perpignan. Through routes going east and west, however, are less satisfactory although a double track line exists from Bordeaux to the Italian frontier via Toulouse and Marseille. In addition to these main lines a network of single track lines covers the entire area pretty thoroughly.

The present situation of French rolling stock is far from good, both as to number and condition. The number of cars and locomotives requisitioned by the Germans has been variously estimated at from one-fourth to one-half of the total available before the war which amounted to over 18,000 locomotives and more than 500,000 freight cars. This shortage can probably be remedied by the Germans to a certain extent in case of emergency through diversion of rolling stock from other areas. The condition of the cars and locomotives still in France has deteriorated due to lack of repairs and shortage of lubricating oils.

Roads

Motor highways throughout France are excellent and should be sufficient to meet all requirements.

Inland Waterways

River and canal routes are less satisfactory in Southern France than in the northern section of the country. The Rhone is navigable as far as Lyon from which a fair canal system spreads out. No through routes exist between the Mediterranean and the Rhine and there is only a small barge canal between the Mediterranean and the Atlantic, the proposed ship canal never having been completed.

Shipping and Ports

It has been estimated that as much as 750,000 tons of shipping are in the Mediterranean ports of Metropolitan France of which over 500,000 tons are laid up, principally due to lack of oil. Marseille is the principal port and facilities there are excellent. Considerable expansion has been reported recently. In normal times Marseille and its port area handled more trade than any other city in France. Other good ports, although smaller, include Sète, Port Vendres, Port de Bouc, La Ciotat, and Toulon, the naval base.

II. FOOD, FUEL AND POWER, RAW MATERIALS

Food

The former unoccupied zone of France is a deficit area insofar as most foodstuffs are concerned. Considerable quantities of wheat and other grains, feedstuffs, sugar and dairy products normally were imported from Northern France and North Africa. Livestock, particularly sheep and goats, were raised in large quantities but were dependent on feedstuffs from other sections of France and the Empire. Wine was the outstanding exception to this deficit position, although some fruits and vegetables were also plentiful, and potatoes were about adequate to cover consumption.

Fuel and Power

For all practical purposes no oil is produced in the area and the most recent information indicates that stocks on hand are negligible.

Only about 10 percent of the French coal output of some 45 million tons annually comes from Southern France. Moreover, a recent report stating that railways in the unoccupied zone had only one week's supply of coal on hand indicates that stocks are very low.

Hydroelectric power is more than adequate for the area's needs and considerable quantities were being exported to Northern France and even, it is reported, to the Rhineland. The prolonged drought of the past 12 months or so has, however, seriously curtailed present hydroelectric output.

Raw Materials

The former unoccupied zone of France is singularly deficient in raw materials. With respect to minerals, bauxite is the only one produced in important quantities; output this year will probably be between 700,000 and 800,000 tons with aluminum production at about 70,000 tons. The producing area is in the southeastern part of the country. The only other raw material of importance is naval stores, most of which come from the area east of Bordeaux. France is the largest producer of naval stores in Europe and the second largest, after Hungary, of bauxite.

III. PROCESSING CAPACITY

Summary

Adequate facilities are believed to be available in Southern France for the repair of aircraft, rolling stock, tanks, trucks, arms, and ships. Capacity for new construction is less satisfactory with regard to aircraft, tanks and ships but is probably sufficient for trucks, rolling stock, arms and ammunition. In a few instances in this section of the report cities just over the line in the former occupied zone, such as Le Creusot, Bordeaux, and Bourges, have been included.

Aircraft

Aircraft plants of importance exist at or near Marseille, Toulouse, Lyon, Bordeaux, Chateauroux and Bourges. Capacity is adequate for large scale repair work but construction of new aircraft would be hampered by lack of materials and machinery. Hispano-Suiza has an important aircraft engine plant at Tarbes reportedly now in production. Engine repairs could probably be carried out in numerous plants throughout the area.

Railway Rolling Stock

St. Etienne is one of the most important centers in France for the manufacture of railway rolling stock and Schneider of Le Creusot is one of the largest makers of locomotives. Consequently ample facilities are available in Southern France both for manufacturing and repair of cars and locomotives.

Tanks and Trucks

Even before the war tank construction was concentrated in Northern France. The shipyard at La Seyne constructed small numbers of light tanks and Schneider was a fairly important producer of medium or heavy tanks. Neither has built any since the Armistice. Repair facilities should be reasonably satisfactory in the Lyon-St. Etienne area, at Marseille and at Le Creusot and Montluçon.

After Paris, Lyon is the most important producing area in France for motor cars and trucks. Berliet, Rochet-Schneider, and Sauerer all have plants in or near the city and at last account all three were in production for German account.

Armaments

The triangle in South Central France formed by Le Creusot, Montluçon and St. Etienne is one of the three principal arms producing districts of France. Schneider of Le Creusot in fact is probably the most important single producer in the country. The important naval arsenal at Toulon should also be mentioned.

Shipbuilding and Repair

At La Seyne, near Toulon, is located the largest shipyard on the French Mediterranean coast capable of building vessels of perhaps 20,000 tons or more. Smaller yards are located at La Ciotat and Port de Bouc. On the whole, however, yards for new construction are not adequate for a large scale building program. In addition to the repair facilities of the yards mentioned above, Marseille has a very large and extensive capacity for repairing vessels. Presumably the naval base at Toulon, France's largest, is also equipped for all types of repair work but information is not available on this point. In short, capacity for repair work is large and should be adequate for almost all contingencies.

Note

It should be borne in mind that all the construction and repair facilities discussed in this section are of great value to the Germans and the Italians but that in case of Allied occupation they would undoubtedly be destroyed by the retreating Axis forces.

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BOARD OF ECONOMIC WARFARE
Enemy Branch

ITALY IN THE PRESENT STAGE OF THE WAR

[redacted]

December 7, 1942

SUMMARY

At the core of the present phase of this war is Italy with the islands of Corsica, Sardinia and Sicily protecting the long Tyrrhenian coast from attack.

The strategic and economic situation in which the Axis now finds itself is such that Germany can hardly abandon Italy altogether. Italy provides Germany with a strategic offensive base; but should Italy be lost, the Alps would still provide Germany with a strong defensive South wall.

Up to the present the Axis has blockaded the Mediterranean Sea rather effectively by (1) the Italian Navy and merchant marine; (2) Italian naval and airplane bases; and (3) Italian communication lines to Africa.

In the economic field Germany has been using Italian processing facilities, after providing coal and raw materials, has been employing Italian labor and has been obtaining Italian food. Should Italy become a major theatre of operations, Germany would have to increase its exports of raw materials and semi-finished products to Italy, send additional troops and equipment there, and provide Italy with fuel or Italian refineries with crude oil. If a great army should be stationed in Italy, no more food could be sent to Germany. Moreover, Italian laborers could not be sent to Germany if the Italian Army calls more men to the colors, as may have occurred already, for Italy has recently occupied Corsica and the southeastern part of France, and has probably increased considerably the garrisons in Sicily and Sardinia.

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I. TRANSPORTATION

Railroads

Italy is separated from the rest of the Axis countries by the Alps which extend from the French Riviera to the Yugoslav border. Italy is connected with the rest of Europe by railroads which run through long tunnels or climb to high level passes. Three lines connect Italy with France, two with Switzerland (connecting ultimately with Germany), three directly with Germany, and four with the Balkans. The heaviest traffic is carried on the lines connecting Italy directly with Germany in the following tentative order of importance: Brenner Pass, Tarvis, Gotthard (Chiasso and Luino lines), Simplon. The southbound traffic via the Swiss routes alone has been estimated at more than 5 million metric tons a year and in 1941 the other Italo-German lines are believed to have carried about 15 million tons, or a total of more than 20 million tons a year, including 10 million tons of coal. This excludes passenger and military traffic. Such freight traffic calls for an average of 140 freight trains of 30 cars each, entering Italy every day. The northbound traffic is estimated at only 3 to 5 million tons, but the empty cars have also to return to Germany.

The Italian railway system is so laid out that Alpine lines converge on a few key places in the Po Valley--Alessandria, Tortona, Piacenza and Bologna--through which all southbound traffic must pass. Only three parallel lines serve the peninsula, one on each coast and one in the center. The central line through the Apennines from Bologna to Florence is reported to carry more than 50 percent of all traffic. Electrification was recently completed of the line from the Brenner Pass via Verona, Bologna, Florence, Rome, Naples to Reggio Calabria at the very tip of the peninsula. The Italian lines are partly steam and partly electric. Of the electric lines the western section including Piedmont and Liguria runs on A/c current while the new projects are D/c 3000 volts. Traction equipment is not interchangeable and while Italy may now have excess traction equipment for the A/c lines, it may run short of equipment for the D/c routes which are carrying the greatest burden of traffic.

It is believed, if left completely undisturbed, that the Italian rail transportation system per se and the Italo-German lines will be able to supply needed transportation facilities to the Axis. Should the key places, however, be attacked at regular intervals traffic of all types would be seriously disrupted. By-passes are not provided for long distances on the Alpine lines and once traffic is routed on the Brenner lines, it cannot be easily re-routed through the Swiss lines or the Tarvis. Serious congestions of rolling stock would result from interruptions on the main lines, and the congested areas in turn would be susceptible to attack.

Roads

Highway traffic between Italy and other European countries is limited because only two roads along the sea can provide transportation throughout the year. Alpine passes are closed to traffic in the winter and late spring, and the Riviera highways with their steep grades and narrow curves cannot be classed as speedy communication lines. Italian highways have been greatly improved in recent years, and some highways for automobile traffic alone are available. These are in good condition but the mountainous nature of the Italian terrain outside of the Po Valley reduces their value when long distances are to be covered.

Shipping

Communication between the mainland and the islands is, and probably will continue to be pretty well taxed and should require a good portion of Italian shipping. The ports of Imperia, Savona, Genoa and Leghorn handle the traffic with Corsica; Leghorn, Civitavecchia, Gaeta and Naples, traffic with Sardinia; Naples and the two terminals of Villa S. Giovanni and Reggio Calabria, traffic with Sicily. Main ports of entry are, in Corsica, Bastia and Ajaccio; in Sardinia, the naval base of Maddalena, Terranova and Cagliari, while Palermo, Messina, Catania and Syracuse should be the main ports of supply to Sicily.

Besides these ports on the Tyrrhenian Sea, the Axis could use the harbors and port facilities of the protected Adriatic Sea to relieve its transportation system. Venezia, Trieste and Fiume provide shipping ports in the north, while Ancona, Bari, Brindisi and Taranto are the receiving points on the Peninsula. Sufficient shipping is believed available to supply present needs.

II. FOOD, FUEL AND POWER, RAW MATERIALS

Food

Under the present strict rationing system, Italy should have been able to create a small stockpile of grain and other non-perishable foodstuffs. Many leakages, however, exist in the food control system and the food situation in Italy as a whole is rather bad. Should Italy become a major theatre of operations with large armies stationed within its borders, food exports of all kinds are bound to cease immediately. It is even doubtful whether Italy would have sufficient food, in that case, to meet average requirements, so that food imports from the Balkans would be necessary.

Fuel

Oil. Italian stocks of oil are now probably exhausted and Italian production is very small. A little oil is obtained from Albania and is refined at Bari; small quantities come from Roumania.

Coal. All of Italy's supplies of hard coal are imported from Germany. Recently, deliveries of coal have fallen off sharply from the promised quota of one million tons a month, the estimated minimum required to keep Italian industry running. Stocks are practically non-existent. Italy has deposits of lignite, one third being in Sardinia, from which 4 million tons are expected in 1943.

Power

Hydroelectric plants provide by far Italy's most important source of power. Total facilities are expected to produce more than 21 billion kwh in 1943. Three quarters of the production is concentrated in Northern Italy.

Raw Materials

Italy has few raw materials to contribute to the Axis economy. Production of steel may reach 1½ million tons and aluminum, 60 to 70,000 tons. Besides these only mercury, galene, sulphur, pyrites and zinc blende are available. A great part of Italian mineral deposits are in Sardinia though sulphur comes from Sicily.

In the agricultural group, Italy can supply hemp, flax and a little cotton along with a variety of other fibres. All other raw materials have been supplied by Germany along with large amounts of semi-finished products.

III. PROCESSING

Italy has rather good processing facilities, but their high degree of geographic concentration makes them susceptible to attack from the air. Though in recent years there has been a trend to decentralization, the plants scattered through the country are vulnerable in respect to their communication lines. Should Italian processing plants be subject to heavy aerial attacks it is possible that actual production would cease. Italy is expected to provide enough facilities, however, to repair all types of military equipment from aircraft to small

arms. The major bottleneck rests in availability of spare parts and skilled labor but Italy has a large number of small enterprises which can carry on ordinary repair work.

Rolling stock repair yards are scattered throughout the country but major work to locomotives and electric locomotives can be done in only a few places.

Shipbuilding facilities are ample and can take care of all needs, subject always to availability of needed supplies.

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BOARD OF ECONOMIC WARFARE
Enemy Branch

AXIS CAPABILITIES IN SOUTHEASTERN EUROPE

[redacted]

December 7, 1942

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I. INTRODUCTION

The economic importance of Southeastern Europe as a source of raw materials to Germany is so great that as a result of the Allied invasion of North Africa Germany will have to take supplementary measures to safeguard its control of these territories, not only against more serious sabotage in countries like Yugoslavia, but also against possible defections on the part of satellite countries in the case of an Allied invasion of Southeastern Europe. Whereas Greece is a liability to the Axis from the point of view of food supply (even in normal times Greece produces only about 65 percent of its food requirements), Germany will defend Greece, and especially the Vardar Valley, because it is a possible door to an Allied invasion of its Southeastern economic empire.

II. TRANSPORTATION

Summary

Transportation facilities, although very limited, especially in Greece and Bulgaria, are sufficient for defensive operations.

Railroads

Defensively the movement of troops and supplies to the coasts on the Ionian and Aegean Seas should be carried out without much difficulty as the problem for the Axis is merely of strengthening the armies of occupation, which does not require an overtaxing of transportation facilities. Considering that all main railroad lines destroyed during the campaign against Yugoslavia and Greece have been repaired, troop reinforcements and supplies should move expeditiously. Since all railroads in the Southeast form interior lines of communication, they are very advantageous to the Axis as they are exposed only to air attack. Naturally troop movements will cause a dislocation of important freight traffic, especially with Turkey. The main funnels for troop movements will have to be the following rail lines:

(1) From Germany proper through Hungary over (a) Budapest - Belgrade to Nish and thence to Salonika and Athens; (b) over Budapest-Belgrade-Nish-Sofia-Plovdiv toward Istanbul.

(2) From occupied Russia through Roumania over (a) Tighina-Galati-Bucharest-Giurgiu-Ruschuk-Ternovo-Plovdiv toward Istanbul; (b) over Germauti-Bucharest-Craiova-Timisoara-Vrsac-Belgrade-Nish-Salonika.

The railroad lines leading to the Yugoslav Dalmatian Coast are unimportant because as long as Italy is in the war no offensive action on the Dalmatian Coast would be possible, and should Italy fall, the Germans would probably retreat to the North and to shorter defensive lines.

Inland Waterways

Important, however, as a route of supplies, is the Danube, as numerous secondary railroads lead south from the various ports in Yugoslavia and Bulgaria to the main rail lines indicated above.

Maritime Ports

Roumania's large maritime Danube ports of Galati and Braila, its Black Sea port, Constantza, Bulgaria's ports of Varna and Burgas, and the Aegean ports of Piraeus, Dedeagach, Kavalla and a few others give the Axis good offensive possibilities as these ports have considerable facilities for loading supplies. The Greek port of Thessaloniki (Salonika) is exceptionally important since it is the key port on the Aegean and has easy access to Serbia and Bulgaria.

Roads

With the exception of a few modern highways, the Southeast has poor roads. Nevertheless the road network is extensive and in dry weather can be easily utilized for the movement of troops and material.

III. FOOD, FUEL AND POWER, RAW MATERIALS

Summary

For the armies operating in Greece and Bulgaria, food could be secured from Bulgaria, Roumania and Hungary, and fuel (oil) from Roumania. While none of these countries has a large surplus of food this year, enough could be diverted from the civilian population to feed the armies operating in the Balkans.

Food

Roumania, Hungary, Bulgaria and Yugoslavia supply the Axis not only with cereals such as wheat, corn and barley, but also with cattle, pigs, vegetables, fruit, fodder and oil seeds.

Fuel and Power

Roumania's oil is of utmost importance to the Axis and sufficient supplies thereof could be sent to armies operating in the Southeast. That country's refining plants are used only to about half their capacity and could be used to full capacity if Russian oil becomes available. Coal resources are sufficient for the railroads and power plants.

Raw Materials

Hungary's bauxite production, which is about 14 percent of the world output, is of great aid to the Axis. Roumania's bauxite deposits are also large and could be utilized in case of necessity. Yugoslavia supplies large amounts of copper, lead, chrome and iron ore. Roumania, Yugoslavia and Hungary also contribute timber.

IV. PROCESSING

Summary

The processing possibilities of Southeastern Europe are small. Production of iron and steel is limited both by facilities and the lack of domestic iron ore. Only Hungary and Roumania have a heavy industry; Hungary produces about 700,000 tons of steel and Roumania 500,000 tons.

Ordnance, Rolling Stock and Shipbuilding

Hungary and Roumania manufacture locomotives (Hungary 100, Roumania 225 yearly) and other railway equipment, including tank cars. Both countries make armaments and munitions (tanks, heavy and light artillery pieces, anti-aircraft guns, tank guns, machine guns, small arms, land and river mines, and munitions for all arms). Hungary has facilities for constructing ships up to 4,000 tons, while Roumania can build small submarines, oil tankers, and ships up to 5,000 tons. An insignificant number of trucks are manufactured both in Hungary and Roumania, and the latter has a large assembly plant for trucks, parts for which are manufactured in Germany.