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THE GDR SHIPBUILDING INDUSTRY UNDER THE FIVE-YEAR PLAN

[Comment: The following report on the shipbuilding program in the GDR is from an article in Die Technik, an East German technical periodical. It discusses in general terms the shipbuilding program under the Five-Year Plan and the problems faced by the shipbuilding industry.]

Plan Objectives

The plan figures for developing the shipbuilding industry were published by Deputy Prime Minister Walter Ulbricht at the Third SED (Socialist Unity Party) Convention, and were confirmed by resolution of the Ministerial Council only a few weeks after publication. The following target figures for the development of the shipbuilding industry were published:

In the interest of supplying the population with fish, the following will be constructed during the period 1951 - 1955: 680 luggers, 100 trawlers, 810 cutters.

The construction of ocean-going vessels will begin simultaneously. By 1955, 78 deep-sea fishing vessels are to be constructed.

Of great significance in the further development of GDR foreign trade is the creation of a new ocean-going merchant fleet. This is particularly important for trade with China and other Eastern countries. For this purpose, new shipyards will be built and at least 18 merchant vessels constructed by 1955. In addition, merchant vessels will be built for other countries.

The number of ocean-going vessels scheduled for construction is as follows: two in 1952, six in 1953, seven in 1954, and seven in 1955.

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From these plan figures, it is possible to recognize the tremendous project confronting the entire shipbuilding industry. Only a few years ago, after the collapse of the Hitler regime, no production facilities were available in the GDR for such a plan except a few small shipyards which built vessels for fishing and inland shipping. The project therefore includes not only the building of ships but also the construction of two large new shipyards, the Warnow Shipyard at Warnemuende, and the Wismar Shipyard. Reconstruction work has already been started at both these yards, which were hitherto engaged only in repair work.

A number of important secondary tasks are involved, particularly the securing of sufficient power for the industry, the solving of the housing and transport problem, and the training of the required skilled personnel. Consideration must be given to increased production in the precision-instrument and optical industries, particularly in the field of instruments for navigation, measuring, and testing.

The rapidly rising production of goods necessitates a corresponding increase in transportation. The turnaround time of freight cars, which carry a large share of the freight traffic, must be decreased. Performance of inland shipping must be increased from 1,400,000,000 ton-kilometers in 1950 to 1,960,000,000 ton-kilometers in 1955, i. e., by 40 percent.

The development of both the maritime fleet and inland shipping is in the interest not only of domestic trade within the GDR, but also of foreign trade, particularly with the USSR and the People's Democracies. A capital investment of 220 million Deutsche marks is provided for /inland?/ shipping and maritime traffic for the 1951 - 1955 period. The first ocean-going vessel, the freighter Vorwaerts, was constructed at the Stralsund State Shipyard from parts salvaged from wrecks, and was put into operation on 13 October 1950.

Tasks Confronting the Shipbuilding Industry Under the Plan

As has already been pointed out, the Warnow and Wismar shipyards are being rebuilt as new shipyards for the maritime fleet. These two enterprises, plus the Rostock Diesel Engine Plant, and the Planning and Design Office in Wuhlheide, were merged to form the Federation of People-Owned Enterprises for Ocean-Going Ship Construction, which was commissioned to perfect plans for increasing the production capacity of its subsidiary plants through large-scale reconstruction and expansion. This project includes particularly the erection of slips for the production of ships of the desired size, and the construction and equipping of all workshops necessary for the preliminary handling and assembling of material and for the proper equipping of vessels.

Also included are plans for standardization; the ocean-going ship construction program, for example, will comprise four different types: Type I, 1,000 tons; Type II, 3,000 tons; Type III, 5,000 tons; Type IV, 8,000 tons.

The construction of these types will be assigned to the two prospective new shipyards. The plan also includes the perfecting of blueprints for mass production, the perfecting of installations required for mass production, and the training of skilled personnel.

In designing the types of vessels to be constructed and in perfecting the blueprints for inland and ocean-going vessels, it is the task of the Chamber of Technology to submit concrete proposals for construction by consolidating the knowledge of scientists and technicians and the experience gained by plant activists.

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Ships' Power Plants

The importance of the problem of ships' power plants must be stressed; in this connection, the selection of fuel (particularly for inland vessels) will be of no small significance in deciding whether to use steam-power or diesel-power machinery. From the standpoint of performance, the diesel engine is undoubtedly the more economical. The steam engine, when viewed merely from the standpoint of fuel economy, can hardly compete with the diesel engine. However, when one considers fuel prices, repair work, etc., the economic aspect of equipping vessels often changes in favor of the steam engine. Decisions regarding the types of propulsion to be used are to be made from critical and objective comparative studies.

The diesel engine will probably be the type most widely used in equipping the maritime fleet. Approximately 58 percent (by gross registered tonnage) of all vessels constructed in 1948 and 1949 are equipped with diesel engines. This reflects the constant demand for higher speed and greater driving power. However, one cannot achieve greater performance simply by increasing the size of the cylinder; there are limits to the mechanical and thermal overload an engine can stand. Increasing the number of cylinders leads to V-type engines, and to double-acting and opposed piston engines. In this respect, the usual method of fuel injection for conventional diesel engines is to be applied and further developed. Moreover, it must be determined whether any given required performance capacity should be achieved by means of giant diesel engines with an individual capacity up to 5,000 horsepower, or by a number of smaller units. An increase in the number of revolutions necessitates either mechanical or hydraulic gears, or the use of diesel-electric machinery. For greater performance, full attention should be given to the gas-turbine engines.

Design and Materials

Next to the matter of engines, the shape of the vessels being built is of decisive importance. Experience gained in construction will have to be consolidated and evaluated accordingly. Furthermore, it will remain a cardinal task to coordinate the rolling-mill program and the program for ship construction on a common basis, i.e., to adjust steel plant and rolling-mill facilities to the requirements of ship construction and to adapt ship construction to the capacities of existing and projected rolling mills.

It will also become necessary to resort to light construction, on the one hand using aluminum and its alloys (it must not be overlooked that very strong, corrosion-resistant aluminum alloys have been made which satisfy the strict requirements of shipbuilding), and on the other hand further developing modern methods of construction such as welding, in order to save every kilogram of material that can be saved. Among other things, light construction results in weight reduction, thus increasing speed at the same level of engine performance, and in an increase of loading capacity, etc.

Conservation of Nonferrous Metals

Special attention must also be given to the conservation of nonferrous metals and other high-grade raw materials for which others of like or equal characteristics may be substituted. Meeting the demand for nonferrous metals is next in importance to meeting the demand for iron and steel. It is already extraordinarily difficult to supply industry with nonferrous metals, i.e., with copper, tin, lead, zinc, and aluminum, and the situation will become more acute since the demand for nonferrous metals will increase greatly under the Five-Year Plan. The requirements will be met mainly by developing new capacities for the production of nonferrous metals within the GDR. For example, it is

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planned to raise the output of the Mansfeld Copper Mines from 840,000 tons of copper ore in 1951 to 1,500,000 tons in 1955. As for nickel-ore concentrates, which are not yet being produced this year, 450 tons are to be produced in 1955. To overcome the shortage of nonferrous metals for all spheres of the industry, Ministry Selbmann /now Minister of Metallurgy and Ore Mining/ suggested two possibilities:

1. Lowering of standards for various items to reduce the use of nonferrous metals.

2. A completely new development, replacing nonferrous metals with substitute materials.

The large amount of nonferrous metals needed in shipbuilding is indicated by the technical director of the Stralsund Shipyard, who gives the following quantities required for the construction of one herring lugger of 260 gross registered tons: copper, 1,200 kilograms; brass, 2,500 kilograms; zinc, 1,400 kilograms; tin, 150 kilograms; total nonferrous metals, 5,250 kilograms. In terms of the annual production of the Stralsund shipyard, this yard's requirements would be 294,000 kilograms, not including nonferrous metals needed for main, auxiliary, and deck machinery. These figures show that, particularly in shipbuilding, the greatest attention must be accorded the question of conserving nonferrous metals. As examples of the possibility of substituting materials of like or equal characteristics for nonferrous metals, the use of sintered iron in the manufacture of bearings and of magnesium alloys in place of cast-iron parts of pump and motor housings may be mentioned.

Sectional Construction

In the practical execution of the proposed shipbuilding program, great attention must be accorded the development of the sectional assembly-line method of shipbuilding. The main parts are assembled to form sections, which are then placed in the scaffolding and welded together. Following this, deck outfitting, carpentry, mechanical work, etc., are completed in assembly-line fashion.

Some 8,500 workers are needed for production in the new shipyards alone. Above all, the task of systematically raising the level of skill of the workers through training courses must be faced. The skilled workers must increase their qualifications so that they reach the level of technical staff workers; the semiskilled workers must reach the status of skilled workers; and the unskilled workers, by adopting some form of vocation, must move up at least into a group of semiskilled workers.

A department for shipbuilding has been established at the University of Rostock, which has taken all necessary steps to guarantee its functioning within the shortest possible time. This school, together with the School of Technology at Wismar and the School of Shipbuilding at Franzburg, currently under construction, will meet the requirements of the shipbuilding industry for engineering and scientific personnel.

Development

Aside from the problem of training qualified and skilled personnel, the development of scientific research work is of the utmost importance in the field of shipbuilding under the Five-Year Plan. To carry out such research work, the establishment of an experimental station for shipbuilding technology is necessary. In addition, it is just as important that the Academy of Sciences, the Chamber of Technology, and the scientific institutes formulate a program for publishing professional literature in the field of technology.

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