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DEVELOPMENTS IN YUGOSLAV MERCHANT MARINE

EXPANSION OF YUGOSLAV MERCHANT MARINE

Maj Ivan Marinovic
Zagreb, Jugoslovenski Mornar, Sep 50

About 60 percent of the Yugoslav merchant fleet was damaged during the last war. The basic problems which had to be solved, as a direct result of war damage, were the following: nationalization of the commercial fleet and organization of its state economic management, general repair of existing ships, salvaging and renovation of sunken ships, and building of a new modern fleet.

The first problem was quickly solved after the liberation by the order for nationalization and the establishment of the federal Ministry of Navigation. The solving of the other problems of a material and technical nature depended on the repair and construction of Yugoslav shipbuilding enterprises and heavy industry.

Significant results have been achieved in the fields of reconstruction and new construction, in spite of enormous technical, political, and economic difficulties caused by technical backwardness, the damaging effects of the war on the country, and the economic blockade by the Cominform leaders. General repair and reconstruction of about 75 percent of the total naval tonnage was accomplished in 1949 - 1950; 80 percent of this work was done in Yugoslav shipyards.

The growth of Yugoslav shipbuilding is demonstrated by the large number of motor ships and tankers built since the liberation; 46 percent of all new construction was in shipbuilding. New construction completed to data consists of heavy motor ships of the most modern type for line service with a standard gross tonnage of 9,000 tons, such as the Srbija and the Makedonija; and with a standard gross tonnage of 4,000 tons, such as the Zagreb and the Rijeka. All these ships have accommodations for a limited number of passengers.

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The increase in the number of fast motor ships has made possible a gradual abandonment of the system of free navigation (tramp steamers) to the superior system of line navigation, which answers the needs of the planned economy and of export and import transport.

The commercial fleet today maintains regular freight lines with northern Europe, the Near East and North and South America. It struggles to carry freight and passengers along the coast with only a modest fleet, which makes up about 10 percent of its total gross tonnage. Transport of passengers makes maximum use of existing tonnage and shows an increase from an index of 100 percent in 1939 to 393 percent in 1949.

Parallel to the increase in transport capacity is the increase in transport accomplishment, as follows:

Year	Transport Capacity	Frt Carried (tons)	Ton-Miles	Tons of Frt per Ship	Pass Transport	Pass Miles
1946	100	100	100	100	100	100
1947	123	116	119	95	148	200
1948	135	145	148	108	193	400
1949	154	170	172	113	162*	314**

* Does not include local transportation.

** Decrease due to the loss of the Partizanka, long-distance passenger ship.

After World War II, only 21 percent of the operational wharfs remained in usable condition; machinery was destroyed; and ports were blocked with sunken ships. The situation was made more difficult since the technical ships necessary for building ports were wholly disabled or sunk. The majority of the ports were almost wholly restored and fitted to prewar capacity from 1945 to 1950. An increase in port commerce resulted, as shown in the following figures (1939 = 100):

Ports	1946	1947	1948	1949
All ports	129	150	212	252
Rijeka	41	64	109	143
Sibenik	86	65	75	136
Split	118	113	137	65*

* Does not include the northern basin

All lighthouses and signals were renovated in 1945 - 1950; new equipment was also installed. The freight service was reorganized and furnished with modern freight vessels.

The standard of living for seamen has been improved 100 percent. In 1948, over 100 million dinars were spent for living quarters on ships. A large number of institutes, schools, and courses have been established for professional instruction of naval transport workers. A higher naval school was opened in Rijeka at the end of 1949.

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REORGANIZATION IN THE MINISTRY OF NAVIGATION

Split, Pomorstvo, Jul 50

The federal government of Yugoslavia issued an order on 19 April 1950 changing the order on the establishment of the Main Administration of Naval Technical Enterprises.

This order, which changes the title of Main Administration of Naval Technical Enterprises to that of Main Administration of Naval Construction Enterprises, is the first step toward the reorganization of the ministry.

The order makes the following organizational changes in naval construction agencies and technical enterprises:

1. The former Main Administration of Naval Technical Enterprises has become the operational manager of all naval construction enterprises and naval dredging enterprises. The independent Rijeka Naval Construction Enterprise is created from the local branch (at Rijeka) of the Split Naval Construction Enterprise, and the jurisdiction of the Split enterprise is decreased, its branches being reduced from four to three (Split, Sibenik, and Dubrovnik). The Administration for the Construction of Ploce Harbor under the altered name of the Enterprise for the Construction of Kardeljevo Harbor is placed under the operational management of the new Main Administration of Naval Construction Enterprises. No organizational changes have been made in the "Bager" (Dredge) Enterprise.

2. The "Obala" (Wharf) Institution for Planning Naval Construction Projects, and the Enterprise for Salvaging and Towing Ships, which has altered its name to the Administration for Repairing and Salvaging Ships, have been transferred to the direct operational management of the Ministry of Navigation of the Federal Government. The "Rad" Naval Workshop Enterprise has ceased to exist as an independent enterprise and is merged with the "Split" Naval Construction Enterprise, of which it is now an auxiliary unit.

The Main Administration of Naval Technical Enterprises is predominantly operational, and all the construction operations under the ministry (including the dredging enterprise) are united under its management. The ministry has freed itself entirely of all the purely operational functions with which it was formerly burdened; notably, the purely operational functions connected with the former Administration for Construction of Ploce Harbor, which it managed directly. The Administration for the Construction of Ploce Harbor has now been placed under the operational management of the Main Administration of Naval Construction Enterprises. In this way, the Administration for the Construction of Ploce Harbor lost its administrative character and had to be renamed the Enterprise for the Construction of Ploce Harbor (or Kardeljevo, since Ploce had in the meantime been renamed Kardeljevo).

The Rijeka Naval Construction Enterprise was created because of the development of Rijeka Harbor as Yugoslavia's most important port in foreign trade, because of the diversity of construction (superstructural, industrial, and electric power plant construction) there, because of the extent of construction (about 33 percent of the plan for construction in 1950 is projected for new construction enterprises in Rijeka), and because of the great distance of the building site from Split, the headquarters of the enterprise.

The "Bager" Naval Dredging Enterprise remains under the operational management of the Main Administration of Naval Construction Enterprises, because dredging serves the naval construction enterprises in the accomplishment of their work and is very closely related to naval construction enterprises.

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During its 4 years of existence, the Enterprise for Salvaging and Towing Ships has raised most of the ships, docks, etc., sunk along the coast during the war. The main work of the enterprise is decreasing in this respect and will cease almost entirely in the near future. On the other hand, there is a new activity, the repair of ships. The ministry can now approach the construction of shipyards for repairing ships of the merchant fleet. It is most suitable for these two activities to unite in one enterprise until one of them (salvaging ships) entirely ceases, while the other (repairing ships) is not completely developed. The combined enterprise is named the Administration for Repairing and Salvaging Ships and will be under the direct management of the Ministry of Navigation.

The "Obala" Institution for Planning Naval Construction Projects is placed under the direct operational management of the Ministry of Navigation because of the necessity of close correlation of its projected plans with the ministry's capital investment plans, because of additions which may be made to the investment plan during the year, because of assigning priorities, and because of the necessarily close relation of the "Obala" to the various commissions for revision of projects. The relation to all other commissions is indirect, through the ministry, because the "Obala" Enterprise must plan ports and port installations (wharves, railroad tracks, warehouses, etc.), and all projects closely related to exploitation. This requires that the enterprise be under the direct management of the agency for over-all planning of ports, i.e., the ministry.

The "Rad" Naval Workshop Enterprise was combined with the Split Naval Construction Enterprise because the "Rad" Enterprise was of a service character and had a very small productive capacity.

THE MAKEDONIJA, YUGOSLAVIA'S NEW MOTOR SHIP

Split, Pomorstvo, Jul 50

The Makedonija, Yugoslavia's new motor ship, was launched in Rijeka Harbor 21 May 1950. It is one of the more modern and attractive cargo boats in form and construction. The ship is equipped with lifesaving apparatus, safety devices, and navigation instruments.

The vessel was built in Holland, but was constructed in considerable part according to Yugoslav design and under the superintendence of Yugoslav builders.

The Makedonija is of open-shelter deck type with open wells in the stern and in the cruiser stern. It has a short bow superstructure, beneath which is the equipment for lifting the anchor and the heavy freight. A double bottom stretches along the entire length of the ship. The captain's bridge, cabins for passengers, and some cabins for the crew are in the center of the bridge. Other cabins for the crew are in the stern. A single-propeller Sulzer engine operates the vessel.

The Makedonija's measurements are as follows:

Over-all length	144 meters
Length between perpendiculars	134.5 meters
Beam	18.6 meters
Height to the main deck	8.34 meters

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Height to the covered deck	11.34 meters
Number of passengers	12
Capacity	6,119 gross-registered tons
Gross tonnage	9,100 tons
Draught	7.01 meters
Effective horsepower	5,000
Speed	14 knots

The body of the vessel is built of strong steel plates, which can sustain the heaviest loads. The ship is constructed according to all the regulations of the Specifications Board and has a certificate of the highest class. Under the main deck is another deck, which strengthens the ship's construction considerably.

The Makedonija has two masts. A steel pole, which serves as a support for the equipment for lifting cargo to holds No 2 and 3, is located amidship, between the foremast and the superstructure.

The double bottom is divided into 15 chambers, which are not interconnected. These tanks store drinking water, fuel, lubricating oil, and ballast. Cofferdams are located between the water and fuel tanks, to prevent mixing of fuel or lubricating oil with the drinking water in the event of a break in the partitions between the tanks.

Three holds for cargo are forward and two astern. Cargo is handled by 12 electric cranes of 4- to 5-ton capacity. The cranes are installed on the deck, four around each mast and four around the steel pole between holds No 2 and 3.

The masts and the steel pole are fitted to hold the equipment for transferring cargo to and from the ship. The foremast is reinforced to support an 80-ton load. Two 60-horsepower electric cranes, located under the forecastle superstructure, lift 80-ton loads and also lift the anchor. The ship also has equipment to lift 20-ton loads. The double bottom is covered with a row of thick boards to prevent damage from loading and unloading cargo. The drains in the holds are also covered with boards to protect them from debris from various cargoes. The hold drains are installed with special pipes equipped to shut off water in case of any failure of the drainage system or leaks. Separate pipes leading only to the upper deck are installed to control the amount of water in the drains. Daily inspections are made to prevent damage to the cargo from standing water.

The holds are separated by bulkheads reaching from the double bottom to the main deck. All holds have a deck, which is especially suitable for separating various kinds of freight. The holds are ventilated by ventilators installed on the deck.

The captain and chief engineer have a workroom and plumbing facilities off their bedrooms. The machine rooms are under the superstructure and are reached by separate stairs. Cabins for crew and passengers are commodious and hygienically arranged. The living quarters extend along both sides of the corridor, which runs the entire length of the superstructure. Separate plumbing facilities for officers and crew are beside the passenger cabins. The floors of all rooms and corridors are covered with "litosil." An electromechanical workshop

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is on the port side toward the stern. A well lighted and well ventilated, commodious kitchen is in the middle of the superstructure towards the stern. Cooking is done on a 37-kilowatt electric range; baking, in an 8-kilowatt electric stove. The cabins are ventilated by a system of pipes leading from a pressure ventilator. Separate dining rooms are provided for officers, passengers, and crew. One section of the dining room for the crew can be separated by sliding doors, making space for a Red Corner.

Eight two-bed cabins for the crew, with complete plumbing facilities, are located in the superstructure. All living quarters are heated by hot-water radiators.

The captain's bridge is amidship and is composed of the navigator's and steersman's cabins. The navigator's cabin is equipped with modern apparatus and instruments. The fire-fighting station in the steersman's cabin can extinguish fires in the holds and engines with carbon dioxide. Steering is done with a small wheel on a telemotor with two 17-horsepower electric engines, one of which is a reserve engine. A mechanical telegraph in the steersman's cabin is used to transmit orders to the crew.

The single-action, two-cycle, 5,000-horsepower, 128-rpm Sulzer engine has nine cylinders without compressors. The ship has a speed of 14 knots under full load. Engine cylinders and oil for the bearings are cooled with fresh water, which in turn is cooled by sea water, using special exhaust pumps.

All working parts of the engine are lubricated by a pressure system. Fuel and lubricating-oil pumps are lubricated by cylinders installed on the same axle as the main engine, which drives them.

A tandem-type double-action pump for cleaning is driven directly by the main engine. Cylinders and pumps are automatically cleaned and lubricated. The engine is started by compressed air from three air flasks, which hold a sufficient quantity of air for 15 to 20 revolutions.

An automatic alarm system warns of any damage to the mechanical lubricating and cooling systems.

The main engine has Michell friction bearings, whose temperature is controlled by a system of pipes containing oil coolant and a thermometer indicating their temperature.

Three 240-horsepower MAN, six-cylinder, 525-rpm, single-action, four-beam diesel generators assist the main engine. They are started by air and each one has its own oil pump, coolant oil, fuel filter, revolution regulator, manometer, thermometer, etc. A 225-volt current is generated. Two of the generators are constructed to run as compressors for filling the air flasks. The compressor capacity is 210 cubic meters per hour for a pressure of 30 kilograms per square centimeter. A smaller diesel generator has an air-compressor capacity of 25 cubic meters per hour.

One 35-cubic-meter-per-hour electric pump pumps the oil to a height of 25 meters; its capacity is 14 cubic meters per hour to a height of 20 meters. Two De Laval electric purification systems, each with a capacity of 2,000 liters per hour, are installed to separate impurities from the fuel oil, and two purification systems of the same capacity separate impurities from the lubricating oil.

Two 65-horsepower horizontal electric pumps lubricate all working parts of the main engine. One of these pumps is in operation when the main engine is working, while the other is in readiness as a reserve pump. Lubricating oil is cooled by two Serck cooling systems. Salt water is cooled by two 25-horsepower, 300-ton-per-hour horizontal electric pumps. Fresh water is cooled by two 56-horsepower horizontal electric pumps. Two smaller 20-ton-per-hour electric pumps assist in the cooling of fresh and salt water.

One 20-horsepower, 150-ton-per-hour centrifugal pump pumps water from the tanks and also transfers it from one tank to another. A 43-horsepower pump pumps water from the drains. Other pumps circulate water for plumbing, for drinking water, etc.

A workshop with a large lathe, planing machine, drill, and grinder, all electrically operated, is equipped to make all minor repairs. A crane with a gross tonnage of 6 tons travels on tracks along the entire length of the main engine. Cranes with a gross tonnage of one ton each serve the auxiliary engines.

Tanks of salt and fresh water placed in the ship's funnel supply the living quarters and plumbing facilities with running water. Two small steam boilers heat fuel oil for the main and auxiliary installations. A refrigerating unit preserves fresh food on board.

WORK OF THE "BRODOSPAS" (SHIP SALVAGE) ENTERPRISE

Slavko Vrebalov
Zagreb, Jugoslovenski Mornar, Sep 50

In 1947, the "Brodospas" (Ship Salvage) Enterprise at Split raised for repair the Balcik, a Rumanian ship of 3,600 tons, and the passenger ship Senj. The enterprise salvaged a total of 11,000 gross registered tons in 1947.

In 1948, in the port of Gruz, the Gigi of 3,666 tons was raised by "Brodospas" for dismantling. The Ramb III was salvaged at Rijeka; the ship's gross registered tonnage is 3,667-tons. A floating dock of 1,500 tons and the Srbin of 982 gross-registered tons were raised at Pula. The enterprise salvaged a total of 11,850 gross-registered tons in 1948.

In 1949, the enterprise had a record year. It salvaged a total of 16,000 tons. The Marko at Split, the Potestas at Tivat, and the Mercurio at Porec were raised for dismantling. The Locchi and the Lazarus Cement Dock at Rijeka, and the Brunduzium at Gruz, were raised for repair.

A total of 5,000 gross-registered tons had been salvaged up to 25 June 1950. The Italia at Rasa was raised for dismantling, while the 864-ton Beograd at Pula was raised for repair; also a 250-ton pontoon crane and the 250-ton Liguria were raised for repair.

"Brodospas" teams helped tow the Panamanian S. Pablo, the Italian fishing boat Gioconda, the tanker Vis, and the Brac.

The enterprise is now raising the Petar, which is sunk over 50 meters under water at Zlarin. The raising of this ship will be one of the greatest achievements of the collective, for no one has as yet succeeded in raising a vessel from this depth. To date, results show that the task will be successfully accomplished.

The enterprise dismantles highly damaged vessels and sends the old iron for use as raw materials in ferrous metallurgy. The largest base is at Split, where the Gigi, S. Marko, Ivo Matkovic, S. Luigi, and Partizanka are being dismantled. The Pulj and Italia are being dismantled at Pula, and the Mar Bianco at Zadar.

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YUGOSLAV SALVAGE OPERATIONS

Split, Pomorstvo, Jul 50

The "Brodospas" Enterprise carried out the following salvage operations during the first 3 years of the Yugoslav Five-Year Plan:

Year	Total Salvage (tons)	For Repair Wt (tons)	For Repair Gross-Registered Tonnage	For Dismantling Wt (tons)
1947	16,004	6,111	5,112	9,893
1948	14,513	9,330	7,485	5,183
1949	20,897	6,330	7,5-9 /third digit illegible/	9,567

The 5,000-ton ship Potestas was salvaged in 1949 for dismantling, but the dismantling has not taken place.

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