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SPECIAL REPORT  
ON  
OPERATIONS AND ORGANIZATION  
OF THE  
GERMAN NAVAL SUPPLY SYSTEM  
DURING  
WORLD WAR II



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NAVY DEPARTMENT  
Bureau of Supplies and Accounts  
Washington 25, D. C., 20 March 1953

This special report on operations and organization of the German naval supply system during World War II is being published to disseminate the information contained therein to interested persons of the Naval Establishment. Extracts from this document may be made without the authority of the Navy Department provided they are given the security protection required by the U. S. Navy Security Manual for Classified Matter - 1951.

The subjects relate to the German navy during World War II and cover organization; supply officers and officials; the logistic system; mobile support; procurement, storage and distribution; fuel; transportation; finance, fiscal accounting and mutual assistance; clothing, small stores, provisions and ships store activities; and the secret supply service.

M. L. ROYAL  
Chief, Bureau of Supplies and Accounts

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### INTRODUCTION

This study had its inception on 30 October 1950 when VAdm Charles W. Fox, SC, U. S. Navy, then Chief of the Bureau of Supplies and Accounts proposed to the Chief of Naval Operations that a study of the supply aspects of the logistics systems of the former German and Japanese navies should be made. In this connection, VAdm Fox wrote:

"While this Navy has made great strides in the field of logistics, we must give relentless attention to the further refinement of our system in order to keep abreast of the increasing requirements of our operating forces. The problems presented in providing material logistic support to the Fleet are becoming more and more difficult of solution. It is considered, therefore, that we should explore all available methods of affording improvement. One possible means is a study of the supply systems of the former German and Japanese navies. While it is believed that a considerable amount of material has been written that touches on this subject, investigations to date have not revealed any consolidation of the material now to be found in various scattered documents.

"Unless OpNav has knowledge of such an existing compilation and unless otherwise directed, this Bureau, with the view of possibly extracting some ideas on methods employed by the Japanese and German navies to the benefit of our own, proposes to undertake a review of what has been written on this subject to determine the practicability of making a detailed study of the supply aspects of the logistics systems of the Japanese and German navies."

On 15 November 1950 the Chief of Naval Operations (OP-40), agreed to the proposal of the Chief of the Bureau of Supplies and Accounts and directed that significant findings be brought to the attention of the Deputy Chief of Naval Operations (Logistics) and that an appropriate report be submitted upon completion of the project. Cdr Roy O. Stratton, SC, U. S. Navy (Retired), was recalled to active duty on 11 January 1951 as the project officer to conduct the study.

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It soon became apparent that the scope of the proposed study was so broad that the problem could not be attacked as a whole, but would have to be phased. The Deputy Chief of the Bureau of Supplies and Accounts, Rear Admiral George W. Bauernschmidt, SC, U.S. Navy, therefore determined that greater benefit would accrue from first studying the techniques and systems employed by the German Navy. If information obtained in that phase of the study was found to be of sufficient importance, the systems and techniques employed by the Japanese Navy would then be studied.

The project was approached by conducting an examination of the documents and papers relating to the former German Navy which were contained in the files of the Office of Naval Intelligence and the Classified Records Center of the Division of Naval Records and History (Op-291), in order to determine what supply/logistic facilities the German Navy had, where they were located and who controlled them. RADM John Heffernan, the Naval Historian, was most helpful and made many suggestions regarding possible source material. Information was also sought in the files of the Army Quartermaster, the Armed Forces Industrial College, the Foreign Studies Branch of the office of the Army Chief of Staff, the Library of the Army Assistant Chief of Staff for Intelligence and the German Military Documents Section of the Office of the Adjutant General of the Army.

The assistance of Cdr. Samuel R. Sanders, USNR, formerly assigned to translations of German naval documents and now on inactive duty was also solicited. This officer was very helpful and made available many documents that had not yet been catalogued.

The files of the Navy Department Library were searched and inquiries made at the Library of Congress and National Archives for information held by those agencies that might be pertinent to the study.

The project officer visited the offices of the NEW YORK TIMES, LIFE, TIME and FORTUNE Magazines at New York City and the READER'S DIGEST at Pleasantville, N.Y. and searched the index files of those

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publications for information that might be of assistance. He also visited the libraries of the Logistic Research Facility at Bayonne and the Naval War College at Newport for the same purpose. While at Newport, he interviewed Capt E. G. Durgin, USN, the Professor of Naval Science at Brown University, Providence, with the view to ascertaining the names of important supply/logistic personalities in the German Navy. Capt. Durgin had been the U.S. Naval Attache at Berlin just prior to the outbreak of World War II.

When preliminary examination of these sources of information had been made, the project officer moved overseas to London where an examination of seized German naval secret documents was conducted at the British Admiralty. This phase of the study started on 9 June 1951.

The U.S. Naval Attache, London, obtained security clearance for the project officer and permission to use the files of the Foreign Document Section of the Historical Division of the British Admiralty. He also effected the necessary introductions to RAdm Roger M. Ballairs, the Royal Naval Historian, and his assistant, Cdr. Malcolm Saunders, Royal Navy (Ret).

The use of all facilities of the Foreign Document Section was made available to the project officer, and a former German naval archivist, Mr. Walter Pfeiffer, and a translator, Mr. Kenneth W. Case, were assigned on a part time basis to assist him in locating and translating documents pertaining to the study.

The originals of the German secret documents held at the British Admiralty are known as the Tarnbach Files. They have been given this name because they were captured by the Allies at the end of the war at Tarnbach Castle, three miles due west of the city of Coburg. The German Admiralty secret archives had been moved there shortly after the bombing of Berlin had become effective. The secret correspondence of all Admiralty offices and bureaus was sent there each day. As a result, these files are quite extensive and several rooms in the

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basement of the British Admiralty are required to house them.

In 1945-1946, the U. S. Navy Microfilmed most of these files.

Mr. Pfeiffer was the senior assistant to the German naval historian, VADM Assmann, at the time these documents were captured. He was then taken on the staff of the British Admiralty and has been the archivist in charge of the Tarnbach Files ever since. Mr. Case was an employee of the U.S. Naval Legal Officer on the Staff of CinC EastLantMed and was working at the British Admiralty on claims against the United States over losses of German merchant marine vessels. Because of the great familiarity of Messrs. Pfeiffer and Case with the contents of the Tarnbach Files, much information that may otherwise have escaped examination was made available to the project officer.

The German Navy reorganized the bureaus of its Admiralty, the Naval War Staff and its Admiral Quartermaster Division and its shore establishment five times during World War II. Each time an organization book was issued setting forth the responsibilities of each division and section of the various bureaus, offices and other administrative agencies of the Admiralty and Naval War Staff. No copies of these books had been located in the files of the Office of Naval Intelligence or the Division of Naval Records and History during the research conducted in Washington. When they were compared with information previously obtained it was seen that the names and functions of many of the supply/logistic agencies had been changed and that several organizations on the project officer's list were duplicative. Therefore, a functional organization chart of the German Admiralty, showing the incumbent in each office was prepared. This entailed considerable research.

Informal talks in American naval circles in London and Washington had revealed that while our former enemies, the Germans, would undoubtedly

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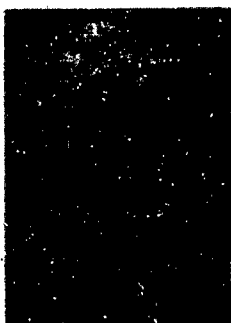
VADM FRIEDRICH RUGE



VADM HELMUTH HERTZ



GENERAL ADMIRAL  
OTTO SCHIEFWIND



RADM GERHARDT WAGNER



COL WALTER GAUL

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co-operate in a study such as this, any approach to them would have to be made in a manner designed to convince them that the person seeking information had made a thorough study of the organization of their Navy, that his project was worthwhile and that he was sincere in his desire to benefit by their experience. For this reason, great emphasis was placed on the accuracy of the chart that was prepared in London.

During the period 19 - 28 July the project officer made a trip to Germany to become acquainted with the various American naval officers there who would probably be of assistance in the study, and such former German naval officers and officials as opportunity might permit. The headquarters of Commander, U.S. Naval Forces in Germany, at Heidelberg, the office of the U.S. Naval Intelligence Officer at Berlin, and the U.S. Naval Advanced Base at Bremerhaven were visited on this trip. Conferences were held at each place.

Little was accomplished at Heidelberg. Cdr. E. G. Campbell, the logistics officer on RADM Holden's staff, and Cdr. R. W. Oliver, SC, the assistant logistics officer, evinced great interest in the study, but knew of no former German naval officers or officials in the area who might contribute any worthwhile information.

At Berlin, however, Capt. D. L. Day, the Intelligence Officer and his assistant, LCDR. E. G. Riedel, were of great assistance and proffered much advice and information regarding German personalities who they believed would help in such a study.

Because LCDR. Riedel had been on duty in Germany before the war and for most of the period since the war, he was able to furnish the names and addresses of several officers who were later interviewed. Most of these officers lived in the Hamburg - Wilhelmshaven - Kiel area. General Admiral Otto Schniewind, the former Commander-in-Chief of the German Fleet, was said to be the dean of the former naval officer corps and in contact with most of the former senior officers



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and officials. Arrangements were made by LCDR Riedel with the naval intelligence officer at Bremerhaven, LCDR C. B. Brouillette, to effect an introduction of the project officer to GenAdm Schniewind and a group of his close associates, VAdm Helmuth Heye, VAdm Friedrich Ruge, RAdm Gerhardt Wagner, and Air Force Colonel Walter Gaul.

Many tales had been told to the project officer in London, Heidelberg, and Berlin of the abrupt one-sided approach of some Americans when seeking information from their former enemies, the Germans, and the resentment that such attitudes had created. The fact that former officers had been stripped of all rank had been stressed. They were to be known as "Mister" only, one informant stated.

This approach did not seem to be one that would induce men, once proud of their position and prestige, to give freely of their experience and opinions. GenAdm Schniewind had been one of the most senior officers in the Navy. VAdm Ruge had been a divisional chief of the very important Bureau of Warship Construction and Armament. VAdm Heye had been the Commander-in-Chief of the Small Battle Units. RAdm Wagner had been the operations planning officer for Grand Admiral Karl Doenitz in the Naval War Staff. Col. Gaul had been liaison officer between Grand Admirals Raeder and Doenitz and Hermann Goering. Manifestly an approach likely to create even the slightest resentment should not be used. After introduction, the project officer said:

"General Admiral Schniewind and gentlemen: The American Navy has long respected the traditions and efficiency of the German Navy. The members of our Supply Corps are greatly impressed with your ability to wage a war on two fronts, operating in an economy of scarcity such as was Germany's during World War II, and to extract so much equipment from so little material.

"Rear Admiral Fox, the Chief of the Bureau of Supplies and Accounts, and his deputy, Rear Admiral Bauernschmidt, send you their respects and best wishes. They want the answers to many questions. Should the United States ever again be forced to engage in a war, it cannot afford to dissipate its resources. Each ounce of its raw materials, each screw driver, each pair of shoes, each bag of flour, each spare part - everything in the supply systems of its armed forces must be fully utilized. They want to know how you stretched the materials available to you, how you salvaged your obsolete, worn out and damaged equipment, what accounting principles you employed and

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many other things. They have sent me, the student, to you, the teachers to get these answers."

The effect was electric. GenAdm Schniewind's deeply lined and stern face softened into an almost complacent satisfaction. He had been a prisoner of war for three years and had been tried and acquitted at Nuernberg. VAdm Heye, who had been very formal and had scowled during this speech, relaxed and appeared more friendly. VAdm Ruge remained as imperturbable as before. He speaks English like an Oxford professor and weighs every word for its finest shade of meaning. RAdm Schubert smiled. His bushy eyebrows, which stick out from his forehead like those of a fox terrier, seemed suddenly less militant. Col. Gaul, the extrovert of the quintette, crossed the room and extended a friendly hand. The approach had been successful.

The functional organization chart was then spread out on a table. In this report it has been broken down into sections, and the names of the chief of bureaus, divisions, etc. have been omitted, since they appear in the text. The original, however, was complete. The five officers studied the chart in silence and it was some time before GenAdm Schniewind spoke. He said:

"A lot of work has obviously gone into the preparation of this chart. I have checked the names of the department, division and section chiefs and they are correct. How can we help you?"

The details of this first meeting with GenAdm Schniewind and his associates are reported here only to emphasize the desirability of a careful, tactful, even flattering approach when dealing with foreigners. Without the support of this group, many of the officers and officials interviewed would never have been reached and, had they been located, would never have been induced to speak as freely as they did.

An outline of the study and specific questions in its various areas had also been prepared. These were submitted to GenAdm Schniewind and his associates for criticism and suggestions. After a short discussion, GenAdm Schniewind stated that a conference schedule with various experts all over Western Germany would have to be established.

The project officer returned to London to continue research at the

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British Admiralty. On 13 August he embarked again for Germany and proceeded to Berlin to start the third phase of the study.

It must be emphasized that when the interviews, shortly to be described, were held the German Navy had been completely disbanded. Its combatant ships had been sunk or apportioned among the victorious allies. Its shore establishment had been wrecked, either by air attacks or demolition. Some of its personnel were employed in minesweeping operations under Allied supervision, but most of them were in civilian jobs. In many instances the diaries and personal papers of naval officers and officials had been confiscated. With the exception of a few books relating to clothing and provisions which were held by the British Admiralty, it was impossible to locate any accounting instructions or other printed information regarding the supply systems and techniques employed by the Navy. As a result, it was necessary in many instances to rely on the memories of persons interviewed in reconstructing such systems and techniques.

During the period 14 August to 22 September 1951, officers and officials chosen by General Schneidwind and his associates were interviewed in many cities and towns of Western Germany.

Vidm Heinrich Stiegel, who was chief of the Dockyard Section of the Bureau of Warship Construction and Armament and charged with over-all administration of both the Central Procurement Office and the Technical Procurement Office supply systems was interviewed at Berlin on 14-15 August. He had entered the Navy in 1908, had been a Captain at the outbreak of war, was promoted to Rear Admiral in 1940 and Vice Admiral in 1942. He was the most outspoken officer interviewed as far as criticism of procurement/production procedures is concerned, and appeared to be better versed than the others in supply distribution techniques. During the first day's meeting, he seemed a little stiff and formal, although he answered questions freely. During the second meeting, however, this restraint disappeared. It was during the second days interview that he was so valuable in his criticisms of Dr. Albert Speer and Grand Admiral Doenitz. He also agreed to send by mail additional information on the history and development of the naval supply system. The project officer left Berlin for Bremerhaven on the night of the 16th of August.

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VAdm Bruno Machens, the Admiral Quartermaster of the Navy from 1942-1944 and the officer charged with matching material requirements with operations, had come to Bremerhaven from Hohenrode, a town in the Harz Mountains area, at the request of GenAdm Schniewind to act as guide, contact man and interpreter for the project officer in interviews to be held during the period 18-28 August. As promised, GenAdm Schniewind had established a schedule. The questions given to him had been translated into German and furnished to group leaders in three cities in which interviews were to be held. Capt Hans R. Moessing had been designated as the officer to make appointments and conduct the proceedings at Bremen. RAdm Guenther Schubert had the same responsibilities at Kiel. RAdm Max Adam was the group leader at Hamburg.

Before the interviews were held, Miss Hede Sistrater, a former naval Hilferinn (Wave) employed by the U.S. Naval Intelligence Office at Bremerhaven, was assigned by LCdr Brouillette as project stenographer and assistant interpreter. Walter Scheibel, a former lieutenant colonel in the German Air Force, also employed at the Intelligence Office at Bremerhaven, was detailed as chauffeur.

On 17 August, Geschwaderintendant Max Kalusa, a mining equipment procurement official with the rank of Commander, and LCdr Fritz Glimann, a Supply Corps officer who had been an E-boat flotilla and E-boat supply officer, were interviewed at Bremerhaven.

On 18 August, VAdm Emil Grael, the Surgeon General of the Navy, who was currently employed as the Director of Public Health of the city of Bremen, was interviewed. Capt. Hans R. Moessing, Chief of U-boats in Western France, and Capt. Bruno Fischer, chief of submarine base construction in France, were also interviewed at Bremen on the same day.

On 19 August, Geschwaderintendant Wolfgang Schmula, a supply official with the rank of commander, was interviewed at Bremerhaven. This officer was a clothing and disbursing specialist and at one time had been the staff supply officer, Naval Command Italy. Questioning was confined to disbursing, clothing and mutual assistance matters.

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On 21 August, RAdm Otto Klueber, Chief of Ordnance was interviewed at Malente. This officer had been the commanding officer of the cruiser **MUERNBERG** in 1939-1940, chief of staff on the logistic/operational command Group North in 1940-1942, and in charge of procurement of all guns and ammunition from 1942-1945. RAdm Hans Voss, at one time the chief of the Fuel and Transportation Section of the Admiral Quartermaster's Division and later Chief of Dockyards in Norway, and VAdm Machens were also interviewed at Rutin on the same day.

On 22-23 August, RAdm Guenther Schubert, chief of the Planning, Requirements and Organisation Section of the Admiral Quartermaster's Division in 1941-1942 was interviewed at Kiel. This officer had formerly been the second in command of the **SCHARNHORST**. During 1943-1945, he was the Admiral Commanding the Western Baltic. He spearheaded the Kiel interviews, was extremely co-operative and helpful, and was the outstanding officer interviewed on the subject of organization of the Navy. He had assembled for interview:

- (a) RAdm Erich Maeller a specialist in mining and mine warfare. This officer had been a captain at the outbreak of war. He was Chief of the Blocking and Mining Division and in charge of all procurement of mines, nets, booms and minesweeping equipment during the period 1943-1945.
- (b) Capt Hans Schmalzer, Chief of the Communication Equipment Division. This officer had entered the Navy in 1911, but had been released from the service between 1919 and 1933, when he reentered as a communications specialist. He was promoted to Captain in 1941 and assigned duty as chief of the Communications Equipment Division, where he was responsible for all procurement of such equipment.
- (c) Capt Heinrich Pohl, assistant to RAdm Klueber in the Ordnance Division during the period 1943-1945. He was a gunnery research specialist and performed much of the procurement of heavy guns for the naval artillery divisions and heavy units of the Fleet.
- (d) Marineoberinspektor Dietrich zur Muehlen, a supply official with the rank of senior lieutenant. This official was the supply officer of the port of Trondheim from 1942-1945 and demonstrated an extensive knowledge of the supply systems employed in advanced bases. He was again interviewed at Rutin on 25 August.
- (e) VAdm Machens was interviewed a second time on this day.

On 24 August, VAdm Walter Kinsel, Chief of Dockyards in France was interviewed at Flensburg. This officer had retired from the Navy in 1932 and was engaged in business in China during 1933-1940. He was recalled

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Left to right  
VADM BRUNO MACHENS  
HILFMEINER MEIN  
STRANER,  
LCCM, WALTER SCHNEIDER.



VADM EDUARD GRUBER,  
Surgeon General



VADM OTTO KLUGER,  
Chief of Ordnance  
Equipment and  
Ammunition



CAPT HANS SCHNEIDER,  
Chief of Communi-  
cation Equipment



VADM AUGUST BERNING,  
Chief of the Supply  
Officer Corps



VADM HENRICH ROOGE  
Captain of Raider  
Ship No. 16,  
The ATLANTIS

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to duty in 1940 and was assigned the job of repairing surface vessels in Western France.

RAdm Harald Kienast, Chief of the Communication Inspectorate from 1934-1942, was also interviewed at Flensburg on 24 August. This officer had entered the Navy in 1915 and had always been a communication specialist. During 1943-1945 he was in charge of all communication schools.

RAdm August Boening, Chief of the Supply Officer Corps, was also interviewed on 24 August at Eckenforde. This officer entered the Navy in 1910 and served continuously in the Paymaster or Supply Officers Corps until 1945. He was the only member of the Supply Officer Corps to be promoted above the rank of Captain.

The interviews at Hamburg were held in accordance with the schedule arranged by RAdm Max Adam, the Chief of the Fuel and Transportation Section of the Admiral Quartermaster Division. RAdm Adam was responsible for the logistic support of all surface vessels at sea, for the arranging of all rail, inland water, air and sea transportation for the Navy with the High Command of the Armed Forces and for the administration of the Navy's fuel program. He was interviewed on 29 August. He was most co-operative. He is the manager of the Anglo-Iranian Oil Company in Hamburg, is alert, very active and dapper and gives the impression of the top-notch American public relations or sales manager. He is extremely well disposed towards Americans and went to great lengths to impress upon the project officer many of the details of how the Germans synthesized the various types of fuel used by the Navy. He had assembled for interview:

- (a) Vidm Bernhard Rogge, the captain of Raider Vessel #16, the ATLANTIS, who was interviewed on 29 August regarding logistic support of raider vessels and blockade runners in the Indian and South Atlantic Oceans. This officer was most co-operative and friendly and very anxious to be of assistance.
- (b) Ministerialdirektor Dr. Guido Trittler, Chief of the Construction Corps, an official with the rank of vice admiral, interviewed on 26 August, who was interrogated about construction battalions, coastal defense installations and the logistic problems experienced in connection with them.
- (c) RAdm Walter Dose, Chief of the Hamburg Acceptance Inspectorate district. This officer was charged with inspection and acceptance of all equipment and supplies manufactured in the Hamburg area for the Army, Navy and

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Air Force. He was questioned on 29 August regarding methods employed.

- (d) Flottenintendant Kurt Glaessing, a Special Service Supply Officer with the rank of captain, who had been the staff supply officer in the Balkans. He was questioned on 28 August about the problems of logistic support in that area. He is at present a Senator and District Judge at Bonn and Hamburg. The interview was held in his chambers in the City Hall.
- (e) Flottenintendant Aread Wulff, another Special Service Supply officer with the rank of captain, who had been Glaessing's successor in the Balkans and had also been the staff supply officer of Naval Command Italy. He is now a maritime lawyer. Questions similar to the ones put to Glaessing were asked of this officer on 27 August. He was extremely co-operative.
- (f) Capt Werner E. Stoephasius, Chief of the Secret Supply Service from 1938-1943. Questions were confined to the activities of the Secret Supply Service.
- (g) Oberregierungsrat Ernst Tennstedt, a sea transport official with the rank of commander, interviewed on 27 August. This official was in charge of all sea transportation matters for the Black Sea area and Italy from 1941-1944. This official was questioned regarding sea transportation matters only. He is currently an official in the Ministry of Water Traffic of the city of Hamburg.
- (h) Dr. Hans Graeber, the managing director of the Deutsche Werft, a large commercial shipyard at Hamburg, who, during the war, was in charge of the assembly of pre-fabricated submarines for the Speer Ministry at Toulon, France. He was interrogated regarding measures employed in transporting submarines overland and through the inland waterways to the Mediterranean, and the problems encountered in connection with such work.
- (i) Capt. Wilhelm Mousseman, a gunnery specialist, charged with the procurement of ordnance equipment in the Bureau of Warship Construction and Armament. Questions were confined to the operations of the Naval Ordnance Inspectorate Supply System.

The interviews at Hamburg completed the first phase of the schedule established by Genltnr Schniewind and the project officer returned to Bremerhaven to transcribe sound recordings and permit the stenographer to type her notes.

During the period 30 August to 6 September, Genltnr Schniewind, VAdm Ruge, VAdm Feye and RAdm Wagner were interviewed on general organizational matters. Col. Gaul was questioned about German naval aviation. Geschwaderintendants Kalusa and Schmalz and LCDr Gliemann were again questioned on mining and general service supply matters.



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RADM MAX ADAM,  
Chief of Fuel and  
Transportation



MINISTERIAL DIRECTOR  
DR GUIDO TRITTLER,  
Chief of  
Construction



FLOTTENINTENDANT  
ARND WULF, Staff  
Supply Officer,  
Italy



GENERAL DIRECTOR  
OTTO MERKER, Chief  
of Submarine  
Construction



DR HANS GRAEBER  
In Charge Submarine  
Assembly, Toulon



CAPT WERNER E.  
STOKPHASIUS, Chief  
of Secret Supply  
Service

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On 6 September, the project officer left Bremerhaven for Bonn with Col. Gaul, who had been designated as contact man by Genltdm Schniewind for the second phase of the schedule and the stenographer. At Bonn, the following were interviewed on 7 September:

- (a) Oberregierungsrat Dr. Hans Georg Mueller, a supply official with the rank of commander, who was chief of procurement at the naval dockyard, Wilhelmshaven, and chief of storage and procurement under VAdm Stiegel in the Admiralty. This official was questioned on supply organization and procedures. He is at present employed by the West German Government as Chief of Inland Waterways.
- (b) Ministerialrat Rolf Hesse, a supply official with the rank of captain, who served as supply officer of the naval dockyard at Wilhelmshaven and later on the senior administrative staff at Kiel, handling disbursing, clothing and commissary matters. He was questioned on these matters.
- (c) Ministerialrat Dr. Klaus A. Eggert, a supply official with the rank of captain, who had been attached to the Navy Budget Office in the Admiralty from 1941-1945. He was questioned on matters pertaining to finance. He is presently employed by the government in the Finance Ministry at Bonn.

On 8 September, Oberregierungsrat Dr. Werner Boeker, a supply official with the rank of commander, was interviewed at Bonn. This official had been deputy fuel director for RAdm Adam. Questions were confined to fuel management and fuel accounting.

On 10 September, Admiral Otto Backenkoehler, Chief of the Bureau of Warship Construction and Armament from 1943-1945, was interviewed at Frankfurt am Main. Questions were of a general nature. Capt Hans Guenther Mommsen, Chief of the Economic Division of the Bureau of Warship Construction and Armament from 1940-1945, was also interviewed at Frankfurt am Main on 10-11 September. This officer was a very important man in procurement/production programs of the Navy. He was questioned at great length about procurement and production.

On 12 September, the project officer visited the headquarters of Commander U.S. Naval Forces Germany at Heidelberg.

On 13 September, Ministerialrat Dr. Hans Jannsen, an official with the rank of captain who was the chief chemist of the Navy, was interviewed at Stuttgart. Questioning was confined to fuel production and fuel administration.

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On 14 September, LCdr Karl Pospischil, a member of the Sea Transportation Section of the Admiral Quartermaster's Division and area sea transportation officer in Italy, was interviewed at Munich. Questioning was confined to shipments, markings and the sea transportation organization.

On 15 September, Marinebaudirektor Dr. Heinz Friese, a supply official with the rank of captain, who was Chief of the Technical Procurement Office supply system, was interviewed at Munich. Most of the questions put to this official pertained to spare parts and engines and their procurement, storage and distribution.

The project officer and his party returned to Bremerhaven on 16 September.

On 19 September, Adm Erich Foerste, the Navy Budget Officer from 1934-1937, Commanding Officer GNEISENAU from 1938-1939, Admiral Regels 1941-1943 and CinC Chief Command North Sea 1943-1945, was interviewed at Wilhelmshaven. Questions were confined to finance and budgets.

Capt. Wilhelm Boettcher, a paymaster and supply officer from 1915-1945, and Fleet Paymaster, North Sea from 1942-1945, was also interviewed at Wilhelmshaven on 19 September. Questions asked covered all phases of supply, disbursing and logistics.

On 20 September, Mr. Otto Merker, a civilian assistant of Dr. Albert Speer, was interviewed at Hannover. Mr. Merker was the man who established the production line system of prefabricating submarine hulls and is at present the managing director of Hannoverische Maschinenbau-Aktien-Gesellschaft (Hanomag), a large truck and tractor manufacturing company. Questions were confined to the Speer Ministry and the Navy's production problems.

On 21 September, VAdm Rogge was again interviewed at Hamburg on mobile support matters.

On 22 September, the project officer returned to London.

Research work had been assigned to Messrs Pfeiffer and Case at the British Admiralty. The material extracted from Admiralty files was reviewed and new assignments made. During this visit, it was discovered by the project officer that the files containing the secret correspondence on the German

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Navy's research and development programs had not been microfilmed by the U.S. Navy at the time when the seized documents were reviewed. This was reported to the Naval Attache at London. In exchange of despatches between the Attache and the Office of Naval Intelligence corroborated this. With the permission of Cdr. Saunders of the Foreign Documents Section of the Admiralty, these files were taken to the office of the Naval Attache and microfilmed. They were subsequently forwarded to the Navy Department.

Before leaving Germany, it was suggested by VAdm Heye and RAdm Wagner that LCdr Kurt Ambrosius, a former minesweeping flotilla commander, then residing in Paris, might be able to contribute some information on how minesweepers and other small craft were logistically supported. This officer was interviewed in Paris on 1 October.

It was also recommended by Flottenintendant Wulff and Geschwaderintendant Schmula that Colonel Commissariat Vittorio de Luca, an Italian Supply Corps captain, should be interviewed regarding the mutual assistance arrangements between Germany and Italy. Capt. W. J. Marshall, the Naval Attache, Rome, made the necessary appointment, and the project officer visited the Italian Navy Department at Rome on 16-17 October to interview Colonel de Luca. This interview proved to be a very important one. Tenente Generale Favale, the Paymaster General of the Italian Navy, and Colonel de Luca were very co-operative and, in addition to furnishing information during the de Luca interview, they gave the project officer copies of the Italian Navy's instructions to its forces regarding mutual assistance transfers of material and other details of the program.

The project officer returned to London, completed his affairs at the British Admiralty and embarked for the United States on 27 October 1951. He arrived in Washington on 29 October. Before leaving London, a review of the information obtained was made. Some essential points had been overlooked. Rather than return to Bremerhaven, a letter was written to Col. Gaul requesting that the additional information should be obtained. This resulted in contributions to the study being made by RAdm P. W. Zieb, the officer in charge of the logistic support department at Kiel.

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Throughout the visit to Germany, the officers and officials interviewed received the project officer with great courtesy, friendliness and welcome frankness. An important contributory factor to this was that he was accompanied by a representative of Genltn Schmiewind, who emphasized that it was Genltn Schmiewind's and his associates' desire that they should answer fully and truthfully every question asked them by the project officer. Vldm Machens and Col. Gaul, because of their former position, were very well known by all of the naval officers and officials. With them acting as guides, contact men and interpreters, it was comparatively easy to reach the various officers and officials in their offices, homes and conference rooms. The project officer decided to travel by whatever means was afforded, to stop at whatever hotel his guide designated and to keep appointments whenever or wherever was most convenient to the persons to be interviewed. In many instances this involved conferences late at night or early in the morning, in third class hotels, in village inns and on board a floating hotel on the Rhine River. It also involved travelling in third class day coaches and sleepers, or packed four in a small German Opel car with recording equipment, typewriters, baggage and Jerry cans filled with gasoline. In Butin and Hamburg, his room was thoroughly searched by persons unknown.

Despite these incidents, however, the day to day job of interviewing was pleasant, and the presence of the contact officers made the task of breaking the ice with those interviewed considerably easier.

The officers and officials interviewed were highly intelligent. The supply officers and officials all spoke English excellently, as did some of the line officers. Vldm Ruge, Col Gaul, Flottenintendant Wulff, Hilferinn Straeter, LCol Scheibel and Marinebandirektor Friese, while speaking English with a decided Oxford accent, quite often interspersed their remarks with Americanisms. It appeared that all the officers and officials were technical experts in their own jobs. However, the conclusion was reluctantly reached by the project officer that most of them did not have a very broad knowledge of the over-all organization of the Navy or the responsibilities of divisions, offices, etc., other than those to which they had been attached.

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In several instances, during informal discussions, reference was made to Russia and its occupation of East Germany, its potential threat to West Germany and the work being done by the United States under the North Atlantic Treaty Organization. There was little doubt that those Germans whom the project officer met thoroughly disliked the Russians and were very kindly disposed towards America.

To summarize, 54 foreign officers or officials of the former German Navy, the former German Air Force, the Royal Navy and the Italian Navy contributed to this study. These officers and officials were of the following ranks or comparative ranks.

General Admiral.....1	Lieutenant Colonel (AF).....1
Admiral.....2	Lieutenant Commander.....4
Vice Admiral.....8	Lieutenant.....1
Rear Admiral.....10	Lieutenant (British).....2
Captain.....14	Civilian assistants to Dr.
Colonel (AF).....1	Alfred Speer.....2
Captain (Italian).....1	Wave CPO.....1
Commander.....5	
Commander (British).....1	

In the United States, 18 American citizens and naval officers not attached to the Navy Department also contributed to this study:

Mr. Hanson Baldwin, Military Editor of the New York Times.  
Mr. Edward Mossein, assistant to Mr. Baldwin.  
Mr. Kenneth W. Payne, Executive Editor, Readers' Digest Magazine.  
Mr. Walter Mahoney, Associate Editor, Readers' Digest Magazine.  
Mrs. Hope Eastman, Associate Editor, Readers' Digest Magazine.  
Miss Mary Mason and Miss Edith Starkey, Index Department, Readers' Digest Magazine.  
Mr. Charles Murphy, Associate Editor, Life Magazine.  
Misses Ann Blanchett and Ann Honich, Index Department of Life, Time and Fortune Magazines.  
Capt. E. R. Durgin, USN, Professor of Naval Science, Brown University.  
Capt. Henry Hoopes, USN, Head of Logistics Department, U.S. Naval War College.  
Cdr. E. M. Standish, SC, USN, assistant to Capt. Hoopes.  
Cdr. R. Volles, SC, USN, assistant to Capt. Hoopes.  
Cdr. R. E. Williams, SC, USN, assistant to Capt. Hoopes.  
Cdr. D. H. Hoard, SC, USN, Second Fleet, U.S. Atlantic Fleet.  
RADM G. H. Austin, SC, USN, Logistic Research Center, Rayonne, N.J.  
Cdr. H. P. Knowles, SC, USN, assistant to RADM Austin.

The Naval Attaches at London, RADM D. S. Cornwall and RADM A. Soucek, and the Assistant Naval Attache, Capt E. Watts, showed great interest in the project and made the facilities of their office available to the project officer as a base from which to operate. The Naval Attache at Rome, Capt W. J. Marshall, was also of great assistance in effecting appointments and introductions to personnel at the Italian Navy Department.

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Within BuSanda, all the assistant chiefs and most of the heads of divisions made suggestions regarding areas in which the study should be directed. Many prepared questions they believed pertinent to the study. Several officers of the Supply Corps and civil employees on duty in the Office of the Chief of Naval Operations also lent valuable assistance. Mr. John Stroblein, the civil employee of the Research and Development Division, BuSanda, assigned to the project as administrative assistant also has contributed greatly to the project through his painstaking research and translation of German documents.

The project officer acknowledges this whole hearted support and assistance by all these officers and other persons in a spirit of great appreciation. Without such support and assistance, the bulk of the information collected during this study could not have been obtained.

Translated documents, sound recordings and stenographic transcriptions of interviews held and other research data used in compiling this report are in the files of the Research and Development Division of BuSanda. Manifestly, it has been impossible to cross-check all of the information contained in this report. The bulk of it has been cross-checked, however, either through study of seized documents, ONI reports and published articles, or where possible, by questioning more than one former naval officer or official on the same subject. The report has been subjected to careful scrutiny for the purpose of producing the most accurate picture possible. Where information of a doubtful nature has been included for the purpose of completing a picture, attention has been invited to its possible unreliability. The purpose of the whole is neither to praise nor to blame, but to measure. It has been the desire of the project officer throughout the compilation of this report to present the information in an unprejudiced manner, since it is only upon unbiased information that sound conclusions can be drawn.

Americans sometimes fail to bear in mind, when comparing the experiences of other countries with that of the United States, that the organizations and operating methods of those countries reflect the past traditions, history, customs and beliefs of those countries and are peculiar to them alone. Some supply and disbursing techniques described in this report will appear, when

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first considered, wholly impractical of even trial by the U. S. Navy because of our standards and American way of life. While it is true that they were conceived and practised under a totalitarian system of government, it is also true that they were practised by a navy sorely pressed, a navy trying to eliminate waste and poor utilization of valuable equipment and supplies wherever possible. Some of them were employed to avoid disruption of the economies of occupied countries. Others were necessary because of the isolated position of Germany's main naval bases and the inability of its forces to return to them for replenishment and repairs. Whatever the reasons for their adoption by the German Navy, it is recommended that they be fully considered before they are discarded as unsuitable for American use in wartime. This recommendation is made because of the conviction that has been gaining strength in American military circles that another war would require the full utilization of every ounce - not ton - of equipment, material and supplies that our country can produce.



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CHAPTER I - THE ORGANIZATION OF THE GERMAN NAVY

Introduction

This discussion of the organization of the German Navy must be prefaced by an explanation at the outset that the whole structure of the German Reich, its economy, its finances, its civil and military agencies - every facet of its national life - was subordinated to one person - the Fuehrer, Adolf Hitler. In 1933 he assumed the title of Chancellor of the German Reich, and stripped the Reichstag of its traditional authority to enact laws. After January 1, 1934, it merely approved the legislation promulgated by Hitler alone or by him and his cabinet. Public control over national budgets or appropriations was eliminated. In short, Hitler created a military state.

When Germany mobilized for war, she stood, with only about one-tenth of the United States' area, close to the United States in the value of her industrial output. Industrial Germany consisted of 1,900,000 factories. There was full employment. Over 400,000 foreigners had been imported and put to work. The cripples, the aged and those injured in industrial accidents had been conscripted. A pool of between four and five million women workers had been tapped for additional labor. Mining, industry and commerce together employed 58 percent of the employable population.

The steel and electrotechnical industries were second in world production. American industry was Germany's only peer in this field. The chemical industry, which supplied most of the world with dyes and chemicals, tied with United States industry for first place in world production.

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I. G. Farbenindustrie was perhaps the world's best known name in chemistry. Machinery and automotive equipment, two of the foundations of industrialism, employed the sixth biggest labor force in Germany. The German machine tool industry was one of the most powerful in the world. It was greatly expanded before the war and was rigidly controlled as being highly important to the war effort. The vehicle industry was the third largest in the world. Germany facilitated and encouraged development of other strategic industries, such as those manufacturing aircraft, instruments, accessories, rubber and fuel substitutes. German products were sold in every important nation in the world.

Sixty-seven percent of the German population lived in cities. Berlin was the world's fourth largest city, with a population of four and one quarter million. The population of the German Reich proper was 66 million. Cramped into an area much smaller than the state of Texas, the people lived 353 to the square mile, a population density eight times that of the United States.

Connecting her industrial centers, seaports and large cities was a highly interwoven transportation system. The state-owned railway system included 42,500 miles of track, or almost twice as much as the combined trackage of the Pennsylvania and New York Central systems. Rolling stock consisted of 22,000 locomotives and 670,000 passenger and freight cars which hauled more than 500,000 tons of merchandise annually.

Highways cut across the country at all angles. Among these were the famous autobahnen. These highways consist of two 25 foot lanes divided by a 16 foot center strip and bordered by a shoulder strip on either side. Designed to connect commercial centers, these roads avoid contact with villages or cities. They are high speed truck and passenger car express highways. When Germany mobilized for war, they were 1850 miles long, with 9000 miles more either projected or under construction. The highway system as a whole totalled 132,000 miles, or more than all the hard surface roads in southern United States.

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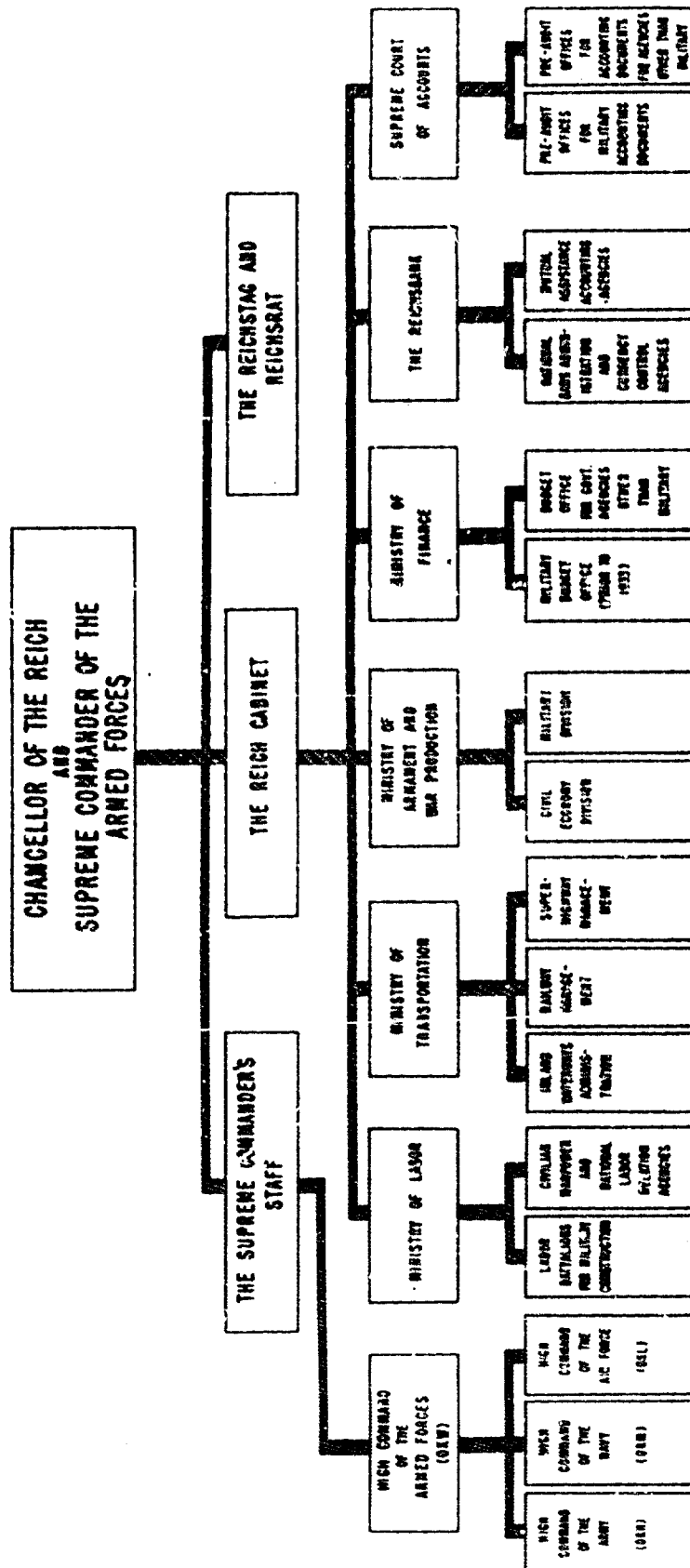
Inland waterways reached far into the interior, with interconnecting canals that would permit transit from one end of Germany to the other. The inland fleet consisted of almost 18,000 vessels. Germany's ocean-going merchant marine was about one-third the size of that of the United States. Its airways system connected with 33 European, South American and Asiatic countries. In brief, the German economy was one of the most highly geared, aggressive and industrialized national systems in the world.

Incongruously, however, Germany had practically none of the raw materials required to support an industrial economy within her own borders. It is claimed that there are over 30 vital materials that an industrial nation needs. Of them all, Germany had in abundance only coal and potash. She had to import all the rest in part or whole quantities - all of her precious metals, all of her nickel, chromium, and mercury, 71 percent of her copper and iron ore, 51 percent of her lead, all of her cotton, silk, rubber and jute and almost all of her wool, hemp and vegetable oils, as well as over half of her hides and skins. This was the German economic position when she entered World War II.

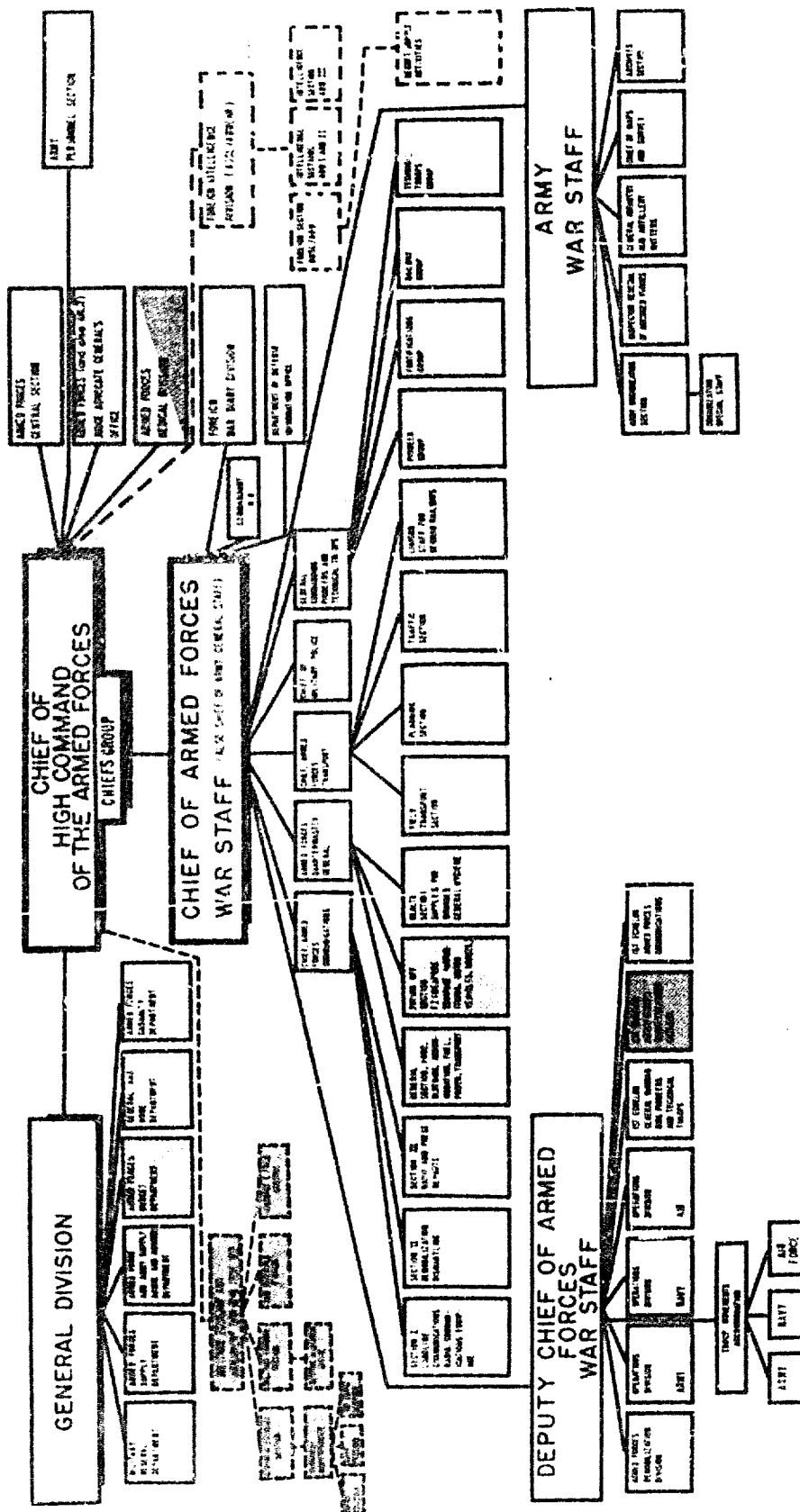
In developing the new military state, Hitler permitted the national agencies of the government (with the exception of the Reichstag; the Reichsrat; and the Reich Supreme Court of Accounts, the duties of which were similar to those of our General Accounting Office) to continue to function as they had under the Weimar Republic. The power of the Reichstag and Reichsrat, however, were curtailed to that of a rubber stamp congress, and the function of the Supreme Court of Accounts limited to superficial examination of accounts, designed only to determine whether or not money had been spent for the purposes intended by the respective commanders-in-chief of the armed forces.

A number of charts showing national agencies, the High Command of the Armed Forces and the various naval bureaus, offices and fleet commands have been included in this chapter as a means of eliminating unnecessarily long or involved discussions of the functions and relative importance of the many units that composed the Navy's organization. The description of these organizations has been kept as brief as was possible without

# NATIONAL AGENCIES AFFECTING NAVAL LOGISTICS (1933 — 1945)



# HIGH COMMAND OF THE ARMED FORCES (OKW)



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loss of clarity. It is not intended that such description shall be construed as complete. Many national agencies and divisions of the High Command of the Armed Forces had responsibilities that indirectly affected the operations of the Navy. The ones that follow, however, are those that most actively affected naval logistics.

NATIONAL LEVEL

At the national level the agencies that affected naval logistics the most were:

1. The Reich Cabinet
2. The Reichstag and Reichsrat
3. The Ministry of Labor
4. The Ministry of Economics, which was later absorbed by
5. The Ministry of War Production and Armament
6. The Ministry of Transportation
7. The Ministry of Food and Agriculture
8. The Ministry of Finance
9. The Reichsbank
10. The Supreme Court of Accounts.

The functions of these policy-making organizations and their effect on naval logistics, the fights for priorities, the complaints of inequities, and the dissension that arose within the Navy over the loss of its traditional prerogatives in the field of procurement and sea transportation have been described in the chapters on Finance, Transportation and Procurement, Storage and Distribution of Supply.

DEPARTMENT OF DEFENSE LEVEL

Under the German principle of unity of command, the Army, Navy and Air Force were regarded as branches of a single service, the Armed Forces (die Wehrmacht). Instead of three departments, there was a single branch of the Government known as the High Command of the Armed Forces (Oberkommando der Wehrmacht:OKW), which represented the joint interests of the armed forces with respect to other governmental departments. This joint high command, of which Hitler was the supreme head, was responsible for the general conduct of the war. It appointed commanders for the joint forces in the field and saw to it that the efforts of the three branches of the service were thoroughly coordinated.

Under the OKW, each branch had its own high command: the High Command of the Army (Oberkommando der Heeres:OKH), the High Command of

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the Navy (Oberkommando der Kriegsmarine:OKM), and the High Command of the Air Force (Oberkommando der Luftwaffe:OKL). These were responsible for organizing in detail, under the general direction of the OKW, the military, naval and air establishments respectively, and for carrying out the strategic planning of the OKW in their particular spheres.

Until 1935, the Army was solely responsible for the mobilization and organization of Germany's entire war potential. Its staff was also responsible for all aspects of planning, and control was not confined to the Army only but included both the Navy and the Air Force within its scope. It is possible, therefore, to realize the immense power which was then wielded by the Supreme Army Staff, and to understand that the Army, which was traditionally of first importance, considered the Navy and the Air Force as "supporting services". It has been said that the German army never fully appreciated the value of an independent navy and air force and that, as a result, the Navy (OKM) and the Air Force (OKL), though represented on the Supreme Army Command Staff, had in practice less standing than the Army.

In 1935 Hitler dismissed von Blomberg as head of the Supreme Army Staff and took over the position of Supreme Commander of the Armed Forces. He reorganized the entire system of higher levels of command, separated the three armed services from the Supreme Army Staff, and created a new and smaller organization, the High Command of the Armed Forces (OKW). It was made responsible for giving effect to his orders and for coordinating the activities of the Army, Air Force and Navy.

This new organization was headed by Gen. Keitel, who was known as the Chief of the Armed Forces (Chef der Wehrmacht). He had no real power, however, and his principal duty was merely to draft Hitler's orders. It is said that he seldom voiced an opinion and that he was regarded with contempt by most of the senior officers. Of very different calibre, however, was General Jodl, who directed a special planning staff within the OKW, and who was responsible for working out the broad outlines of major operations. It has been reported that he understood the principles of

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inter-service cooperation more clearly than most of the German staff officers and that his cold intelligence fitted him well for his duties. Theoretically, Jodl was subordinate to Keitel, but in practice he served as an equal, and both generals worked together as Hitler's private staff officers.

The three CinCs, Goering (Air Force), Raeder and later Doenitz (Navy), and von Brauchitsch (Army), were senior to Keitel and Jodl and, depending on their personal relations with Hitler, more or less directed their own operations within the framework laid down by the Supreme Commander. Each CinC had the right of direct access to Hitler, and periodically discussed with him future plans and the progress of current operations. These "Fuehrer Conferences" were the nearest approach to a Council of War in Nazi Germany, but they never attained the status of a genuine council, as the three CinCs were seldom allowed to report together. The conferences were essentially reports by the CinC concerned to Hitler, and although the reports were frequently advisory as well as descriptive, it depended on Hitler whether a free discussion followed or not. The other officers present, usually Keitel, Jodl, and minor staff officers of the OKW, were there simply to note decisions reached or to provide information on specific points raised at the conference. In 1941 Hitler also assumed command of the Army, dismissing von Brauchitsch. In addition to being Supreme Commander of all armed forces, he was then also CinC, OKW.

RAdm Guenther Schubert, Chief of the Mobilization Planning and Requirements section of the Admiral Quartermaster Division, Naval War Staff (Adm Qu II), when asked to explain the development of the OKW and its influence on the naval logistic system, stated:

"During the first years of the war, the Navy tried, and succeeded, to maintain its independence. It goes without saying that now and then OKW tried by so-called 'Fuehrer directives' to interfere with the Navy's competence even in the sector of operational command. However, actual consequences hardly ever resulted from these activities. It was not until the entire German warfare was forced more and more into the defensive, and the supply problems grew more difficult, that OKW rose into the foreground where the Navy was concerned. In this defensive situation the three services had increasingly to close the ranks of their forces in the field of common action.



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"This natural and useful development was followed by a more rigid concentration of the three services at the highest level, the OKW. This was a logical reaction and in no way disadvantageous. It was a mere necessity. In nearly all theaters of war, commands comprising all three services were set up. However, naval warfare not connected with coastal areas (at that time practically only submarine warfare) was not touched by this development. Shipbuilding was transferred to Speer, who, as head of the Ministry of Armament and War Production, from that time onward became responsible for the armament of the forces. In this period of scarcity of productive capacities and raw materials, there was no other solution. The difficulties then being faced by the Navy in logistics and supply did not result from this step or from the more rigid direction by OKW, but were due to the over-all situation.

"This unavoidable development in modern warfare had been recognized in peace time and led to the idea of creating a corps of high level staff officers, consisting of representatives of all three services, to carry out general staff duties in connection with the combined command of the forces. Each service therefore sent able staff officers to a common training course, established as the Armed Forces Academy (Wehrmachtsakademie). It was our intention to create a staff officers' corps able to consider and judge the over-all situation from a higher point of view, one exceeding the sphere of their own services. Only this type of staff officer in a High Command of the Armed Forces would offer a guarantee that in top level decisions interferences which were disadvantageous to vital concerns of one of the services would be cut out. However, it was impossible to avoid this danger completely. That is human nature. In spite of all this, in modern warfare such combined command of the forces had to be created."

Some of the naval officers and officials interrogated claimed that the subordination of the Navy to the OKW had been disadvantageous. They stated that Hitler, as head of the Army while head of the state, and Goering, as head of the Air Force while head of the Four Year Plan, had used their influence to commandeer badly needed supplies for their respective services and that, as a result, the Navy had not been furnished many of the items of supplies (predominantly fuel) necessary to wage a successful war. When RADM Schubert was questioned on this subject, he continued:

"First, it has to be stated that a modern war, which will always be a total one, cannot be conducted without subordinating the various services under one common planning and operating authority. The problem now is, how far the competence of such a top level organization is to influence the individual services without endangering their own type of warfare. It seems obvious and logical, owing to the different

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backgrounds of the top staff officers of the individual services, that such a staff ought to see its task merely in terms of strategical and operational planning. The center of gravity of all the tasks a High Command of the Forces has to carry out will always rest with organizing and directing the entire war effort of the nation, i.e., of its material and personnel strength, its industry, economy, and sources of raw materials and, also, to assign to the various services that amount of means of war as is necessary to meet the situation.

"The OKW, established before the war, was the directing and administrative staff of the Supreme Commander of the Forces, Hitler. It had no command authority on its own and, therefore, no authority to issue orders to the various services. These were subordinated to their own commanders-in-chief, who were directly subordinated to Hitler. The head of OKW, therefore, had no duties or authority other than being the chief for supervising and directing the staff duties of the OKW. Merely to complete the picture, I might mention that, in addition to the tasks listed above, OKW, for all three services, dealt with propaganda, counter espionage, strategical reconnaissance and intelligence, and problems of military and international law.

"When the OKW was set up in peace time it was planned, in case of war, to subordinate the three services to a Supreme Commander, who was not appointed in peace time, who would be required to use the OKW staff for his staff duties in planning and command. Theoretically, all preparations necessary in this direction were completed beforehand. However, this appointment never materialized before war broke out. Hitler was the supreme commander and remained in that position. In autumn 1941 he took charge of the Army and thus designated to it a dominating position. At least it appeared that way to an outside observer.

"This position of the Army resulted on occasions in a disadvantage for the Navy where large scale supply and procurement of stores was concerned. However, regarding the problem of command, the Navy had the advantage, because it retained its independence and its own command by naval experts. The predominance of the Air Force over the Navy in the field of supply, beginning with the creation of the Air Force, was due to the economic key positions in industry held by Goering."

Although the officers and officials claimed that the danger involved in superimposing an Army command over the Navy was clearly foreseen, and that they expected from the very beginning of mobilization to be treated as "stepchildren" in such a scheme, CinC Navy had no misgivings about the establishment of the OKW. In a speech delivered by GrAdm Raeder on 3 February 1937, he said, among other things:

"Today war means not only soldier against soldier but also war between total populations. The concept of

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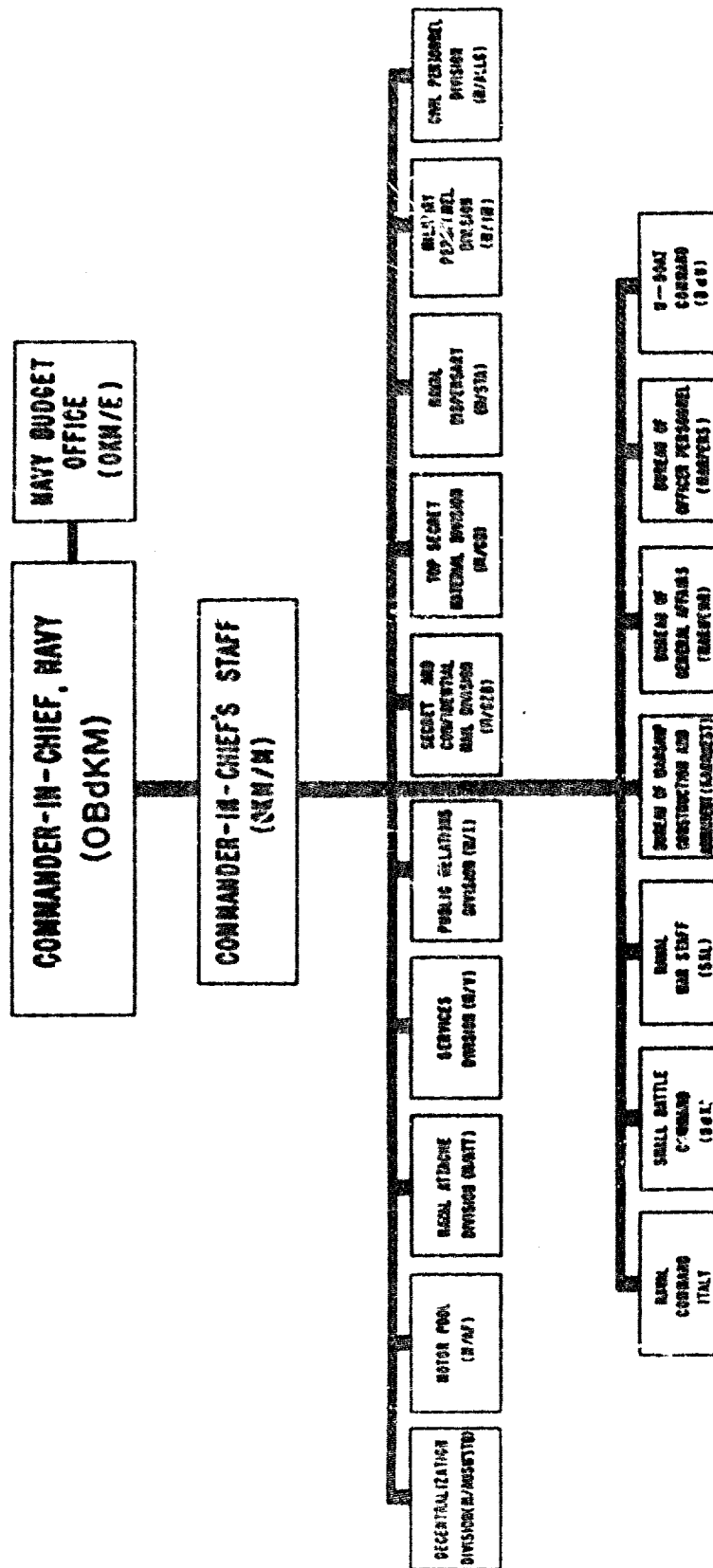
different fronts will disappear. Not only will the land, sea and air fronts on the borders of the Motherland present a unified battlefront, but the operations area of the war will include the total of our own area and that of the enemy. This will also be true of all colonies, bases and sea communications. It is here that the crisis of the war must be expected. The borders of the enemy which lie directly adjacent will not be the decisive factor under all circumstances.

"The best possibilities for the successful completion of an operation exist when not only the operation itself comes as a surprise but also the outbreak of war. Since World War I it has become apparent that there has been a transition from the independent conduct of a war by the Army or the Navy to war operations conducted under a unified command."

In carrying out its mission of coordinating Army, Navy and Air Force activities, OKW controlled most of the Navy's procurement and production until 1942 because of OKW's liaison with the Ministries of Labor, Transportation, Economics, Food and Agriculture, War Production and Armament and Finance. The agency in OKW that dealt with such matters was the Division of Military Economics and Armament (OKW/Rue W1). Until 1942 when the Speer Ministry was formed, this division controlled the allocation of raw materials, prices which contractors could charge the military, and other economic phases of procurement for all branches of the Armed Forces. The Armament Commands and Armament Inspectorates, described in the chapter on Procurement, were subordinated to this division. It only needs to be said here that OKW/Rue W1 designated which should be the service responsible for procurement of common use items of equipment or consumables, and determined what percentage of the raw materials, finished products and plant production facilities each service would receive.

Another activity in the OKW that affected naval logistics was the Foreign Intelligence Division (OKW/Abwehr), headed by Adm Wilhelm Canaris. It was dissolved when that officer was arrested in July 1944. The Ausland/Abwehr section of this division controlled the activities of Etappendienst, a secret supply organization composed of business men abroad who operated under orders of the various naval attaches throughout the world. The mission of this organization was to service submarines, blockade runners, armed merchant raiders and other naval vessels at foreign

# HIGH COMMAND OF THE NAVY (OKM)



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ports. An account of its activities and organization has been included in the chapter on the Secret Supply Service.

The Armed Forces Medical Division played a relatively unimportant role in naval logistics but should be mentioned here to complete the picture. Its function was to procure and equally distribute medical supplies and equipment among the various services. Details are contained in the chapter on Procurement, Storage and Distribution of Supply.

NAVY DEPARTMENT LEVEL

THE HIGH COMMAND OF THE NAVY, referred to here as the OKM or Admiralty, consisted of:

- (a) A Navy Budget Office which consolidated the fiscal requirements of the Navy for submission through CinC Navy to the Ministry of Finance (later direct to the Reich Cabinet), and which then, as direct representative of CinC Navy administered the budget.
- (b) A Commander-in-Chief's staff which, in addition to performing the normal functions of such a staff, cared for and administered the civil and military personnel of the Admiralty.
- (c) A Naval War Staff (SKL), whose functions were similar to those of our Chief of Naval Operations. It exercised naval and logistics command, with an Admiral Quartermaster division (Adm Qu), whose duties paralleled those of our Deputy Chief of Naval Operations for Logistics.
- (d) Two technical bureaus: The Bureau of Warship Construction and Armament (MarRuest) and the Bureau of General Affairs (MarWehr)
- (e) A Bureau of Officer Personnel (MarPers)

The following is a breakdown of the functional organization of these offices, staffs and bureaus, insofar as they affected naval logistics.

The Navy Budget Office (OKM/E), headed by Captain Baumke, was the supreme authority in the Navy in all budget and disbursing matters. This department was solely responsible to CinC Navy, its head acting as the direct representative of GrAdm Raeder or Doenitz in such matters. Many persons interrogated said that this department was very arbitrary in its decisions about how much money could be spent and in what manner, and that many of these decisions were based on opinion rather than the evidence of need submitted.

OKM/E was responsible for the preparation of estimates of the Navy's financial requirements and revisions of estimates; development, execution

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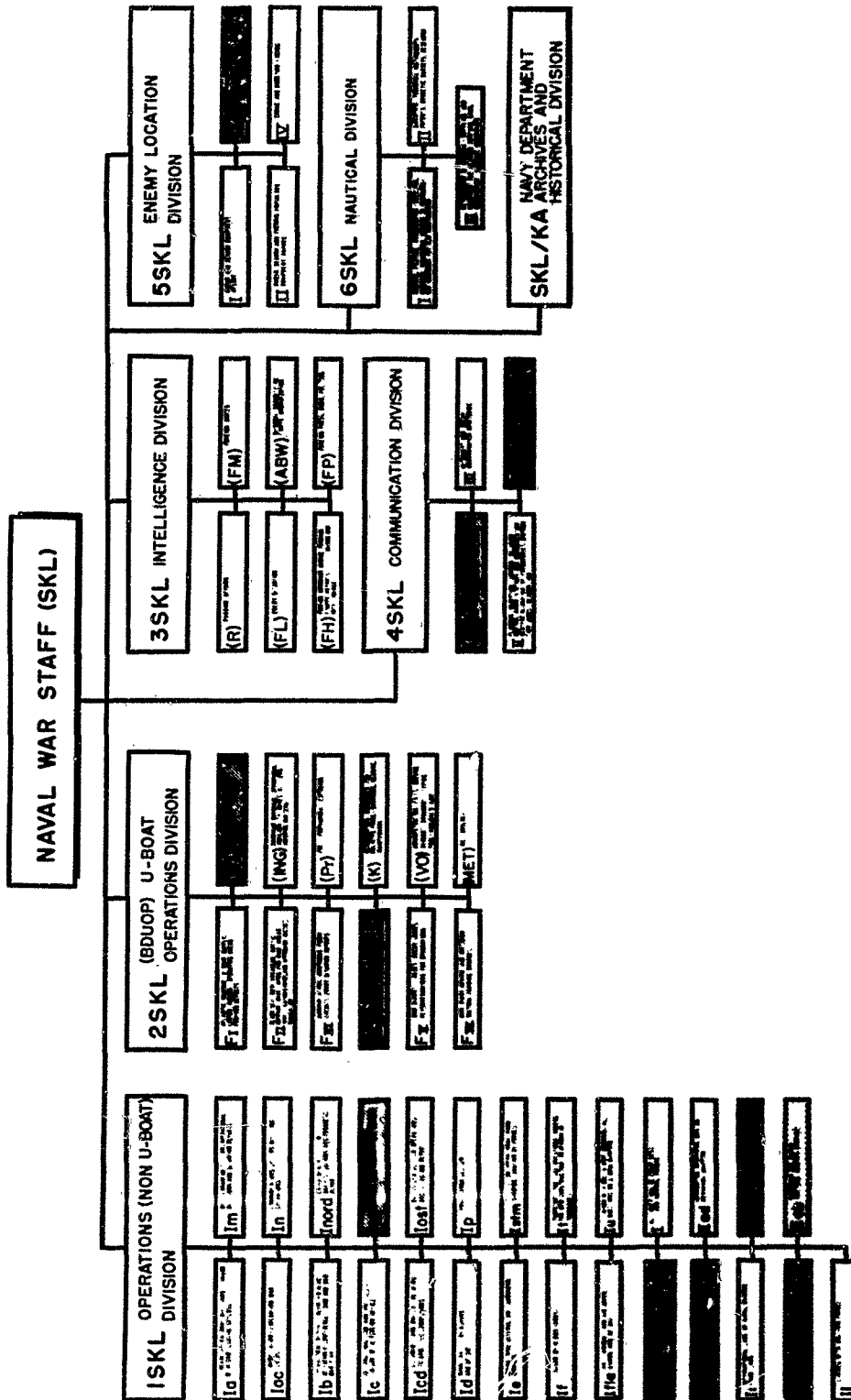
assistance to naval activities in the administration of their appropriations; and supervising the general finances of the Navy.

It played an important role in the development of the new German Navy by maintaining a secret budget used for the establishment and perpetuation of a "shadow industry" to construct fishing vessels, motor boats and other patrol craft in Germany, electrical torpedoes in Sweden and U-boats in Holland. It also financed experiments in Finland and Japan. It accomplished this without the consent or knowledge of the Reichstag or Reichsrat, through the establishment of a business firm, the Metallurgical Research Company, whose bonds were sold to the public. The details of these transactions and other responsibilities of OKM/E are contained in the chapter on Finance.

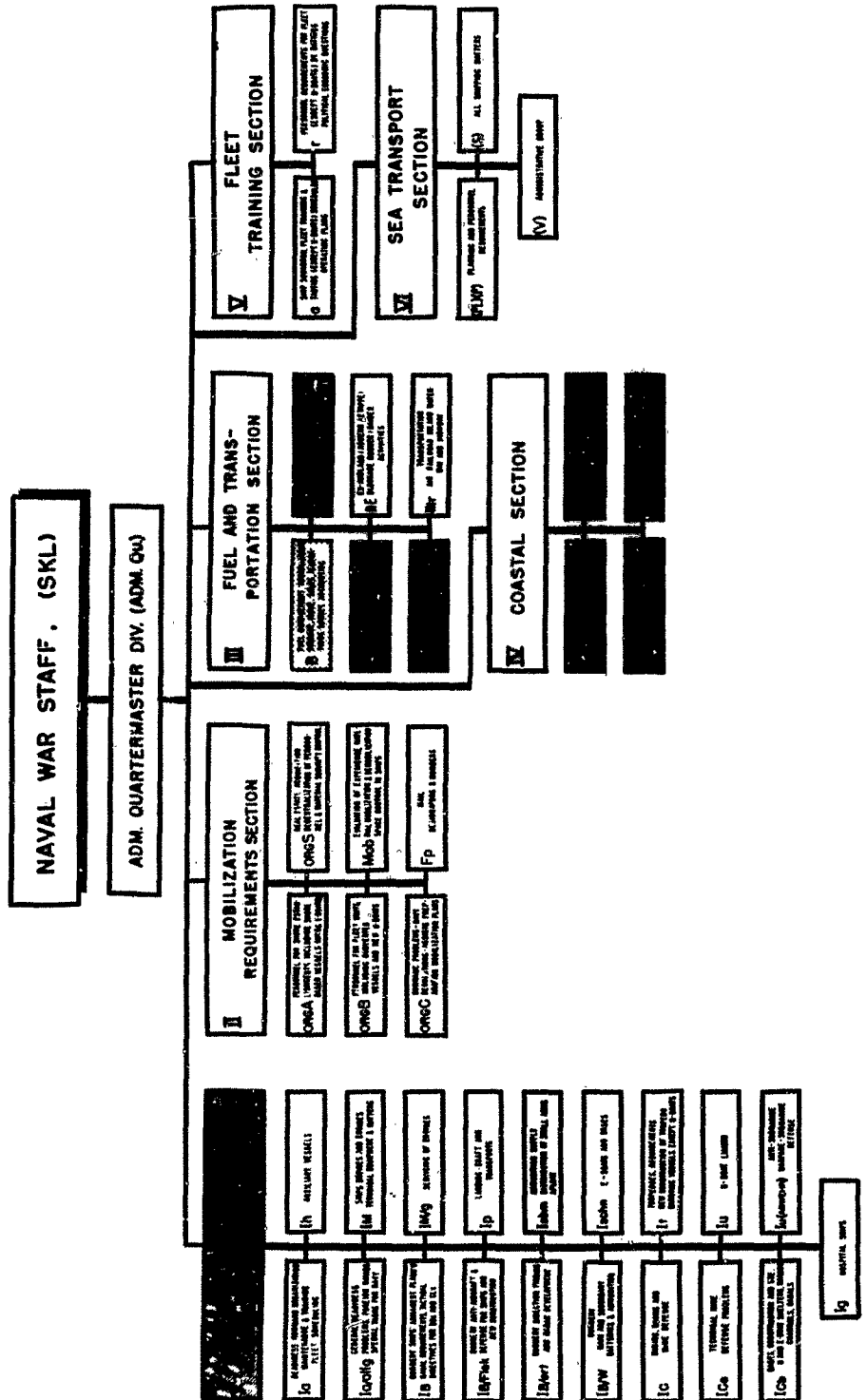
The Commander-in-Chief's Staff (M), headed by RAdm Schulte - Moenting, contained a Public Relations Division (MI), Naval Attache Division (MATT), Military Personnel Division (MIM), Civil Personnel Division (M Allg), Naval Dispensary (M/Sta) and several other groups, whose functions were primarily housekeeping ones. The Naval Attache Division (MATT) was the contact point between the Foreign Intelligence Division of OKW (Ausland/Abwehr) and the area or group leaders of the Secret Supply Service, since directives relating to their work and reports from them were transmitted via the naval attaches in the countries in which they served.

THE NAVAL WAR STAFF (SKL)

The Naval War Staff, headed by VAdm Meisel, consisted of two groups, an operational staff (SKL) and an Admiral Quartermaster's Division (Adm Qu). The former (1-6 SKL and SKL/KA) was administered by RAdm Gerhardt Wagner (1 SKL) and was charged with the planning of all surface force operations. The latter (Adm Qu) was administered by VAdm Bruno Machens, the Admiral Quartermaster, and was charged with the logistic planning for such operations. SKL may be likened to the staff of our Chief of Naval Operations, Adm Qu to the staff of our Deputy Chief of Naval Operations for Logistics. A discussion of the duties of some of the divisions and sections of SKL and Adm Qu follow. Those not mentioned had no logistic functions.



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1 SKL, the Operations (non U-boat) Division, was, as has been said, headed by RAdm Wagner. Its function was to develop and execute operational plans for the surface fleet, including commerce raiding and blockade running, and had charge of all divisions of the Naval War Staff, except 2 SKL (U-boat Operations Division). It informed the Admiral Quartermaster divisions of its operational plans so that Adm Qu could plan the material requirements for such operations and inform the various supply organizations of the Navy what was needed, where it was needed and when it was needed.

Section 1h of this division co-ordinated the assignment of supply vessels to operations with the Fuel and Transportation Section of the Admiral Quartermaster Division (Adm Qu III) and was charged with the operational planning of commerce raiding in foreign waters, schedules for blockade runners and rendezvous between supply vessels and blockade runners and armed merchant cruisers.

Section 1m, in conjunction with Adm Qu III co-ordinated the fuel requirements of bases in occupied countries with those in Germany.

2 SKL, the U-boat Operations Division, was headed by RAdm Godt. GrAdm Karl Doenitz was CinC U-boats, before his appointment as successor to GrAdm Raeder. When he assumed his new duties as CinC Navy in 1943, he retained his title of CinC U-boats. As such, he was in complete control of submarine warfare. Godt acted as an operational chief of staff and, despite the position of 2 SKL in the organization of the Naval War Staff, reported direct to Doenitz and not to VAdm Meisel, Chief of SKL. The U-boat arm of the Navy was autonomous organization, a Navy within a Navy. The U-boat Administrative Command, described later, was charged with the procurement of U-boats, their trials and acceptance and preparation for sea, including personnel to man them. When in all respects ready for combat, the U-boats were brought up to the fighting line and turned over to 2 SKL for operations. When they returned from their missions, they were again turned over to the U-boat Administrative Command for overhaul and refitting for sea. Rendezvous of undersea and surface supply ships with

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submarines on patrol were co-ordinated with Adm Qu III. When raiders or blockade runners were operating in the same area with submarines, supply of U-boats by those vessels was arranged with 1 SKL/In.

4 SKL, the Communications Division, was headed by RAdm Stummel. This division performed all requirements planning for communication equipment for operations scheduled by 1 SKL .

5 SKL, the Enemy Location Division, headed by Odr Meckel, determined requirements of radar, search and thermal equipment required for operations.

6 SKL, the Nautical Division, was headed by RAdm Fein.

The functions of Section I of this division were similar to those of our Hydrographic Office. It supervised the preparation and issue of all naval charts, nautical almanacs, pilot's handbooks and similar nautical books and pamphlets. It also established requirements for navigational equipment for new construction and ship-to-shore telephone service in home waters.

Section III established the requirements for all meteorological and aerological equipment at naval weather stations. The German Navy had no naval air arm. The Air Force furnished all reconnaissance and observation planes.

THE ADMIRAL QUARTERMASTER DIVISION (ADM-QU)

This division was a part of the Naval War Staff and should properly be abbreviated SKL/Adm Qu. However, for clarity, it will be referred to throughout this report as Adm Qu. VAdm Machens, the Admiral Quartermaster, was charged with the co-ordination of logistic planning with operational planning and informing the various naval bureaus, inspectorates, intendanturen offices, technical and central procurement offices and other naval logistic organizations of the Naval War Staff's material and transportation requirements, and the administration of the Navy's fuel program.

Adm Qu I, the Surface Fleet Readiness-Requirements Planning Section was headed by Capt. Loewbisch. It performed the logistic planning referred to above and informed the various supply agencies of the Navy of SKL's requirements.

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Adm Qu III, the Fuel and Transportation Section, was headed by Radm Max Adam. It was responsible for:

- (a) Co-ordinating all demands for logistic support of naval forces ashore and afloat.
- (b) Determining the rail, air, sea and inland waterway transportation requirements of naval activities and arranging with the General and Home Department, General Division of the High Command of the Armed Forces (OKW/WFStd/Heimstab) for the allocation of such transportation.
- (c) Loading, scheduling and dispatching supply ships and tankers to support fleet activities and raiding vessels.
- (d) Freight shipments between Japan and Germany via surface and submarine blockade runners.
- (e) The operating supplies of all logistic support vessels and the housing, pay and subsistence of the personnel operating such vessels.
- (f) Controlling the logistics support system in line with general naval requirements.

At the outbreak of war, Adm Qu III took over the direct management of the Trossschiffverband, a shipping company with 26 large and small tankers. To this fleet of tankers were added, as the war progressed, regular Navy-owned supply ships, converted supply ships, German-owned commercial tankers, chartered vessels of friendly nations and captured enemy vessels. It was the task of these vessels to supply surface ships at sea with fuel, ammunition, water, provisions, general and special supplies, as well as to furnish any required transportation of raw materials, such as ore and food-stuffs, from occupied countries.

Adm Qu III was responsible for:

- (a) Procurement, storage, distribution and accounting for all fuel, lubricating oil, boiler feed water and distilled water required for high pressure engines.
- (b) Preparation of all contracts, leases, charters and other legal documents concerning fuel procurement and its storage and transportation in tankers, rail or highway tank cars and trucks owned or leased by the Navy.
- (c) Administration of all naval fuel storage at home or abroad.
- (d) Preparation and management of the Navy's fuel budget and appropriations.
- (e) Control, after 1944, of such secret supply activities as still existed.

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Shortly after war broke out, the establishment of two logistic support departments as field activities of Adm Qu III was directed. One was at Kiel, the other at Wilhelmshaven. They commenced to function on 1 April 1940. The reason for this decision was, according to RAdm P. W. Zieb, head of the logistic support department at Wilhelmshaven from 1940-1943, that the logistic support system employed at that time failed, and that submarines and motor torpedo boats (apparently during the first attempt to penetrate the channel ports) were not promptly fuelled. From then on, these departments, as field activities of Adm Qu III, managed the fuel depots, fuel oil distribution system and operations of all logistic support vessels. See sections of this report on Fuel and the Logistic Support Departments under Main Naval Base Organization for further details regarding the functions of these departments.

Adm Qu IV, the Coastal Section, headed by Capt von Regendorff, was responsible for the requirements planning for all naval artillery divisions and other special naval paramilitary formations ashore and the installations manned by them.

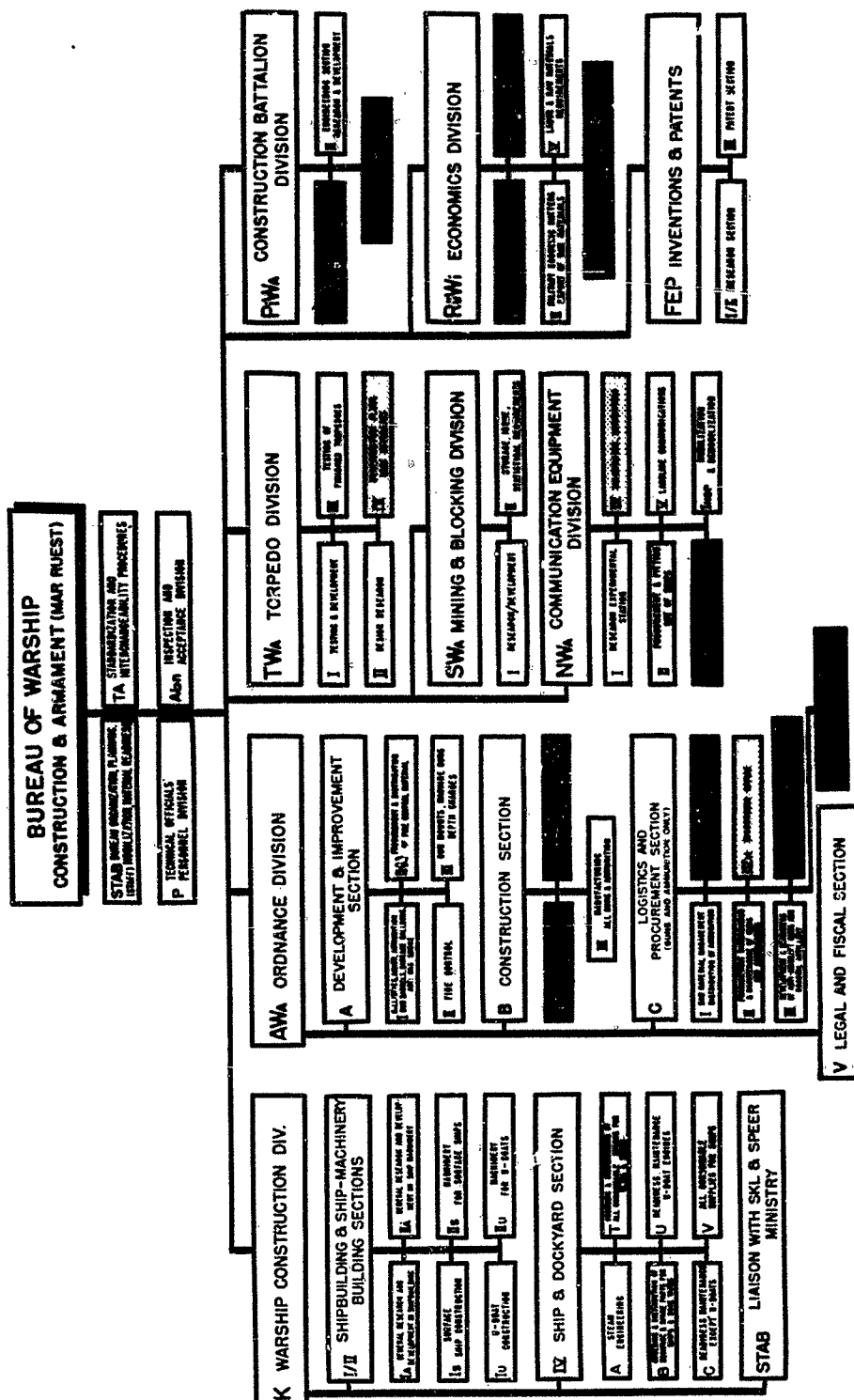
The Navy was jointly responsible for coastal defenses with the Army, usually for the more important naval objectives. This responsibility was administered by the group commanders and their subordinate area commanders. Three special corps of naval personnel performed these duties. They were:

- (a) Naval artillery divisions, which manned the main coastal batteries.
- (b) Naval flak divisions, an independent anti-aircraft group defending coastal ports, areas and shore establishments.
- (c) Naval smoke divisions, which were an integral part of the naval artillery divisions.

Until 1940 the Navy was responsible for all coastal defense. At that time, however, the points to be defended became so great in number e.g. Belgian, Dutch and French ports, that naval personnel was no longer adequate to do the job and Army personnel had to take over certain sectors.

The Navy also developed two other special groups whose duties were primarily ashore, the Emergency Battalions and the Naval Shock Troops. The Emergency Battalions were organized after the Normandy invasion, from

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redundant shore personnel, to perform paramilitary duties. The Naval Shock Troops were founded and organized by the Navy at the time the Normandy invasion was contemplated. They were later trained as special guards for naval shore establishments.

Adm Qu VI, the Sea Transport Section, was headed by RAdm Englehardt. Until April 1942 sea transportation was the Navy's sole logistics responsibility to the other armed services. In carrying out this responsibility, Adm Qu VI was responsible for scheduling the movements of all Merchant Marine vessels except those regularly assigned to the Navy for logistic support purposes, their loading, sailing, rendezvous, turnaround and all other details of their operations. After April 1942 the Navy was stripped of some of these responsibilities by the Ministry of Transportation. (See section on Transportation for further details.) During the period in which Adm Qu VI had complete control of these vessels, however, it performed all requirements planning for their operation.

Adm Qu II, the Mobilization Requirements Section, headed by RAdm Gerhardt Schubert, and Adm Qu V, the Fleet Training Section, headed by Capt Rollman, had no supply logistic functions. They did, however, perform personnel logistic duties.

THE BUREAU OF WARSHIP CONSTRUCTION AND ARMAMENT (MARRUEST)

This bureau, headed by Adm Otto Bachenkohler, was the counterpart of our Bureau of Ships and Ordnance. It was also responsible for some of the functions of our Bureau of Yards and Docks (construction battalions); Munitions Board and Chief of Naval Operations (economics); Office of Industrial Relations (manpower for naval manufacturing establishments); Office of Naval Material (policies with respect to manpower, material and production at industrial plants performing work for the Navy); Inventions Branch of the Office of Naval Research (inventions and patents); and Bureau of Supplies and Accounts (exports of naval equipment to allies and foreign bases).

As its title indicates, this bureau was responsible for the research and development in procurement and production, storage, distribution of

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and accounting for guns, ammunition, torpedoes, optical and fire control material, mines, booms, nets, communication and signal equipment, and all equiptage, spare parts and consumables, except clothing, food, fuel and lubricating oil, distilled and boiler water, medical, navigation and meteorological/aerological material or supplies. Its field activities included:

- (a) Six naval inspectorates, a group of top level staffs of technical experts, subordinated to a technical division of MarRuest, each of which controlled a supply system for its own particular weapon. Each produced the type of equipment for which it was responsible, stored, distributed and accounted for the equipment, spare parts or consumables in its supply system. (See section on naval inspectorates and chapter on Procurement for details.)
- (b) A warship acceptance inspectorate, whose duties consisted of inspection of new construction for acceptance by the Navy. (See section on Naval Inspectorates.)
- (c) A Central Procurement Office with a vast system of supply centers, depots and storehouses, in which were stored and from which were distributed all general equipment, spare parts and consumables. (See chapter on Distribution of Supply.)
- (d) A Technical Procurement Office with another vast system of supply depots and storehouses in which were stored and from which were distributed all engines, auxiliary machinery and their spare parts. (See chapter on Distribution of Supply.)

MarRuest, as a bureau, was not a direct purchasing agency in any respect. It formulated policy, arranged for the acquisition of raw materials and factory space for naval production of material over which it had technical cognizance through OKW/Rue W1 (later through the Speer Ministry) and supervised its field activities in their work. Title to articles was not taken until they were finished and inspected.

The naval inspectorates, the Central Procurement Office and the Technical Procurement Office, as explained in the chapter on Distribution of Supply, maintained their own supply systems and determined their requirements for MarRuest. The naval inspectorates were responsible for production of their equipment. After the finished products had been inspected and accepted, they took the material into their supply systems and distributed it.

The production of common use items, such as certain shells, small arms, and communication equipment was assigned to the branch of the armed forces having the greatest need for them. However, once an item of such stock

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was produced, it was delivered to the Navy and taken up in one of these supply systems. Until 1942 the Ministry of Economics determined what portion of the national resources would be available for military production of war materials. After that the Speer Ministry performed this function. The chapter on Procurement contains a detailed explanation of the procedures employed.

A breakdown of the divisions and sections of MarRuest follows. It is intentionally brief and gives only their important functions. Those sections not described had no supply responsibilities.

MarRuest/K-Stab. Adm Bachenkohler's staff, headed by Capt von der Damerau-Dombrowski, was responsible for liaison with OKW, later with the Speer Ministry, in matters of ship construction and for the preparation of statistics regarding all production supervised by the bureau's naval inspectorates.

MarRuest/Abn. the Inspection/Acceptance Division, headed by Capt Cociancig, was a clearing house for all bureau inspection matters. It was not a part of the Naval or OKW Armament Inspectorate organizations, but co-ordinated the several independent inspection groups maintained by MarRuest divisions to enforce adherence to their specifications. These inspectors worked independently of all naval inspectorates and were responsible only to the bureau. MarRuest/Abn also prepared, in conjunction with other MarRuest divisions, specifications for material under the technical cognizance of MarRuest.

MarRuest/K. the Warship Construction Division, headed by VAdm Friedrich Ruge, through its field activity, the Warship Acceptance Inspectorate, dealt with the design, construction, and testing of all types of naval vessels, except U-boats, prior to 1942. The U-boat Acceptance Command, prior to 1942, tested all submarines. After 1942 the Speer Ministry assumed these functions. The shipbuilding departments of all dockyards and private shipyards performing such work were also supervised by MarRuest/K.

Section K-IV. the Ship and Dockyard Section, headed by VAdm Heinrich Stiegel, was charged, among other duties, with the ordering and distribution



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of all general and special equipment, spare parts and consumables for the naval establishment. The Central and Technical Procurement Offices were field activities of this section. (See chapter on Distribution of Supply for details.) In addition, MarRuest/K 4 was responsible for repairs and maintenance work performed at naval dockyards and private shipyards, including U-boat repairs and overhaul.

MarRuest/AWa, the Ordnance Division, headed by VAdm Hoffman, was charged with the research, development, improvement and distribution of guns for ships and naval stations, coastal artillery weapons, small arms, ammunition and smoke equipment and ordnance consumables. Much of the initial research performed by Germany's armament industry was also supervised by this division. It also performed the same functions in connection with the production of fire control materials, such as searchlights, rangefinders and computers. Actual assembly, storage, distribution, maintenance and upkeep of ammunition and its components; the installation of ordnance equipment, smoke apparatus and anti-gas equipment, and their storage, distribution, maintenance and upkeep were accomplished by the Naval Ammunition and Ordnance Inspectorates, which were the field activities of this division.

The Navy had no gun factory. Most of its ordnance equipment, spares and consumables and component parts of ammunition were manufactured by the armament industry under the supervision of the Army Ordnance Inspectorate. The Naval Ordnance and Ammunition Inspectorates took them over when produced.

MarRuest/AWa-C, the Logistics and Procurement Section, headed by RAdm Otto Klueber, represented the Naval Ammunition and Ordnance Inspectorates with MarRuest/Rue W1 and the Army Ordnance Inspectorate in all matters connected with the production of ordnance and ammunition components. It also maintained statistical data on equipment, spare parts and consumables in the supply systems of the Naval Ammunition and Ordnance Inspectorates for ready reference by MarRuest.

MarRuest/AWa-V, the Legal and Fiscal Section, headed by Cdr von Borrie, prepared all contracts and made all disbursements for the various divisions of MarRuest.

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MarRuest/TWa, the Torpedo Division, headed by RAdm Gutjahr, performed the same functions in relation to torpedoes as MarRuest/NWa performed for ammunition, ordnance, etc. The Naval Torpedo Inspectorate was a field activity of this division. The Navy had no torpedo factories of its own. Prior to the formation of the Speer ministry, component parts were manufactured by civilian firms under supervision of the Naval Torpedo Inspectorate, and shipped to assembly and testing activities where the Naval Torpedo Inspectorate actually assembled and tested all torpedoes before distributing them. After 1942 the Speer Ministry manufactured complete torpedoes. Thereafter, the Naval Torpedo Inspectorate only tested and distributed torpedoes.

MarRuest/SWa, the Mining and Blocking Division, headed by RAdm Erich Mueller, performed the same duties in relation to mines, minesweeping gear and boom defenses as that performed by TWa in relation to torpedoes. It had management control over the Naval Mining Inspectorate and technical personnel attached to that inspectorate.

MarRuest/NWa, the Communication Equipment Division, headed by Capt Hans Schuler, after 1941 was in charge of the research and development, procurement, storage, distribution and accounting for all communication equipment, including radar and landline communications. Prior to 1941 the Naval Communication Inspectorate was a field activity of this division. In 1941, however, most military communication apparatus and equipment was declared to be common use items for all three services, and production responsibility within the armed forces was determined by OKW on the basis of service requirements. The Army, being the largest service, produced most of it. As a result, the Naval Communication Inspectorate was dissolved and MarRuest/NWa assumed its duties. Allocation of industry's total productive output, however, was made by OKW/Rue W1 (later by the Speer Ministry) among the armed forces. Prior to the disestablishment of the Naval Communication Inspectorate, MarRuest/NWa performed the same functions with relation to communication apparatus and the Naval Communication Inspectorate as MarRuest/TWa performed for torpedoes and the Naval Torpedo Inspectorate.

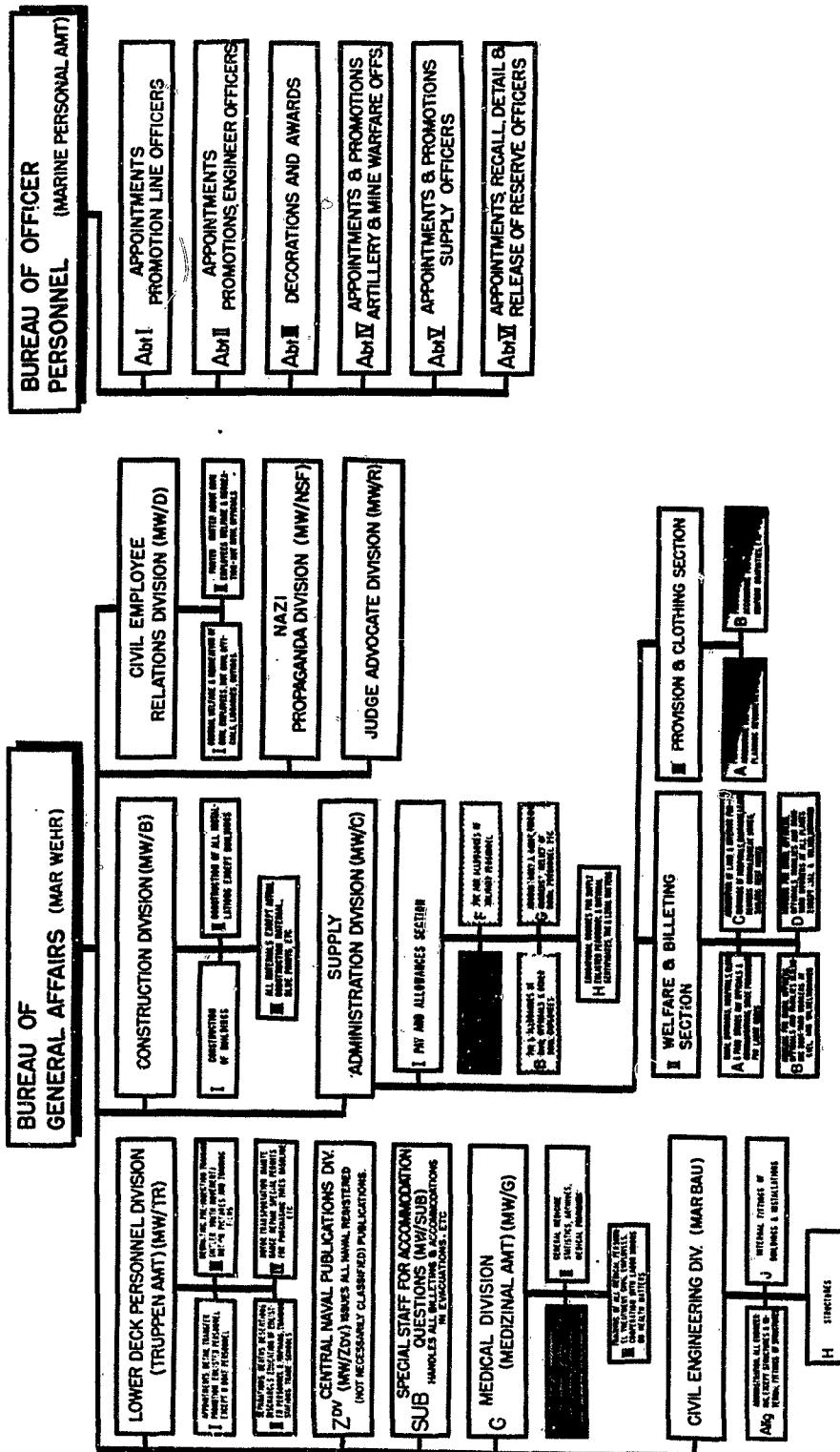
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Section of Naval Communications Division of CNO; the Bureau of Medicine and Surgery; Bureau of Yards and Docks; the Subsistence Division, the Disbursing Operations Division and the Field Branch of the Bureau of Supplies and Accounts; the Naval Clothing Office and Naval Clothing Factory; the Office of Industrial Relations (EXOS); and the Office of the Judge Advocate General. A description of the responsibilities of its various divisions follows:

MarWehr/TR, the Lower Deck Personnel Division, headed by RAdm Schoenemark, was, like some of the divisions of our Bureau of Naval Personnel, charged with the pre-induction training (Hitler Youth Organization) of lower deck (enlisted) personnel; also regular recruiting and induction and recruit training. It was also responsible for the transfers, promotions, separations and education of all lower deck ratings, except those belonging to the submarine service, and the education of orphans of naval personnel. It had cognizance over all Navy-owned motor vehicles, their maintenance and repairs and the issuance of special permits for procuring tires, gasoline and oil necessary for their operation. Bicycles and horses used for official transportation were also the concern of this division, as were the issue of and accountability for welfare funds, and the procurement of motion pictures and training films.

In the education of lower deck personnel, the Navy had a program for preparing lower deck ratings for return to civil life. It consisted of six weeks education per year at a technical or non-technical school. A man had to serve two years in the Navy before becoming eligible for such training. The course lasted ten years. If a man completed the sixty weeks' training successfully, he was then entitled to twelve months' education at a trade or specialist school. He received a national diploma upon graduation. This entitled him to a position, as vacancies occurred, with a government agency. Many of these graduates became supply officials and supervisors in the Navy.

MarWehr/Zdv, the Central Naval Publications Division, was the counterpart of our Registered Publication Section, Naval Communication Section,



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Naval Communication Division of the Office of the Chief of Naval Operations. It was headed by RAdm Tobye and had cognizance over the preparation and issue of and accountability for all registered (not necessarily classified) publications. These, among others, included supply manuals.

MarWehr/Sub, the Special Staff for Accommodation Questions, headed by Cdr Stein, handled all the details of providing emergency quarters and other accommodations for naval personnel and civil employees evacuated from bombed out or other disaster areas. While some planning in this field has been completed, the American Navy Department has no organization of this kind.

MarWehr/G, the Medical Division, was headed by VAdm Dr. Emil Greul, the Surgeon General of the Navy. He was chief consultant and assistant to CinC Navy in all matters concerning the naval medical service. He had full command over all medical personnel, their appointment, post graduate training, transfers, details, etc. In addition to personnel matters MarWehr/G controlled, through the Naval Medical Inspectorate, the medical supply centers at Kiel, Wilhelmshaven and Gdynia and other supply depots established in occupied countries; the procurement, storage, issue of and accounting for all medical and dental equipment and supplies. All hospitals, convalescent homes, dispensaries, fleet and group medical staffs and medical schools were subordinated to this division. The Navy had no nurse corps. Hospital staffs included nurses, but they were civil employees. It also had no warrant pharmacist corps. Naval pharmacists were officials.

Hospital ships were not employed in the peace time Navy, but it was planned to convert merchant marine vessels into hospital ships in periods of emergency. When the Navy mobilized in 1939, conversion of thirteen merchant vessels to hospital ships was commenced. They were completed in 1940. In addition to these hospital ships, the Navy had improvised hospital ships equipped for only one or several cruises, and transport vessels which had been pressed into service for the purpose of evacuating patients previously treated. Towards the end of the war, hospital ships were

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frequently used to replace regular hospitals in ports where naval and merchant marine traffic was heavy. River and canal tugs and barges were often used for the evacuation of wounded to and from the inland areas.

An unusual function of this division was that it represented the Navy with the labor unions to ensure that civil employees, especially dockyard workers and those employed in factories producing Navy material, were promptly treated and hospitalized when necessary. It also conducted a civil employee health program, involving safety engineering features, in close collaboration with the various labor unions. The U. S. Navy Bureau of Medicine and Surgery performs a similar service for civil employees, but only within the naval establishment, and independent of trade or labor unions.

MarBau and MarWehr/B, the Civil Engineering and Construction Divisions, headed by Ministerial Direktor Dr. Guido Trittler, was similar to our Bureau of Yards and Docks. There were no commissioned Construction or Civil Engineering Corps in the German Navy. Officials performed these duties. The functions of this bureau did not include ship construction (a function of MarRuest/K), but were limited to construction and maintenance of buildings, facilities and grounds of the naval shore establishment at home and at bases abroad. It did not, like our Bureau of Yards and Docks, have cognizance over housing projects or barracks, once they were built. This was a function of MarWehr/C. It worked closely with the Ministry of Labor (later the Speer Ministry) and MarRuest/PiWa. Its primary function was that of planning, layout and supervision of construction.

MarWehr/C, the Supply Administration Division, was headed by Admiral-oberstabsintendant Benda. It was divided into three sections and charged with these responsibilities:

Pay and Allowances Section

- (1) Formulation of all policy and issuance of regulations and instructions regarding salaries and allowances of civil and naval personnel.
- (2) Establishment of seniority of naval officials.
- (3) The payment of all civil and naval personnel, including assistance grants, sick benefits and other relief benefits.

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- (4) The management, operation and inspection of all pay offices ashore and afloat.
- (5) The procurement of all German and foreign currency for disbursing officers from OKM/E and the Reichsbank.
- (6) All tax and customs matters.
- (7) Pre-audit and inspection of all disbursing accounts.
- (8) Preparation of budgets covering naval and civil pay and allowances and cost of operating chapels, churches, libraries, Intendanturen offices, the clothing and food stores and their supply systems. Representation to the Ministry of Finance and Reichsbank in matters of litigation where the Navy was involved. Interpretations of principles of national law regarding longevity and rank of naval officials. Determination of procedures in settling carrier claims for transportation, railway freight rates and other forwarding expenses, postage, telephone and telegraph charges.

Welfare and Billeting Section

- (1) Spiritual welfare of Naval personnel, upkeep of chapels, churches and libraries. Arrangements for funerals and burials. Care of naval cemeteries and war graves. (Chaplains did not come under this department.)
- (2) Procurement of and accounting for band instruments, bicycles and horses used for recreational purposes.
- (3) Acquisition of land, utilities and the living accommodations at hospitals, convalescent homes, sailors' rest homes, leave centers, naval barracks, and housing projects for officers, officials and dockyard workers at Kiel, Wilhelmshaven and overseas bases. Determination and requisition of rates of compensation to be paid for private property.
- (4) Management and procurement of supplies for the operation and maintenance of barber, tailor and cobbler shops and laundries. Supervision over the operation of canteens, but not procurement of articles for sale in canteens, which were operated by civilian concessionaires while ships were in home waters. (On long cruises sailors operated them for the concessionaires.)
- (5) Single service responsibility for developing and procuring special tropical quarters for all branches of the armed forces, and procurement of huts for the National Labor Corps.
- (6) Establishment of priority lists for all construction or conversion of housing facilities for all military and civil personnel in the naval establishment, and buildings required for use by food, clothing or disbursing activities.

Provision and Clothing Section

Food

- (1) The requirements planning, procurement or production, storage, transportation, issue and sale of and accounting for all food and horse fodder. Preparation of schedules of food available at food stores for general and independent messes.

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- (2) Research and development in synthetic foods, food preservatives and food preparation equipment. Processing, preparation and packaging of food.
- (3) Procurement and maintenance of refrigeration space and equipment.
- (4) Administration, inventory, stock control and personnel management of food stores, food warehouses and commissary departments ashore and afloat.
- (5) Provisioning of forces afloat, schedules, manpower required in provisioning ships.
- (6) Supplemental food for dockyard workers. Publicity and propaganda regarding the conservation or waste of food.
- (7) Training programs for Supply Corps officers, special Service Supply officers and supply officials, Supply Corps cadets, other non-commissioned supply personnel and civilian galley staffs in food packaging, preparation, storage, conservation and accounting. Issuance of directives and regulations on these subjects.
- (8) Food requirements for submission to Ministry of Food and Agriculture via OKW/Rue Wi. Reports on food economics and evaluation of foreign and German press reports regarding food. Navy garden projects.
- (9) Planning the layout and construction, conversion or modification of all naval food stores, warehouses, refrigeration plants, field kitchens, and galleys and provision storage and issue spaces afloat.
- (10) Management control over all naval food stores.

Clothing

- (1) Development of raw material, plant production and common use clothing item requirements for submission to OKW/Rue Wi. Supervision over manufacture, storage, issue, survey of and accounting for all articles of uniform for naval personnel and officials, and such identifying clothing as was needed for naval employees and laborers.
- (2) Preparation of uniform regulations and specifications. Establishment of clothing requirements for officers, officials, cadets and non-commissioned personnel. Uniform outfitting gratuities and clothing maintenance allowances. Compensation rates to be used when clothing was lost or destroyed in disasters. Life expectancy of articles of uniform. Indices of raw materials allocated to the Navy by OKW/Rue Wi but not used in manufacturing clothing.
- (3) Management control over the Naval Clothing Factories at Kiel and Wilhelmshaven.

The Naval Intendanturen Offices at Kiel and Wilhelmshaven were the field activities of MarWehr/C at the outbreak of war. Later, senior administrative staffs attached to each group and subordinate area command absorbed their functions.



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All supply officers, special service supply officers and Intendantur (supply) officials were subordinated to this bureau. All accounting, ashore and afloat, including that done for naval inspectorates and the Central and Technical Procurement Offices, was performed by these officials.

As shown by the functional details listed above, MarWehr/C was the responsible logistic agency of the Navy for all food, clothing, welfare items and services and equipment for barracks and quarters. In addition, it was responsible for all disbursements and accounting in the Navy.

The details of these functions and the procedures employed by representatives of MarWehr/C are contained in the chapters on Finance and Accounting, Clothing, Small Stores and Ships Store Activities, Supply Officers and Supply Officials, and Distribution of Supply.

MarWehr/D, the Civil Employee Relations Division headed by RAdm Heinrich Wagner, was similar to our Office of Industrial Relations. It was responsible for the settlement of all labor disputes and acted as liaison between the Admiralty and labor and trade unions, and between civil employees and naval management personnel. It supervised all civil employee welfare and recreational activities, such as libraries, picnics, outings and sports programs, and issued information bulletins on those subjects. It worked closely with the Billeting Section of MarWehr/C in connection with housing for all civil employees, except civil officials. Each division of a bureau had a section that handled the personal affairs of officials attached to it.

MarWehr/NSE, the Nazi Propaganda Division headed by RAdm Matthies, was charged with the inculcation of National Socialist principles in the Navy and the "intellectual welfare" of naval personnel. Each command, bureau and office appointed an officer to perform this duty. Personnel interviewed during this study stated that none of the officers so appointed took his duties seriously, and that the lower deck ratings likewise disregarded the propaganda disseminated to them.

MarWehr/R, the Judge Advocate Division headed by Adm Rudolphi, performed functions similar to our Office of the Judge Advocate General. It dealt with all legal matters of the Navy, standing courts-martial and review and approval of sentences imposed by courts-martial.

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THE BUREAU OF OFFICER PERSONNEL (MARPERSONALANT)

This bureau, headed by Adm Patzig until 1943, thereafter by VAdm Baltzer, dealt with officer personnel only. Appointments, details, decorations, promotions and separations of all officers, except medical and U-boat officers, came under its cognizance. Each personnel section retained its own fitness reports and personnel jackets, and recommended assignments and action to be taken on courts-martial proceedings.

LOGISTIC/OPERATIONAL COMMANDS

The organization of the shore establishment and fighting units, except U-boats, was changed five times during World War II. As the operational areas were extended or contracted, reorganizations to meet the tactical and strategic situations were developed. Between these changes, additional commands and subordinate commands were established to keep the existing organization flexible enough to meet the changing demands on the logistic system and to control operations. These changes in command ashore and afloat did not necessarily reflect themselves in the organization of the Admiralty. Little evidence has come to light during the course of this study to indicate that any great changes were made in its organizational structure, with the exception of renaming certain technical divisions of bureaus, or inaugurating new subsections to take care of expanding operational areas.

None of the admirals interrogated during this study believed, at the outbreak of war, that the Navy's operational area would extend very far outside the homeland waters of Germany, except that pocket battleships and U-boats would operate in the Atlantic as commerce destroyers. They were thinking of operations, it appears, in terms of World War I operations, viz., sorties of major fleet units to engage and destroy units of the British and French fleets, returning to their home bases at Wilhelmshaven and Kiel when a battle was finished. This is borne out by the concentration of major repair/supply facilities at these two naval dockyards, and the statements of VAdm Machens and RAdm Schubert.

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When Machens was interrogated about logistic planning, he stated that in 1939 there were only the two logistic/operational commands, namely CinC North Sea and CinC Baltic, and that he and his contemporaries never thought that Germany would occupy Denmark and Norway. The Navy's mission, he said, was to protect the coasts of Germany and to stop a foreign navy from entering the Baltic. As a result, their logistic problems were not so difficult. When asked if he envisaged naval action in France, he stated:

"I did not believe even after the war had begun that we would get all of France. I thought we would be successful if we got the Channel Coast up to Calais. We had no plans to extend our supply facilities, none that I ever heard about."

When Schubert was asked about the Navy's mobilization planning for World War II and its plans for expanding its supply system, he stated that they had large central supply organizations (supply centers) only at Kiel and Wilhelmshaven, which they were not preparing to expand in 1939.

"We were preparing for warfare in the Atlantic by pocket battleships and the heavy battleships. For supplying these units, we prepared an organization of coastal supply and other supply facilities afloat but not ashore. This was impossible, because we did not know what would happen."

During this study, certain evidence was disclosed, which indicates that the Navy was loathe to over-extend its logistic system, because of the reluctance of its officers to believe that Hitler could achieve his ambitious plans to conquer all Europe, and the widespread belief that eventually the Navy would have to have a logistic system capable of handling situations on a local rather than on a continental basis. This opinion was most volubly expressed by VAdm Stiegel, when he was asked when he knew that Germany had lost the war. He said:

"Before it started. In June 1938, during the Sudeten crisis, Adm. Karls, the CinC of the German Fleet at an admiral's conference, stated: 'I cannot understand what the Government is doing. Either it has a thousand trumps in its hand or it is politically committing a crime. We are in no position to go to war. The Navy has no ships and the Army is not prepared. If the Government continues its present policy, we cannot avoid a Second World War, and Germany will lose that war under any circumstances. The Government is making a simple milk maid's conclusion. You need only compare the power potentials as regards soldiers and industry and raw materials.' I believed this way also at the time. The Second World War was forced

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upon the German people. In 1939, CinC Fleet Adm Boehm had his own staff for political tangents. Raeder had Boehm keep him informed of the political situation. We were completely unprepared. Stalingrad and Rommel's defeat in Africa clinched our convictions. We knew all along that if we did not conclude the war in early 1942 it was a hopeless situation."

When Germany entered the war, the Navy was operating under the organization plan of 1 August 1939. This, as has been stated, consisted of two group commands, Group Baltic, with headquarters at Kiel, and Group North Sea, with headquarters at Wilhelmshaven. Both were responsible to the Admiralty for policy and operations of the shore establishment within their command. CinC Fleet, whose headquarters was also at Kiel, was independent of these group commands and responsible under SKL for the operations of the surface fleet. CinC U-boats had the same responsibility for U-boat operations. This was also an independent command.

In April 1942, when U-boat sinkings of merchantmen were at their highest, when armed merchant raiders were taking their greatest toll, when Norway, France and the Lowland countries had been conquered and the German Army had overrun the Balkans, a reorganization was effected. Three over-all logistic/operational commands were established, namely Group North, Group West and Group South.

Group North absorbed Groups Baltic and North Sea. Several new commands were established and placed under the over-all administrative and operational command of Group North. These were: Admiral Commanding Denmark, Admiral Commanding Baltic States, Admiral Commanding West Baltic, Admiral Commanding Central Baltic, Admiral Commanding Pomeranian Coast, Admiral Commanding East Baltic, and Naval Chief Command Norway with subordinate Admirals West Coast, North Coast and Polar Coast.

Group West controlled the area Belgium-Netherlands-France and the many defense and operating establishments in those countries. Under this group was established Admiral France, with subordinate commands of Admiral Channel Coast, Admiral Atlantic Coast and Admiral South Coast of France, each commanding a number of sea defense commandants. The Flag Officer in Command, Western Defenses, also a part of Group West, commanded a number

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of naval defense divisions in the Lowland countries and on the western coast of France.

Group South controlled the activities of fleet units under Admiral Adriatic, Admiral Aegean and Admiral Black Sea and their supporting bases in Rumania, Albania, Yugoslavia, Greece and Bulgaria. These three subordinate commands had their own sea defense commandants.

Naval Command Italy, with headquarters at Rome, ~~maintained~~ official liaison with the Italian Navy. This was an independent command and reported directly to the Admiralty.

CinC Fleet and CinC U-boats also continued to retain their independence.

In May 1943, when the major units of the surface fleet had been driven from the ports of France into Norwegian and Baltic ports, a third logistic/operational organization was promulgated. It was based on the organization of April 1942. However, several new commands in western and southern France were added to Group West. Naval liaison staffs in Rumania, Finland and Croatia had been established. Grand Admiral Doenitz, while continuing to occupy the post of CinC U-boats, had also been appointed to the post of Supreme Commander of the Navy in the early part of that year. He immediately introduced a number of organizational changes, the most important of which was the subordination of 2SKL (U-boat Operations Division of the Naval War Staff) direct to CinC U-boats.

On 1 March 1944, another logistic/operational organization plan was distributed. The Navy had abandoned its surface operations. U-boat warfare had passed its peak in tonnage sinkings. The last armed merchant raider had been sunk. The independent Small Battle Unit Command had been established as a possible desperate means of stemming the tide of reverses that beset the Navy. Aside from this command and the independent Naval Command Italy and U-boat command, there were then only three instead of four logistic/operational commands in the new organization. These were: Groups North/Fleet, West and South. Fleet had been absorbed into Group North. Naval forces and activities, however, were extended from the

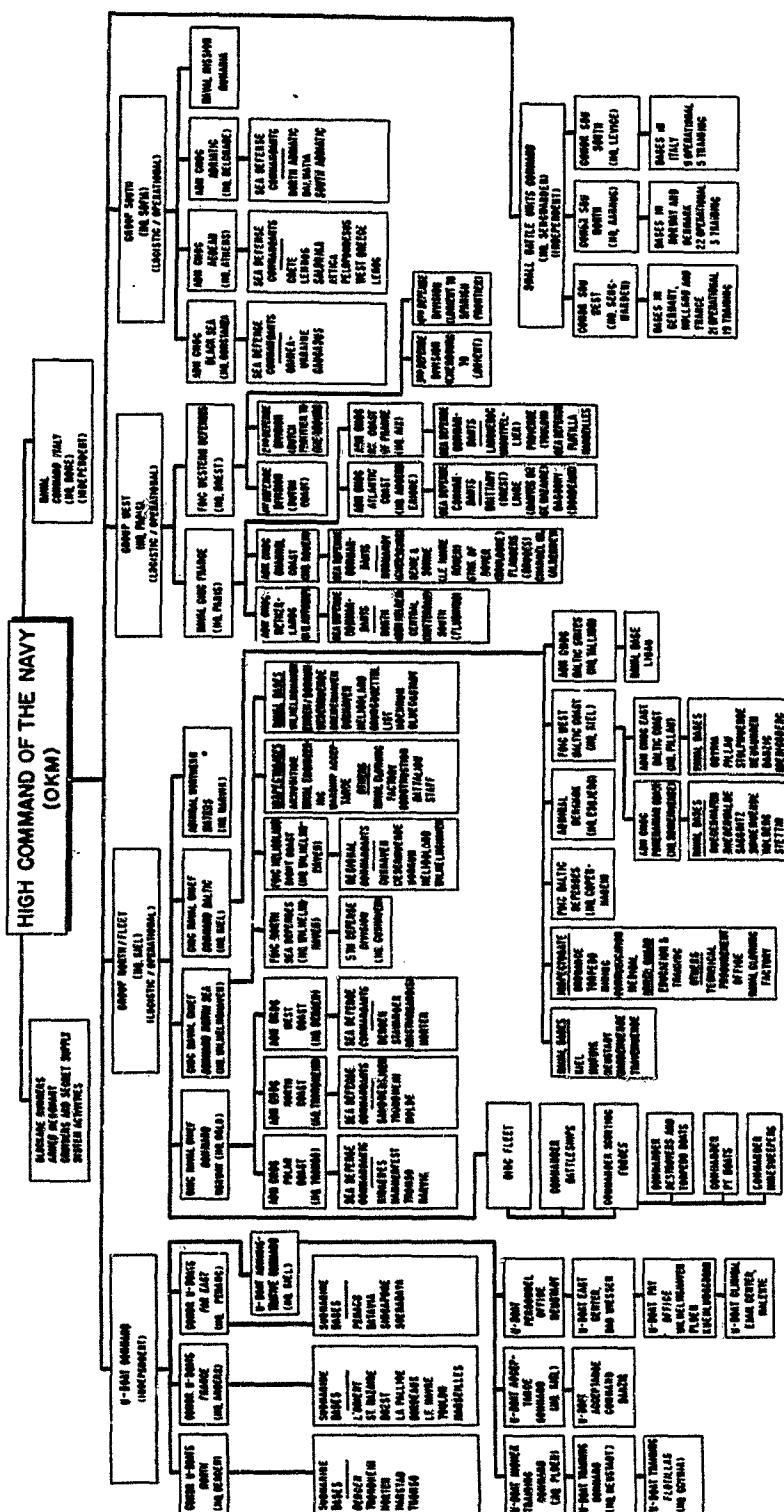
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Arctic Ocean along the western coast of Norway, the northern fringe of Germany along the Baltic, the coasts of Latvia, Lithuania and Estonia, the Atlantic coasts of Belgium, Netherlands and France, the Mediterranean coasts of France and Italy, the ports of the Adriatic and Aegean, and the Balkan ports on the Black Sea. The Danube River, with its interconnecting canals, was a hive of activity, as river steamers and barges supplied the Black Sea units. German armed forces were sprawled all over Europe, and were still in Crimea, even though they had suffered a staggering defeat at Stalingrad. The Normandy invasion was anticipated. The allocation of fuel to the Navy was so small that many vessels had to be immobilized. This was the period during which the logistic system of the German Navy was put to its greatest test. This new organization of 1 March 1944 is the one chiefly studied in this report. While in many respects it deviates from those preceding it and the one following it, for purposes of the study of the supply aspects of the German naval supply system, it provides a comprehensive picture of the many commands involved and the demands made upon the Navy's logistic system.

In August 1944, a fifth organization plan was drawn up. It was an emergency shift in the command structure of the Navy. The Allies had landed in Normandy. The need for decentralization and authority for local area commanders to meet situations as they arose appears to have dictated this change. Suffice it to say that the fleet was again made a separate command, as were Naval Chief Commands Norway, North Sea, Baltic, West and South, and Small Battle Units Command and Naval Command Italy. As VAdm Machens put it when interrogated about the German concept of organization: "Every little commander in his little district was a king in his own house."

In the 1 March 1944 organization, operating directly under OKM, there were, apart from the independent U-boat and Small Battle Units commands and Naval Command Italy, three logistic/operational (Group) commands, all of which were responsible for all activities ashore and afloat in their respective areas. They were:

**LOGISTIC / OPERATIONAL & INDEPENDENT COMMANDS AS OF MARCH 1944**



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<u>COMMAND</u>	<u>COVERING</u>
A. GROUP NORTH/FLEET	Norway, Denmark, Baltic Sea and Heligoland Bight Coast.
B. GROUP WEST	France, Belgium and the Netherlands.
C. GROUP SOUTH	The Balkans, the Adriatic, Aegean and Black Seas.

Each group commander was responsible for the operations of the units of the fleet as well as the shore stations in his area, and each issued orders to the officer in command of forces afloat.

CinC Fleet, CinC Battleships and CinC Cruisers were always junior in rank to group commanders. Group Commander WEST, for example, issued directives to large units of the fleet operating in the Atlantic. When the BISMARCK and PRINZ EUGEN, after their engagement with the HOOD, were proceeding to a French port, they were subject to directives from Group WEST, who supplied CinC Fleet on the BISMARCK with information concerning the location of the British units and issued instructions as to the course he was to steam. When major units of the fleet became engaged with the enemy, CinC Fleet, if present, and if not the Flag Officer in Command, was required to act on his own initiative without recourse to the group command.

Each shore station, with its sub-stations, was administered by a commanding admiral subordinated to a group commander. It was the mission of these stations to defend the coast, the rivers and the off-lying islands, to provide base facilities for forces afloat, to administer coastwise naval intelligence and to regulate shipping in its own area.

A. GROUP NORTH/FLEET

This logistic/operational command was headed by CinC Group North/Fleet. His headquarters were at Kiel. The three principal commands under him were:

- (1) CinC Fleet (headquarters at Kiel)  
GenAdm Otto Schniewind was CinC Fleet from 1942-44. Under him were three commands:

- (a) Commander Battleships  
This command had seven ships: three battleships, two old battleships and two pocket battleships in 1939.



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In 1943, it had the same strength, considering interim losses. In 1944, it had six vessels. In 1945 only five remained.

- (b) Commander Scouting Forces (Cruisers)  
Two heavy cruisers and six light cruisers comprised this command in 1939, two heavy cruisers and five light cruisers in 1943, two heavy cruisers and five light cruisers in 1944 and two heavy cruisers and four light cruisers in 1945.

Reporting to Commander Scouting Forces were:

- (c) Commander Destroyers and Torpedo Boats  
There were 52 destroyers and torpedo boats in this command in 1939, 66 in 1943, 102 in 1944 and 57 in 1945.
- (d) Commander S (PT) Boats  
The S-boat command had 52 boats in 1939, 150 in 1944 and 125 in 1945. E-boats were included in this command.
- (e) Commander Minesweepers  
This command had 187 vessels in 1939, 376 in 1943, 655 in 1944 and 762 in 1945.
- (2) Naval Chief Command Norway (headquarters at Oslo)  
Under CinC Naval Chief Command Norway, whose functions were administrative, there were three admirals in command of the coastal areas:
- (a) Admiral Commanding West Coast (headquarters at Bergen),  
whose area extended from the Swedish border to Stadlandet (63° 11' N).
- In charge of the sectors of this command there were sea defense commandants at Bergen, Stavanger, Kristiansand (S) and Horten (Oslo), who were generally responsible for the seaward and local defenses and shipping regulation.
- Supply centers were established under this command at Bergen and Horten. Supply depots were established at Oslo and Stavanger.
- (b) Admiral Commanding North Coast (headquarters at Trondheim), whose area extended from Stadlandet to Nordfolda (67° 40' N).
- In charge of sectors of this command there were sea defense commandants at Sandnessjoen, Trondheim and Molde. A supply center was established at Trondheim. Supply depots were set up at Sandnessjoen and Molde.
- (c) Admiral Commanding Polar Coast (headquarters at Tromsø), whose area extended from Nordfolda to the Russian frontier.
- In charge of the sectors of this command were the sea defense commandants at Kirkenes, Hammerfest, Tromsø and Narvik. Supply depots were established at Tromsø and Narvik.

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Note: Admiral Northern Waters, with headquarters at Narvik, had a purely operational function. Main units of the fleet in the Arctic area of the size of a destroyer and above came under his control. U-boats also operated occasionally under his command, when combined operations with surface craft were required or intended. This command was not responsible for shipping and off-shore defenses in its area, which came under Admiral Commanding Polar Coast. Operationally it was subordinated to SKL and Group North/Fleet, though administratively it came under CinC Naval Chief Command Norway. This was a special command established to take care of operations from northern Norwegian bases on the Arctic Ocean.

(3) Naval Chief Command North Sea (headquarters at Wilhelmshaven)

CinC Naval Chief Command North Sea was responsible for coastal defense on land and offshore, and for the general administration of the shore stations (e.g., naval inspectorates, etc.) within his area. The conscription and training of personnel in his area came under the direction of the Second Admiral Naval Chief Command North Sea. The principal subordinates to this command were:

(a) Flag Officer in Command North Sea Defenses (headquarters at Wilhelmshaven), who was concerned only with offshore defenses. Subordinated to him was the Fifth Defense Division (naval artillery with headquarters at Cuxhaven) which was responsible for shipping, convoy protection, patrols, etc., in the Heligoland Bight.

(b) Flag Officer in Command Heligoland Bight (headquarters at Wilhelmshaven), who was responsible for shore defenses and controlled regional defense commands in Borkum, Heligoland, Cuxhaven, Wesermuende and Wilhelmshaven.

(4) Naval Chief Command Baltic (headquarters at Kiel)

CinC Naval Chief Command Baltic had functions similar to those of CinC Naval Chief Command North Sea as regards defenses and shore establishments. In this command, the conscription and training of personnel also came under the direction of the Second Admiral. The principal subordinates to this command were:

(a) Flag Officer in Command Baltic Defenses (headquarters at Copenhagen), whose area extended as far as Memel. He was responsible only for shipping and offshore defenses within his area.

(b) Flag Officer in Command West Baltic Coast (headquarters at Kiel), with:

(1) Admiral Commanding Pomeranian Coast (headquarters at Swinemuende) with naval bases at Rugenhafen, Rugenwald, Sassnitz, Swinemuende and Kolberg.

(2) Admiral Commanding East Baltic Coast (headquarters at Pillau, East Prussia) with a naval dockyard at Gdynia, and naval bases at Pillau, Stolpmuende and Neukuhren. Both commands were responsible for the administration of the shore establishment and shore defenses in their respective areas.

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- (c) Admiral Denmark (headquarters at Esbjerg on west coast of Denmark), responsible for the administration of the shore establishments at Copenhagen, Frederikshaven, Aarhus, Aalborg and Esbjerg, with shore defenses and supply depots at each base.
- (d) Admiral Commanding Baltic States Coast (headquarters at Tallinn, Estonia), responsible for the coastal defenses in the Gulfs of Finland and Riga, and the naval base with its supply depot at Libau.

The shore establishment subordinated to group North/Fleet follows shortly. Because of the great number of activities involved, it has been omitted here in an attempt to describe clearly the logistic/operational and independent command organizations.

B. GROUP WEST (headquarters at Paris).

CinC Group West was responsible for all naval activities ashore and afloat in France, Belgium and Holland. The two principal commands under him were those of the CinC France (headquarters at Paris) and Flag Officer in Command Western Defenses (headquarters at Brest).

(1) Naval Commander in Chief France

CinC France was responsible to CinC Group West for the naval shore establishment in France, and had as subordinates four admirals in charge of coastal areas as follows:

- (a) Admiral Commanding Netherlands (headquarters at Antwerp) to whose responsibility the northern fringe of Belgium had been added, so as to include all the naval defenses in the Scheldt estuary under one command. It has been impossible to determine during this study exactly how far north this command extended, but it is believed that it included all of Holland, with the exception of Drenthe, Fries, Groningen and the Frisian Islands. In charge of the sector in the command there were sea defense commandants, in the north at den Helder, in central Holland at Rotterdam and in the south at Flushing, who were generally responsible for seaward and local defense and shipping regulation. Supply depots were located at Rotterdam, Amsterdam, Groningen and at the shipyard at Den Helder.
- (b) Admiral Commanding Channel Coast (headquarters at Rouen. In charge of the sectors of this command were the sea defense commandants at Cherbourg, Alderney, Le Havre, Boulogne and Bruges. It is not known whether the northern part of the Brest peninsula belonged to Admiral Commanding Channel Coast or to Admiral Commanding Atlantic Coast.
- (c) Admiral Commanding Atlantic Coast (headquarters at Angers-Erigne), whose area extended from Brest (or the northern boundary of Brittany) to the Spanish Frontier. Under this command there were sea defense commandants at Brest, Nantes, St. Nazaire and Bordeaux.

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- (d) Admiral Commanding South Coast of France (headquarters at Aix, just north of Marseilles), who had under him sea defense commandants at Montpellier and Toulon and a sea defense flotilla at Marseilles. The supply center at Rennes came under his command.
- (2) Flag Officer in Command Western Defenses (headquarters at Brest).  
The responsibilities of Flag Officer in Command Western Defenses were restricted to offshore defenses and defensive sea patrols. To assist him in this mission, he had the First Defense Division of naval artillery (Dutch Coast), the Second Defense Division (Dutch frontier to Cherbourg), the Third Defense Division (Cherbourg to L'Orient) and the Fourth Defense Division (L'Orient to the Spanish frontier).

C. GROUP SOUTH (headquarters at Sofia)

CinC Group South was responsible for naval activities in the Balkans, in the Black Sea, the Aegean Sea, the Eastern Mediterranean and the Adriatic Sea. According to U. S. naval intelligence reports, he had under his command in 1941, 1600 officers and men at Varna, 1200 at Sozopol and 2000 at Sofia. Subordinated to this command were:

- (1) Admiral Commanding Black Sea (headquarters at Constanza)  
Under this command were the sea defense commandants for the Caucasus and Crimea-Ukraine districts. Constanza was the main Black Sea base from 1939 until May 1944.

Prefabricated submarines, shipped via canal and the Danube River, without their conning towers, were assembled at Galatz, at the mouth of the Danube, and commissioned for Black Sea service.

Varna was the main operating base from May 1944 until the Rumanian government fell in August 1944. At that time, there were between 50 and 60 German vessels stationed there. Most of them were engaged in transporting supplies and men to the Crimea and to Greece. There were also 1500 naval personnel stationed ashore at Varna at that time.

Italian E-boats operating under this command used the port of Burgas. German-Hungarian naval personnel operated gunboats, armored motor boats, combat ferryboats, artillery carriers and patrol boats on the Danube River.

- (2) Admiral Commanding Aegean (headquarters at Athens)  
This command had sea defense commandants at Crete, Lemnos, Salonika, Attica, Peloponnesus, West Greece and Leros.
- (3) Admiral Commanding Adriatic (headquarters at Belgrade)  
This command extended from Trieste to the Greco-Albanian frontier. Sea defense commandants subordinated to this command controlled the North Adriatic (headquarters at Trieste), Dalmatia (headquarters at Spalato), and the South Adriatic (headquarters possibly at Durozo).

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(4) Naval Mission Rumania. The functions of this mission are unknown.

The major problems of support in the area controlled by Group South, according to Ministerial Direktor Guido Trittler, chief of the Construction Corps, were the long distances involved, i. e., getting the required material to the various ports and dockyards, and the shortage of experienced workers to do the job after the material was procured. This was particularly true, he said, in Greece, where, aside from the small ships that sailed from Black Sea ports, rail was the only means of transportation. There were not enough trains. The tracks were often destroyed by the Partisans. When this happened, shipments had to be unloaded, transported around the destroyed area, and reloaded. Lack of trucks hampered operations. Lack of rolling stock at the other end of the destroyed rail area also slowed up operations.

Small vessels such as motor torpedo boats, minesweepers, etc., required for operations in this area, were transferred from Germany via the inland waterways and the Danube River into the Black Sea and from there to Greece, if needed in the Aegean Sea. Prefabricated submarines for the Black Sea were assembled in Germany, except for their conning towers, transported overland on huge trucks or, where possible, lightered through the inland waterways to the Danube River where they unloaded and guided down the river to Galatz, Rumania. The conning towers were placed on the submarines at that point. They were then put into service either in the Black Sea, the Aegean or Mediterranean.

Shipping space in the Black Sea was so tight, according to Oberregierungsrat Dr. Ernest Tennstedt, that:

"It was necessary to load ammunition and barrels of gasoline in the same holds. Ships blew up sometimes. Necessity was the mother of invention all the time. One had to improvise. If more sea transportation had been available, we would have dispersed such items in the ships."

Flottenintendant Arend Wulff, one of the staff supply officers for Group South, told of the hundreds of thousands of tons of clothing and food and immeasurable quantities of other types of stores that were

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abandoned when Rumania turned Communistic and the Army and Navy were forced to retreat. Despite this, he said:

"These losses had no great effect on the logistic support of Group South. The war continued eight or nine months after that and there were always ample stores."

THE U-BOAT COMMAND (headquarters at Berlin)

Theoretically, the operations of U-boats should fall within the province of CinC Group North/Fleet. However, inasmuch as CinC U-boats exercised an independent command, it is believed that he was not subject to the orders of any group commander. This belief is supported by a report that during an engagement between major forces of the fleet and the Royal Navy, U-boat commanders refused to obey the orders of CinC Fleet and that as a result of such disobedience, the Royal Navy's losses were lessened.

As described before under the 2 SKL organization, GrAdm Doenitz retained his title as CinC U-boats when he succeeded GrAdm Raeder as CinC Navy and appointed RAdm Godt, 2 SKL, his chief of staff for operations. GenAdm von Friedeburg, Second Admiral U-boats, whose job will be explained under the organization of the U-boat Administrative Command, was responsible for bringing the submarines up to the firing line and turning them over to Godt for operations. When they returned from sea, Godt turned them back to von Friedeburg for overhaul and servicing preparatory to their next trip to sea.

Submarines were organized in flotillas, each of which included from 10 to 30 units. The Navy had 63 active submarines in 1939, 450 in 1943, 465 in 1944, and 379 in 1945. Each flotilla had an administrative head, usually a former submarine commander with the rank of LCdr. Several of the officers holding such positions in 1943 had been engaged in combat operations during the early years of the war but, due to incapacitation, were assigned to flotilla staffs.

Before the occupation of France and the Low Countries, submarines were based at German North Sea and Baltic ports. Taking advantage of all opportunities afforded by the changing situation as the war theaters were extended, however, new submarine bases were established in Norway,

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Denmark, Netherlands, Belgium, France, Italy, Albania, Greece, Rumania, Bulgaria, and in the Far East in Japan, the Marshall Islands, Malaya and Java. In addition to these, several clandestine, i.e., not regularly established bases with supply/repair facilities, existed in Spain, Mexico and South America. (See charts showing ports and anchorages in Europe and other parts of the world for details of operational areas.)

THE SMALL BATTLE UNITS COMMAND (headquarters at Berlin)

This command was established late in 1943. Units under it began to operate in April 1944. Its mission was:

- (a) To strengthen coastal defenses against allied landings.
- (b) To provide new defensive weapons which would compensate in part for the failure of U-boats.
- (c) To provide a stop-gap until old submarines could be equipped with anti-radar and anti-ascdic devices, or until new submarines with increased speed and better protection could be built.
- (d) To create quickly a naval arm which could serve as a useful propaganda theme to save the face of the Navy at the time when submarine losses were severe.

VAdm Hellmuth Heye was CinC Small Battle Units. Like the U-boat command, this organization was given independent status and did not report to any group or fleet commander but to I SKL direct. It has been said that Italy's main contribution to Axis warfare was in sneak craft, serving as models for VAdm Heye's battle units, which consisted of:

- |  |                               |
|--|-------------------------------|
| (a) One-man torpedoes                      | (f) Electrically controlled   |
| (b) One-man midget submarines (Molch type) | shore launched torpedoes      |
| (c) One-man midget submarines (Biber type) | (g) Long range shore launched |
| (d) Two-man midget submarines              | torpedoes                     |
| (e) Torpedo launching                      | (h) Main Assault craft        |
| seaplane floats                            | (i) Explosive motor boats     |
|  | (j) Swimming saboteurs        |

One-man torpedoes, one-man Molch type midget submarines and explosive motor boats were organized in 60 craft flotillas. One-man Biber type midget submarines were organized in 30 craft flotillas. The organization of the other small battle units is unknown. In January 1945, it was estimated that the Small Battle Units Command had approximately 1350 operational units.

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Operation bases for these units were located as follows:

Germany	Denmark	Norway	Holland	Italy	France
Borkum	*Aarhus	Aalesund	Groningen	*Levice	
Danzig	Bornholm	Arendal	Hellevaetsluis	Pola	
Eckernfoerde	Horsup	Bergen	Hook of Holland	Lussino Island	
#Luebeck	Kronborg	Eidsvold	Ijmuiden	Porto Maurizio	
Neustadt	Saaby	Kristiansand	Poortershaven	San Remo	
Nordeney	Fredericia	Mo-I-Rana	Rotterdam	Trieste	
Schlutup	Helsingor	Mosjoen	Schiedam	Venice	
*Sengwarden	Strib	Oslo	Schouwen Island	Verona	
Island of Sylt	Dyrhede	Stavanger	Scheveningen	Fiume	
(List)	Lynaes	Harvik	Den Helder		
Wilhelmshaven	New Zealand	Trondheim			
		Levanger			

# Main Supply Base

\* Regional Headquarters

Training bases for this command were located at:

	Germany	Italy	Denmark
Bad Holz	Luebeck	Genoa	Mosmark
Bad Schwartau	Neustadt	Sesto Calende	Saaby
Bad Sulz	Floen	Stresa	Soeraa
Bad Toulz	Priesterbek	Valdagna	
Guxhaven	Schlutup	Venice	
Eckernfoerde	Selmsdorf		
Friedrichshaven	Surendorf		
Heilingenhafen	Timmendorferstrand		
Kiel	Travemuende		
List (Sylt)			

THE NAVAL COMMAND ITALY (headquarters at Rome)

This command was primarily a staff whose mission was to keep the Italian Navy in the war as long as possible. From 1939-1942, its mission also included the control and management of all sea transportation in Italian waters and the arrangement with the Italian Government for the logistic support of submarines, landing craft, small battle units and transports operating in Italian waters. Supply depots, with stocks limited to those required for these types of naval vessels, were established at Venice, LaSpezia, Pola, Naples, Genoa and Trieste. From 1942-1945, the Navy only provided escort vessels and armed guard crews for merchant convoys. (See chapter on Transportation.)

In August 1941 orders were issued for 15 operational and 23 training landing craft to be built at the Italian shipyard at Palermo. Personnel was sent from the dockyards at Wilhelmshaven and Kiel to supervise construction. Construction was completed in December 1951, and naval crews were



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sent to Italy to man the craft. A storehouse, in which provisions and spare parts only were carried, was established at Palermo in support of these craft. Main stocks were carried at Naples.

Further landing craft were built at Palermo for use both as escort and supply vessels in the African campaign. Their cargo capacity was 75 tons in bad weather, 100 tons in good weather.

**PORTS AND ANCHORAGES USED BY FORCES AFLOAT**

Three charts showing the location of ports and anchorages used by these many commands in Europe appear opposite this text. It has been impossible to determine the periods during which units of the Navy operated from these ports. All that is known is that forces of the type indicated operated from the places shown. As the German fortunes of war improved or deteriorated, they were active or inactive. However, since it is desired that a complete picture of the Navy's logistic responsibilities be shown, even though determination of the period such responsibility existed has been impossible, all ports used by naval forces have been included.

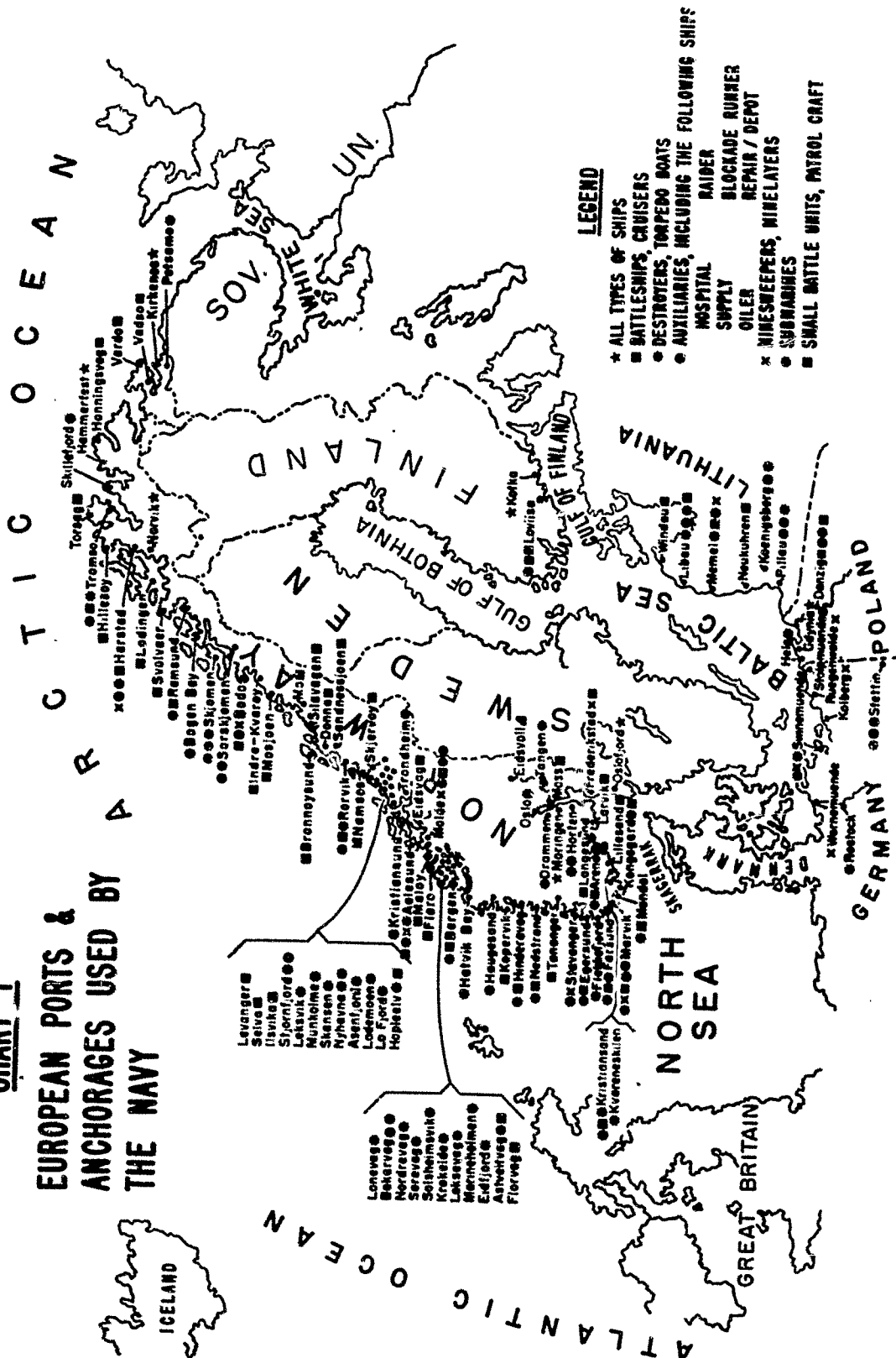
A fourth chart, showing ports and anchorages used by the Navy in countries outside Europe has also been included. Some of the research material used in constructing this chart may possibly contain inaccuracies, due to the large number of unverifiable reports originating in Latin and Central America during the war. It is known that submarines operating in the Caribbean and South Atlantic Oceans were supported by surface and undersea supply ships. However, it has been impossible to separate inaccuracies from accuracies in these reports; therefore, all reports of submarine activity in ports and anchorages in the Western Hemisphere have been included.

**PORT ORGANIZATION**

In each important harbor in Germany and in the occupied countries, there was a naval port director (Hafenkommandant) who was responsible for the administration of the port. Subordinated to him were, among other groups, the following logistic activities:

# CHART 1

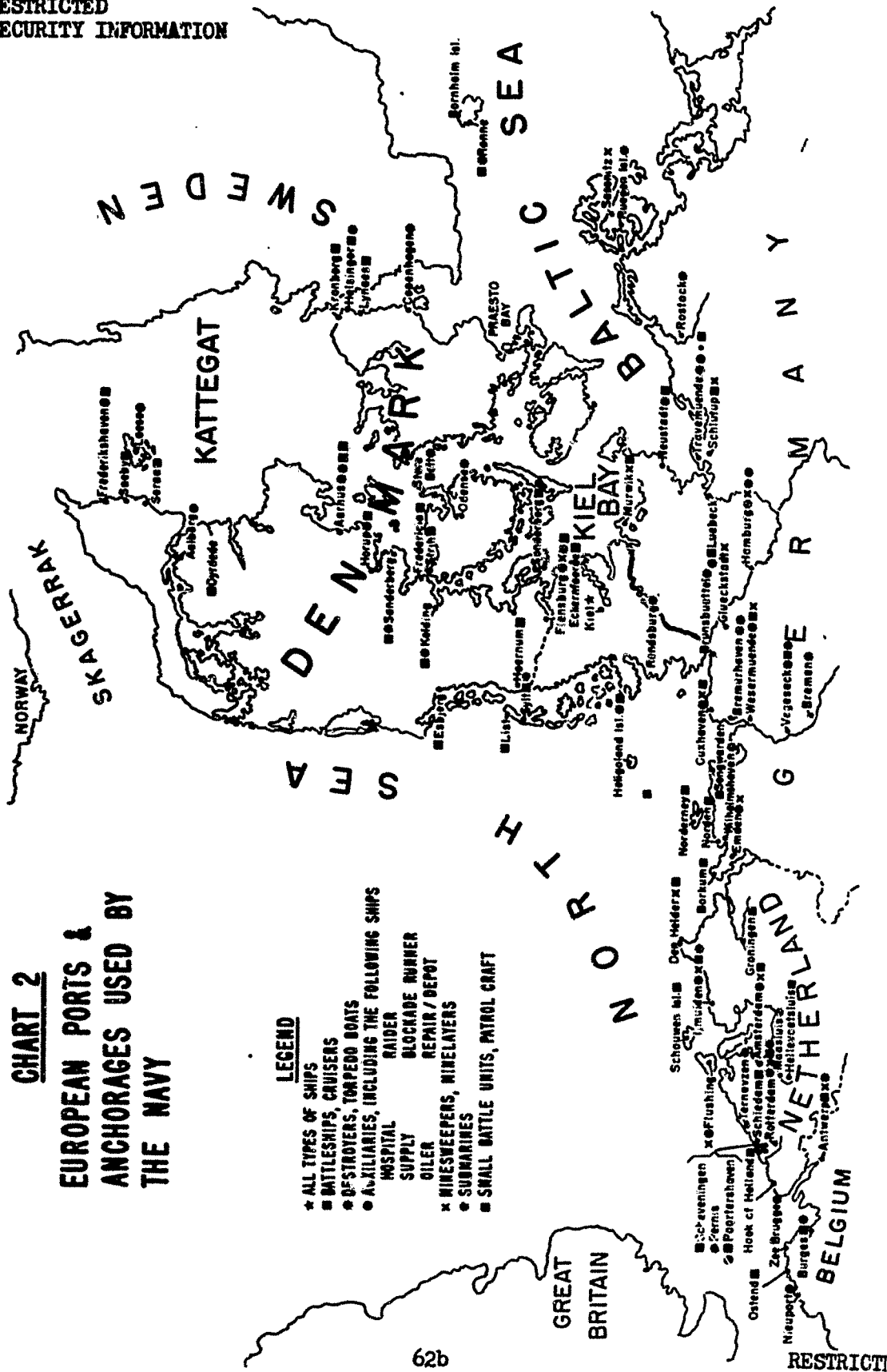
# EUROPEAN PORTS & ANCHORAGES USED BY THE NAVY



# CHART 2 EUROPEAN PORTS & ANCHORAGES USED BY THE NAVY

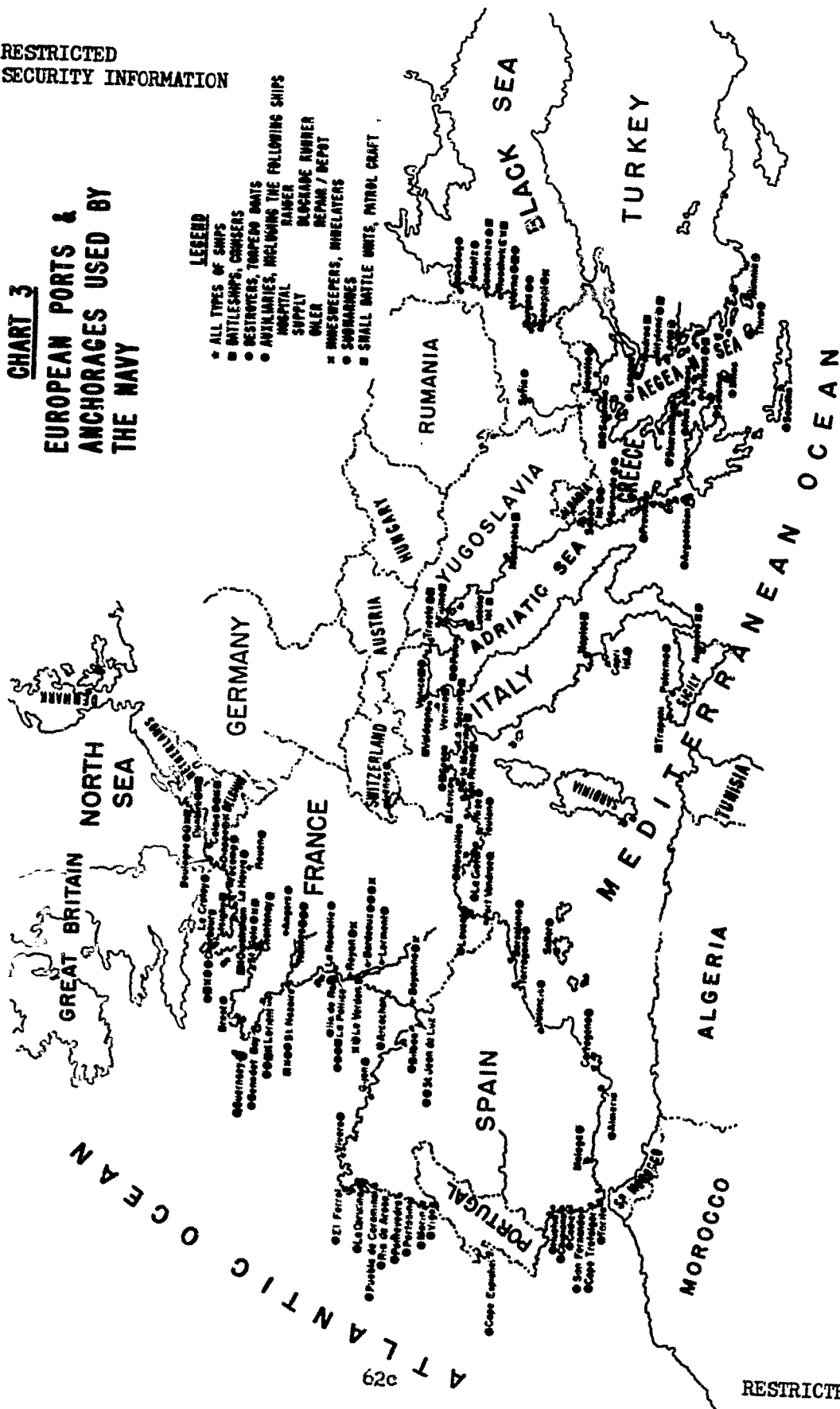
### LEGEND

- ★ ALL TYPES OF SHIPS  
 ✱ BATTLESHIPS, CARRIERS  
 ✱ DESTROYERS, TORPEDO BOATS  
 ● AUXILIARIES, INCLUDING THE FOLLOWING SHIPS  
 HOSPITAL  
 SUPPLY  
 OILER  
 BLOCKADE RUNNER  
 REPAIR / DEPOT  
 ✱ MINESWEEPERS, MINELAYERS  
 ● SUBMARINES  
 ✱ SMALL BATTLE UNITS, PATROL CRAFT



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# **CHART 3** **EUROPEAN PORTS & ANCHORAGES USED BY THE NAVY**



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- (a) A hydrographic office, charged with the distribution of charts and recognition signals.
- (b) A medical officer and staff or naval hospital depending on the size of the port, with a stock of medical supplies for issue to forces afloat.
- (c) A torpedo supply depot or torpedo storehouse, depending on the size of the port.
- (d) An ordnance depot or ordnance storehouse, depending on the size of the port.
- (e) An ammunition depot or storehouse, depending on the size of the port.
- (f) A mining and barrage depot or storehouse, depending on the size of the port, for the purpose of issuing mines, mine fittings and minesweeping gear, and installing and servicing barrage nets.
- (g) A communication supply depot or storehouse, depending on the size of the port.
- (h) A pay office.
- (i) A food office.
- (j) A clothing depot or clothing store, depending on the size of the port.
- (k) An accommodation office, charged with the accommodation of all shore based personnel.
- (l) A naval laundry.

Note: Pay, Food, Clothing and Accommodation offices were all a part of the Intendantur supply system. Usually, the same Supply Officer, Special Service Supply Officer or Intendantur official in charge was responsible for all of these offices in one port.

In addition to the above, there were located in each important harbor, but not subordinated to the port directors:

- (a) A Sea Transport Office (KMD), charged with the responsibility of requisitioning, expediting the turnaround, repair, equipping, servicing and assembly of convoys of merchant vessels. These offices were field activities of Adm Qu VI. They also had authority to recruit labor for loading and unloading ships.
- (b) A representative of the Ministry of Transportation to assist the Sea Transport Office in coordinating the movement of merchant shipping. During the latter part of the war (see Chapter VII), these representatives took over part of the duties of the Sea Transport Office.

**COASTAL DEFENSE CONSTRUCTION ORGANIZATION**

Coastal defenses consisted of both naval and army batteries, the former usually covering the more important naval objectives. Naval defenses and

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naval coastal defense troops came under the group commander, but the disposition of these forces was mainly the concern of the admirals commanding coastal areas and the sea defense commandants, e.g., CinC Naval Chief Command North Sea and FOIG North Sea Defenses. Each admiral commanding a coastal area was responsible for deciding the tactical employment of the defense troops assigned him and the strategical locations of the naval fortifications within his command. He also had to obtain permission, personnel and necessary funds from MarRuest/PIWa to build such fortifications and, where more economical or expedient, obtain bids from qualified civilian construction agencies. He was responsible for overseeing the construction, controlling the use of rationed materials, and acquiring the necessary real estate through purchase, lease or requisition.

To assist the area commanders in these responsibilities, Construction Battalion Staffs (Oberfestungspionierstab), with headquarters at Kiel which operated under the supervision of MarRuest/PIWa, were assigned to perform these duties and supervise all coastal artillery, anti-aircraft and submarine pen construction. In addition, these staffs were also responsible for the procurement and distribution of material such as steel, tools, camouflage material and other construction equipment and supplies, as well as obtaining foremen and laborers to perform the actual construction in Germany, and labor battalions for construction overseas.

Naval Labor Battalions, also subordinated to MarRuest/PIWa, with headquarters at Hamburg, constructed the submarine pens and naval anti-aircraft installations in occupied countries. These battalions were composed of naval personnel who had been given training in construction techniques as well as in military subjects. In 1943, there were three such battalions.

**THE SHORE ESTABLISHMENT  
UNDER GROUP NORTH/FLEET**

**Basen**

Group North/Fleet, in addition to surface units, controlled all shore establishments in Germany, as well as those in Denmark and Norway. In Germany itself there were three main dockyards, one at Kiel, one at

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Wilhelmshaven and one at Swinemünde. These dockyards performed most of the repair and maintenance work for major surface units operating in home waters.

During the First World War (1914-18), it became evident that the supply of the Imperial Navy's forces afloat by these three dockyards required a far-reaching differentiation in the various supply areas. Numerous ports which, during the peace years before World War I had been visited by warships only occasionally, had during that war become garrisons and anchorages for new forces developed during the war, e.g., escort flotillas, harbor patrol flotillas, auxiliary minesweeper flotillas and similar forces. Furthermore, during World War I, the number of ships and craft had increased considerably as a result of new construction and commandeering of merchantmen and private craft, and due to the activation of reserve squadrons, all of which demanded a decentralization of supply.

This condition led to the establishment of Marine Versorgungsstellen (naval supply depots) which were primarily equipped for supplying fuel, water, machinery spare parts, consumable stores and equipage to vessels and commands in the local areas. These supply depots, in addition to being stocked with consumables and equipage, were also equipped with tugs, water barges, fuel and supply barges and other craft essential to servicing ships. The need for emergency repair facilities at these supply depots soon became apparent and they were added wherever the use of highly efficient private shipyards, repair ships and/or naval repair ships was not feasible. The recognized minimum requirement in this respect was the establishment of adequate repair facilities ashore and, until construction was completed, repair ships were used to fill this requirement. The naval supply depots established near the dockyards at Kiel, Wilhelmshaven and Swinemünde under the World War I supply decentralization program were located at:

Baden/Borkum  
Cuxhaven, with a branch depot at Brunsbüttel  
Bromerhaven-Wesermünde  
Heligoland-List  
Neustadt-Müritzk



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Swinemuende with branch depots at Sassnitz, Warnemuende,  
Ruegenwalde, Stolpmuende, Kolberg and Neukuhren  
Pillau-Libau

During the period between World War I and World War II, the increased need for supply/repair facilities required that bases with facilities be organized as (a) main naval bases, (b) second class naval bases, (c) third class naval bases and (d) U-boat bases. This new organization was effected in 1935. Support facilities afforded by them were:

Main naval bases (Kiel, Wilhelmshaven and Gdynia)

In addition to having a supply center with large permanent stocks of all kinds of consumables and equipment, including ammunition, for supplying forces afloat and shore activities in the immediate area, these had large technical departments to take care of problems of ship construction, overhaul and repair of machinery, electrical, ordnance, torpedo and communication equipment, as well as dredging and harbor construction. In addition to these facilities, the drydocks and slipways of the many private shipyards in the immediate vicinity of these main naval bases were requisitioned, as necessary, to provide repair facilities. The bases themselves were amply outfitted with tugs, supply and special craft, floating cranes, etc. During the war additional main naval bases were established at Hamburg and Le Havre (France).

Second class naval bases (Swinemuende, Stettin, Danzig, Pillau and Koenigsberg)

These had naval supply depots for supplying fuel, consumable stores and general equipment, also stocks to meet the demands of the forces based on them for at least ninety days. Docking and repair facilities to care for all local needs were provided at the shipyards in the area.

Third class naval bases (Emden, Heligoland, Cuxhaven, Glueckstadt, Sassnitz, Warnemuende, Ruegenwalde, Stolpmuende, Kolberg, Muorwik, Travemuende and Neustadt)

These were equipped with naval supply sub-depots with limited stocks (mostly fuel and water) for supplying permanently based units. They had no special equipment. A few tugs and supply craft were assigned to these

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bases when special conditions warranted such action but, aside from a few small shops ashore where minor repairs could be undertaken by a ship's force, no special repair facilities were available. Examples: At Emden, the repair shops of a private shipyard were utilized; at Cuxhaven, the same situation obtained; at Sassnitz, the railroad shops were available; at another port, the facilities of the Inland Waterways Administration were used. Similar bases were established during the war at Memel, Wesermünde and Linz on the Danube.

U-boat bases (Kiel and Wilhelmshaven)

These bases provided berths, special supply facilities, billets, school rooms, sport facilities, etc., but had no special yard installations or repair facilities. The latter were provided by the main naval bases. During the war a great number of submarine bases were established in Holland, Belgium, France, Italy, Greece, Rumania and Norway. (See chart showing location of ports and anchorages.)

Main and second class naval bases employed chiefly civil personnel and used only a small number of naval officers and men. Third class naval bases and U-boat bases, however, employed only naval personnel.

These base facilities were greatly expanded when the Navy mobilized for World War II. However, the bases enumerated above continued throughout the war to play an important role in the logistic support of the fleet and shore establishment under Group North/Fleet.

Main Naval Base Organization

All main naval bases (naval dockyards) were directly subordinated to the Bureau of Warship Construction and Repair (MarRuest), although administratively under the control of the respective group commanders. Their mission, as has been stated, was to build, equip and maintain ships based on them and such shore stations as were in the territorial limits assigned to them. They were commanded by a naval officer, known as the Director of the Dockyard. Admiral Fleischer held this position at Wilhelmshaven in 1942.

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An organization chart showing the facilities at the Naval Dockyard at Wilhelmshaven appears opposite this page. This organization, with the exception of West Yard, is the same as the ones used at Kiel, Gdynia and Le Havre. In order to administer the multiple tasks imposed on the dockyards, they were divided into two divisions, five offices and ten departments as follows:

Divisions

Z	Staff Division
TA	Works and Planning Division

Offices

A	Labor Office
D	Office of the Base Medical Officer
F	Radio Control Office
K	Base Hospital
ZMN3	Communications Center

Departments

I	Equipage and Navigation Department
II	Gunnery Department
III	Shipbuilding Department
IV	Engineering Department
V	Harbor Construction Department
VI	Torpedo Department
VII	Dredging Department
VIII	Communications Department
IX	Logistic Support Department
(V)	Supply/Administrative Department

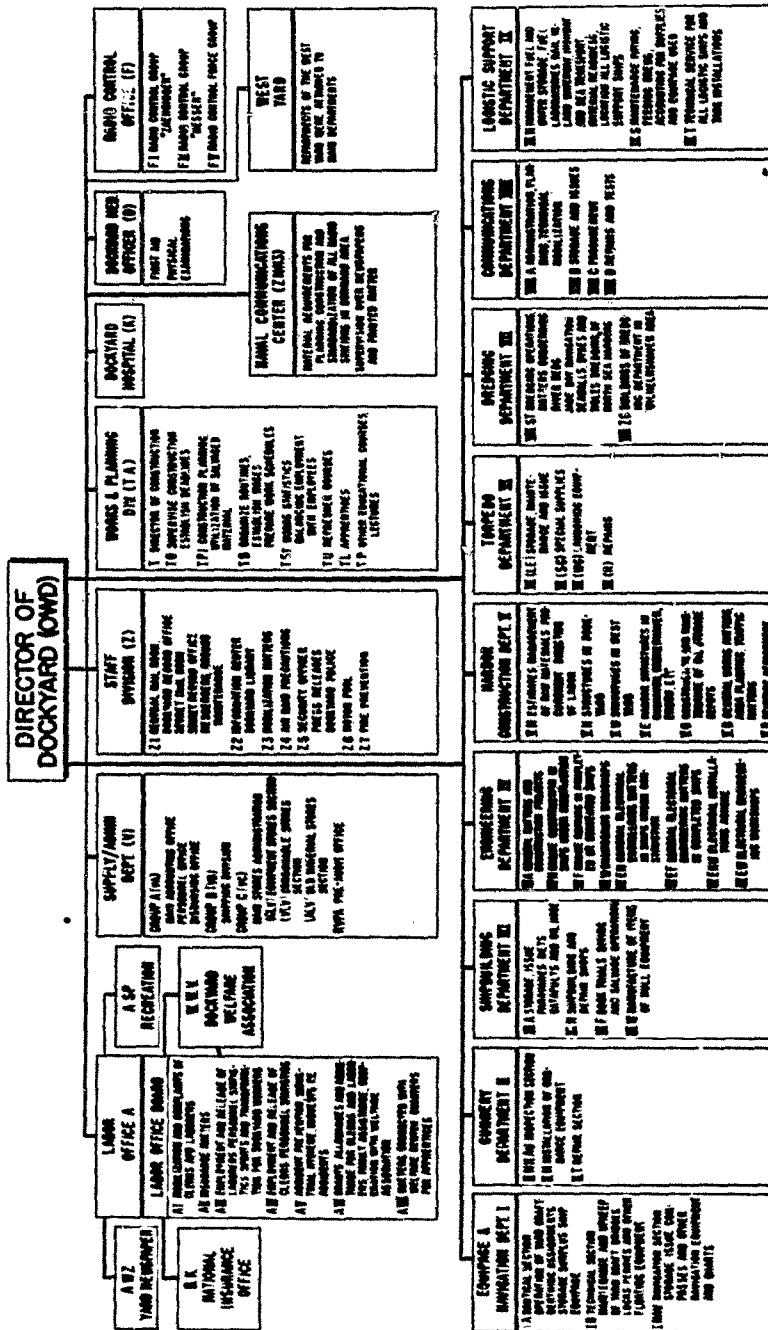
Each department was headed by a civil official, known as the department director. Offices functioned separately. All were subordinated to the Dockyard Director.

Z - The Staff Division

This division, also known as the Central Division, was the counterpart of a commandant's office in our naval shipyards, and had charge of all departments and offices in the dockyard. It was headed by a naval officer, usually a captain, who acted as chief of staff to the Director of the Dockyard and administered the various divisions, offices and departments in accordance with the directives of that officer and the naval regulations. It was subdivided into seven sections. They handled:

1. Mail, messenger service and ground maintenance
2. Information center and dockyard library
3. Mobilization matters

# ORGANIZATION PLAN OF NAVAL DOCKYARD, WILHELMSHAVEN (1942)



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4. Air raid precautions
5. Security, yard police and press releases
6. Motor pool
7. Fire prevention

**TA - The Works and Planning Division**

The head of this division was the Construction Superintendent of the dockyard. The functions of the office were to plan and supervise all construction, establish deadlines, supervise the utilization of salvaged material, organize routines and work schedules, establish wages, prepare work statistics, balance employment with employees, supervise refresher courses for employees, training programs for apprentices and other courses of instruction and lectures.

**Offices**

**A - The Labor Office**

This office, headed by a Labor Board, had eleven sections that performed duties in connection with :

1. Mobilization of clerks and laborers
2. Insurance matters
3. Employment and release of laborers, personnel statistics, sports and transportation for dockyard employees
4. Employment and release of clerks, personnel statistics
5. Accident prevention, industrial hygiene, inquests regarding accidents
6. Grants, allowances and assistance for clerks and laborers, family assistance, cooperation with Welfare Association
7. Matters pertaining to Welfare Center and quarters for apprentices

WZ. Base newspaper  
SP. Recreational matters, sports, etc.  
BK. National insurance  
WWV. Dockyard Welfare Association matters

**D and K - Base Medical Officer, Base Hospital and Naval Medical Supply Center**

The Medical Officer had charge of the base dispensary where all first aid was rendered and physical examinations were conducted. At the same time, he was also the base surgeon and area medical officer. In the former capacity, he was head of the base hospital, in the latter in charge of all hospitals, dispensaries, and medical supply depots in the area, and the medical supply center of the main naval base. He was the representative of MacMuir/G in personnel and administrative matters and of the Medical Inspectorate in matters of supplies and material and their distribution.

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F and ZMW3 - Radio Control Office and Communications Center.

These offices furnished the base with communication service. In addition, they ensured that the material requirements for all radio stations in the command area were supplied. In this connection, they were field activities of the Naval Communication Inspectorate and MarRuest/NWa. They also supervised the preparation of newspapers and other printed propaganda media.

Department I - Equipment and Navigation Department

For each ship permanently assigned to the base, this division provided space in which the ship could store its supplementary reserve, strip ship or excess equipment. The ship's complete equipment was stored by this division while the ship was under construction or during extensive repairs or conversion. Such storerooms were maintained for the ships as long as they were in commission. The administration of these storerooms was the responsibility of the dockyard. The equipment, however, belonged to the ships and the dockyard was not permitted to use it for any purpose. Extraordinary, cumbersome and bulky pieces of equipment and/or spare parts used only infrequently were stored in special compartments or storerooms which were also exclusively assigned to the ships.

In addition to providing storage space ashore for the vessels assigned to the base, this division functioned similarly to a harbormaster's department or yardcraft office, in that it was responsible for the assignment of harbor space, floating cranes, tugs and other harbor small craft, and transit of vessels through the locks at the entrance to the base.

It was responsible for the operation and maintenance of locks, ferries, yardcraft and other floating equipment, except floating drydocks, and for storing and issuing compasses, and other navigational instruments. It also prepared, assembled and maintained all ships' allowance lists and other publications, including navigational charts, for all ships in commission or reserve attached to the base.

Department II - Gunnery Department

The mission of the Gunnery Department was to store, install, issue, repair and service guns, small arms and smoke equipment for vessels and naval

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artillery installations in the area assigned to the base, and fire control instruments. It was a supply/repair facility of the Naval Ordnance Inspectorate.

**Department III - Shipbuilding Department**

The Shipbuilding Department was responsible for all ship construction and ship repairs. It provided storage for paravanes, catapults, submarine nets and oil hose, conducted dock trials, diving and salvage operations and manufactured equipage normally produced by the Navy and issued by the Yard Supply/Administrative Department for the Central and Technical Procurement Offices such as tackle, rigging and line, boats and boat equipment, ports, ladders, lockers, etc. (See chapter on Distribution of Supply for details.) It also had management control over the locksmith, carpenter, lathe, paint and saddler's workshops, the sail and rigging lofts, and drydocks and floating drydocks. This division worked closely with the Warship Acceptance Inspectorate and was subordinated, through the Dockyard Director, to WarWest/X IV.

**Department IV - Engineering Department**

The Engineering Department constructed, assembled, repaired and/or installed engines and engineering and electrical ship equipment, and maintained all electrical installations, operating mechanisms of swinging bridges, dock installations, power houses, etc. Organizationally, it was broken into two sections, viz., (a) the machinery construction workshop and service section, under which were the machine construction shop, motor, boiler, coppersmith and pattern maker's workshops and the foundry, and (b) the electrical workshop and service section, under which were the electrical, galvano-technical and searchlight workshops. This department worked closely with the Naval Engineering Inspectorate, Technical Procurement Office and Supply/Administrative Department of the base in manufacturing electrical equipment and engines and their spare parts for ultimate issue through supply activities.

**Department V - Harbor Construction Department**

This department was responsible for all design, construction and

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maintenance of all docks, buildings, workshops and other public works ashore in the Wilhelmshaven area. It worked closely with the Construction Battalion staff.

Subordinated to this department was the printing department.

**Department VI - Torpedo Department**

The Torpedo Department stored, maintained, repaired and issued torpedoes and torpedo accessories, including launching equipment and supplies. It also installed torpedo launching equipment. It was a supply/repair facility of the Naval Torpedo Inspectorate.

**Department VII - Dredging Department**

The regulation of the navigable parts of Jade Bay, construction of sea walls, dikes and moles outside the harbor and the dredging of all North Sea harbors came under this department.

**Department VIII - Communications Department**

The mission of this department was to equip ships and shore stations with communication equipment and special communication supplies, the repair of damaged communication equipment, and the storage and issue of replacement equipment and supplies. It had access to the various departments of the dockyard for repair and testing work outside the scope of technical adjustment. Since the greater part of communication equipment used by the Navy was purchased from commercial firms, a special procurement division of this department, under supervision of the Naval Communication Inspectorate (later by MarRuest/NWa), handled such purchases. It had its own storage division, subdivided into equipment, supplies and tube sections. This department was one of the supply/repair facilities of the Naval Communication Inspectorate, later taken over by MarRuest/NWa.

**Department IX - Logistic Support Department**

This department was a field activity of Adm Qu III. It was responsible for the transportation via land or water of all supplies required to support the forces afloat and naval bases outside Germany. To facilitate this mission, all fleet supply ships, auxiliary supply ships, all Navy-owned seized or chartered tankers and fuel storages were subordinated to this



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department. The personnel in the ships operated by the department were subsisted, housed and fed by this department or its branch unit in France. It was subdivided into three divisions, (a) Service Directorate N, (b) Service Directorate T and (c) Service Directorate S.

Service Directorate N managed all fuel and water storage and fuel laboratories, and rail, inland water and highway transportation of equipment and supplies to bases in occupied countries, after transportation had been furnished by the appropriate agency. It supervised the loading and dispatch of naval logistic support vessels to overseas bases or rendezvous with forces afloat. It prepared statistical computations regarding requirements of tank farms and laboratories and was responsible for the readiness of all vessels assigned to the department and maintenance of charts showing their location. It had its own trucks, guards and truck drivers for highway transportation. (See chapter on Distribution of Supply and the one on Fuel for details.)

Service Directorate T rendered technical service to all logistic support vessels and fuel installations.

Service Directorate S was responsible for the maintenance, subsistence and payment of all crews assigned to tankers, supply ships, and other vessels assigned to the Logistic Support Department.

**Department(V) - The Supply Administration Department**

The supply/administrative department of a main naval base was, in U. S. naval terminology, a naval supply center. It was headed by a civil official, usually an Admiral/Lieutenant with the rank of rear admiral. It carried in stock all general and special equipment, spare parts and consumables carried in the supply systems of the Central Procurement Office and the Technical Procurement Office and was a part of these supply systems.

For purposes of administration, these departments had:

- (a) A main accounting office
- (b) A personnel office
- (c) A disbursing office
- (d) A shipping department
- (e) A preliminary audit office

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For purposes of receiving and issuing equipment, spare parts and supplies, they had a main store administration, broken into:

- (a) A general equipment stores section
- (b) A general consumable stores section
- (c) A special equipment, spare parts and consumable stores section
- (d) An old material section

A description of these offices, etc., follows:

**The Main Accounting Office**

The primary functions of this office were:

1. To maintain a record of all charges and credits incurred through transactions with ships and stations for issues of material or stores, work performed for them by base departments (supply department and inspectorate branches alike) or material or stores turned in to those departments or branches.
2. To administer the allotments for the several departments, divisions and offices of the naval dockyard.
3. To lodge debits and credits against such allotments.
4. To render monthly statements of balances remaining in such allotments to appropriate heads of departments.

To facilitate control over all issues, receipts and charges against departmental allotments, all requisitions, invoices, dealers' bills or other documents having any relation to charges and credits, regardless where the charge or credit originated on the base, were initially taken to the Main Accounting Office, where they were recorded as being received and treated as a potential charge or credit. When issues were made, work performed by a department or material received in one of the stores sections of the supply or other department, the invoice covering the debit or credit was sent to the Main Accounting Office for pricing, entry in the records, and transmittal to the ship or station. In the case of a dealer's bill, it went to the disbursing office for payment. The office also maintained a record of all real estate transactions and a plant account for all buildings in the dockyard and their furnishings and equipment.

**The Personnel Office**

This office controlled all personnel matters such as admissions, transfers and separations, and distributed personnel among the various sections and offices.

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**The Disbursing Office**

The details of payments and financial record keeping in the Navy are contained in the chapter on Finance. This office, however, paid all base personnel, including dockyard employees, and bills.

**The Shipping Division**

When stores and/or material were requisitioned by a ship or station, the cognizant stores section of a base department (naval inspectorate activities or supply department) assembled the stores or material, prepared a list of them, their destination, showing whether they were to go by air, rail or water, and stating any special packing procedures to be observed. It then turned the list and the stores over to the base pickup-delivery service (a branch of this division equipped with trucks, mobile cranes, electric flatbeds, etc.) which brought them to this division, where packing papers were prepared, the material packed and shipping documents prepared. The cases were then delivered to the Logistic Support Division for shipment.

All mail, freight and express shipments from base departments, except that of the Logistic Support Department, passed through the Shipping Division.

**The Main Stores Administration**

This division was headed by a civil official. It controlled all receipts and issues of general and special equipment, spare parts and consumables. Before the Technical Procurement Office and the Central Procurement Office were established, TPO functions were performed by the naval supply center, Kiel; CPO functions were handled by the naval supply center, Wilhelmshaven. After these two main procurement offices were established, these supply centers became a part of their supply systems and acted as storage and issuing depots for them. (See chapter on Distribution of Supply for details.)

The division was divided into four sections:

- (1) A central office, to which all administrative matters pertaining to the division were referred, and which handled all labor and financial matters

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- (2) A general equipment and spare parts stores section
- (3) A general consumable stores section
- (4) A special equipment, spare parts and consumables section
- (5) An old material section.

The General Equipment and Consumable Stores sections and the Special Equipment, Spare Parts and Consumable Stores section each had its own management office, accounting, procurement, storage and shipping subsections.

General Equipment Stores Section (GLV)

This section was subdivided into:

- 1. Accounting sub-section
  - (a) Voucher control
  - (b) Receipts and issues control
  - (c) Correspondence
- 2. Management sub-section
  - (a) Inventory Control Office  
Priced vouchers, verified nomenclature and quantities, took up and expended material from cardex.
  - (b) Procurement office
    - (1) Open and contract purchases
    - (2) Base manufacturing
- 3. Shipping sub-section  
Assembled material for delivery by delivery service to Shipping Division.
- .. Stores sub-section
  - I Boatwain equipment  
Boat gear, anchors, line, chain, shackles, cables, sails, swabs, buckets, life jackets, work and protective clothing.
  - II Navigation equipment  
Military and commercial flags, pennants, signal flags, signal horns, megaphones, watches, clocks, sounding lines.
  - III Carpenter and diving equipment  
Axes, hammers, planes, saws, metal working tools, diving helmets, diving suits, diving air pumps.
  - IV Barracks and quarters supply equipment  
Chinaware and table accessories, bed linen, blankets, cabin furniture, office equipment, brooms, padlocks.
  - V Mechanical equipment  
Spare parts for machines and auxiliary machines, instruments, equipment for cleaning, overhauling machine and boiler equipment, hand tools.
  - Va Submarine tools
  - VI Fuelling hose, fire fighting equipment, bicycles and their spare parts.

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- VII Boats, equipment for boats and life saving equipment.
- VIII Electrical equipment and electrical measuring instruments  
Motors, instruments, switches, transformers, telephone and telegraph equipment, batteries and battery charging equipment, searchlights and covers, electrical hand tools.
- IX Tools of all kinds, except those carried in sections III, V, Va and VIII.
- X General equipment, except engines and spare parts, for U-boats, R-boats and E-boats.

Administration, i.e., inventories, stock receipts and issues, of each section was the responsibility of the stores section manager.

General Consumable Stores Section (VLV)

This section was subdivided like the equipment Stores Section into an accounting, management, shipping, and stores sub-section. The tasks of the various sub-sections are the same as those in the Equipment Stores Administration. The stores sub-section was subdivided as follows:

- I Coal, coke and lubricating oils
- II Glycerin, paints, chemicals, lubricating fats, unprocessed leather (including driving belts), firebricks, holystones, grindstones, sand
- III All tarred and untarred rigging, hemp, manila and other rope products, steel and copper cable.
- IV Iron, cast-iron, steel, forging iron, zinc, copper, tin, bronze, brass, aluminum, standard type sheet metal tubes, wire, pipe, electrodes
- V Notions: canvas, bunting, linen, miscellaneous types of cotton, belting, woolen and linen bands; metal articles, nails, screws, nuts, glass and wooden articles, rubber and asbestos articles, packing materials, paper, screws, nails, rivets, hasps, staples, etc.
- VI Hemp tow, yarn, old linen, old canvas, horse-hair, kapok, sponge shreds, barrel measuring rods, oakum, tar
- VII Timber, boards, planks, plywood, including veneers of maple, beech, cypress, ebony, oak, alder, mahogany, walnut, pine, etc.
- VIII Stationery: foolscap, scratch paper, note pads and books, forms, blotters, ink, pencils, pens, penholders, erasers, file folders, etc.
- IX Electric bulbs, lamp shades, sockets, carbon,

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batteries, portable lamps, insulating material, rheostat wire, plain and covered copper wire, etc., for electric lighting

**X Electric cable of all kinds**

The General Equipment and Spare Parts Stores Section and the General Consumable Stores Section carried the items belonging in the Central Procurement Office supply system.

Technical Equipment, Spare Parts and Consumable Stores Section (TIV)

This section was subdivided like the Equipment Stores and Consumable Stores Sections into accounting, management, shipping and stores sub-sections. This section carried the items of technical equipment, spare parts and consumables that comprised the stock of the Technical Procurement Office supply system. They were not maintained in classes, but as equipment and supplies for the various types of vessels, which in general were broken down into surface and undersea craft. Spare parts, however, were split into:

- (a) Combatant ships' spares, which were peculiar to battleships, pocket battleships, heavy cruisers, light cruisers, destroyers, torpedo boats, minelayers, minesweepers, patrol craft, landing craft and small battle units
- (b) Auxiliary ships' spares, which were peculiar to supply ships, tankers, armed merchant cruisers, blockade runners, merchant ships, trawlers and other vessels taken over by the Navy for the duration of war.

Used Material Section (ALV)

This section stored all used materials returned to the dockyard by ships and stations, according to their relationship, and held them ready for sale. Unusable items received were checked by a Used Material Inspection Committee (Survey Board) which made certain that the articles could not be used. This committee had the additional tasks of determining whether or not the articles were Reich property and to establish the prices at which they were to be sold. For these purposes, the section had two sub-sections: namely, the accounting and storage sub-sections.

Salvage of material was a very important part of the Navy's mission in wartime. All supplies not actually required on board ship were returned to a base. When an article arrived there, it was sent to the Consumable

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Stores Section of the supply department, where a receiving official inspected it and determined whether it could be reissued, used in making repairs, or should be sent to the Old Materials Section.

If an article was usable, it was taken up by the Consumable Stores Section. After its value was ascertained and entered on the stock records, the invoice was forwarded to the Main Accounting Office, where the value was credited to the ship or shore station and debited to the Consumable Stores Section.

If an article was unusable, it was sent with the invoice to the Old Materials Section, where the Committee again inspected it with the view of utilizing it if at all possible and, if it was absolutely unusable, determined its sale value. No credit was given to the ship or shore station for items determined unusable; however, the invoice was accomplished by the Old Material Section as a receipt for the article. If only part of a shipment was unusable, the Consumable Stores Section made a cut invoice for the unusable articles and forwarded it with them to the Old Material Section.

Articles carried by the Old Material Section were not priced on the stock records. Money received from the sale of unusable material was taken up by the Main Accounting Office and disbursed for the maintenance of the Main Stores Administration. Any surplus was deposited to the credit of Reich Receipts (miscellaneous receipts of the government).

This system was also used for material returned to a naval dockyard in peacetime, when ships were placed in reserve or struck from the Navy register.

RVPA - The Preliminary Audit Office

Because of the great volume of accounting transactions, the Supreme Court of Accounts established preliminary audit offices at each main naval base and at the Admiralty. These offices audited the fiscal receipts and expenditures of the Main Accounting Office and of all vessels attached to the base, as well as all shore activities within the territorial limits

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of the command. The heads of these offices were elderly Intendantur officials. It was their responsibility to ensure that audits of disbursing vouchers, invoices and property returns for equipment, spare parts and consumables, including maintenance of vehicles and yardcraft, were carried out objectively and carefully and that the naval regulations and directives of the Supreme Court of Accounts were observed. RVPAs, while organizationally subordinated to the Supply/Administrative departments (later to the senior administrative staffs) were service departments for the main naval bases and the ships based on them. Their relationship was that of a coordinating agency. However, the departments, offices and divisions of the naval base and ship commands were obliged to provide them, immediately, punctually and exhaustively, with such information as they might require in the course of their audits.

When audits were completed, the vouchers, returns, etc., were forwarded to the Supreme Court of Accounts (Reichsrechnungshof) via the Dockyard Director or Fleet Paymaster, depending on whether the return audited came from a shore or fleet activity.

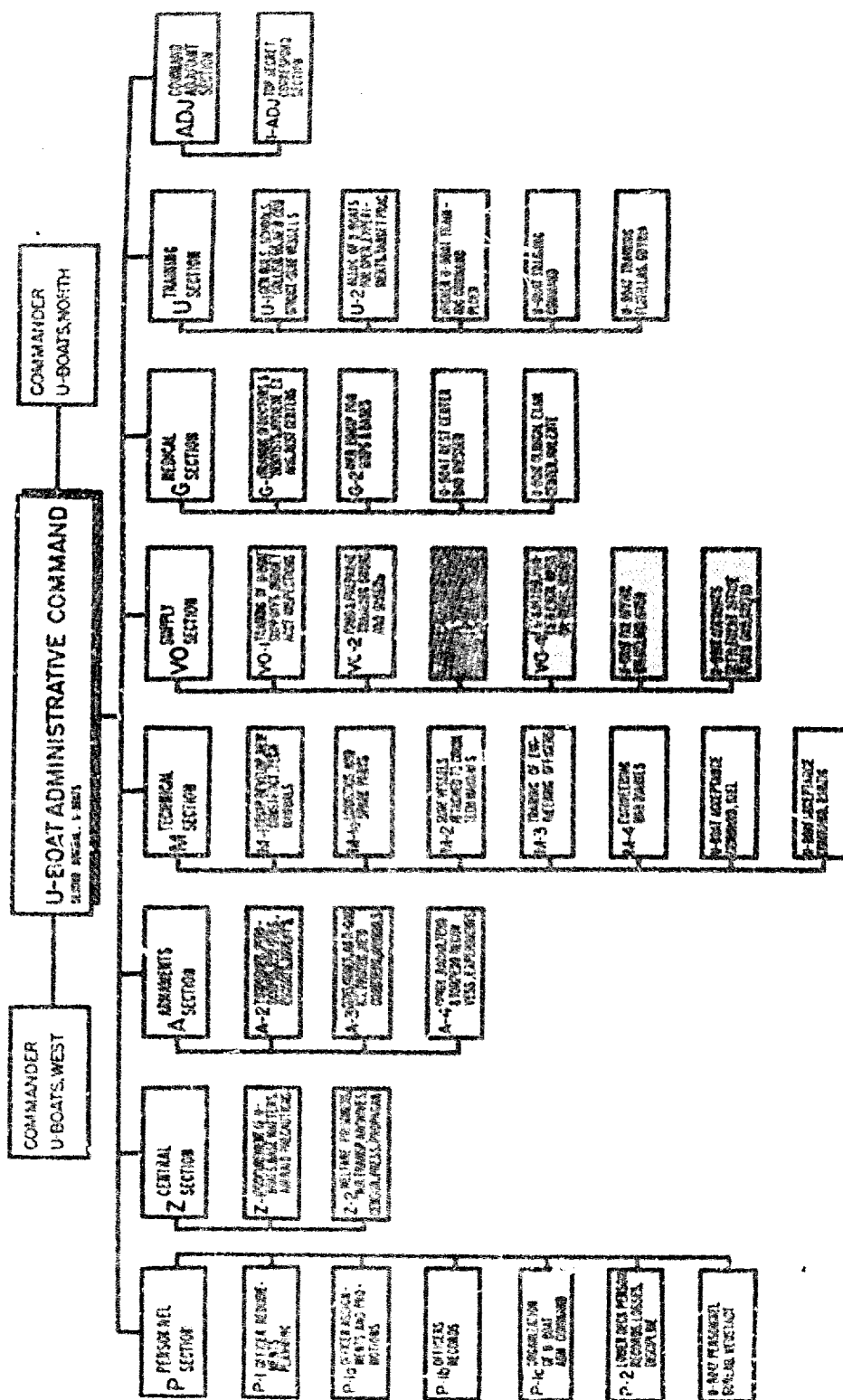
Other Base Activities

Not a part of the dockyard, but usually immediately contiguous thereto and a part of the main naval base, were a mine depot, an ammunition depot, a food store, a clothing store and, in the case of Wilhelmshaven and Kiel, a naval clothing factory. These activities were distributive agencies of the Naval Mining and Ammunition Inspectorates and the Intendanturen (supply/administrative) offices respectively. Each had its own stock control system. Ammunition was probably not invoiced by the main accounting office of the naval base for the ammunition depot. Although there has been evidence indicating that provisions and clothing were invoiced by the Main Accounting Office for the food and clothing offices, it is known that there was no accountability for mining and blocking material.

Other Shore Activities

In addition to naval bases located within the territorial limits of his command, the logistic organizations described below were also under





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the administrative control of CinC Group North/Fleet:

- (a) The U-boat administrative command
- (b) Eleven naval inspectorates
- (c) A central procurement office
- (d) A technical procurement office
- (e) Supply/administrative (Intendanturen) offices

U-boat Administrative Command (2AdU)

This organization was headed by GenAdm von Friedeburg, who was known as the Second Admiral U-boats. Headquarters were at Kiel. The command trained, assigned, promoted and separated its own officers and non-commissioned personnel, including engineering, supply, medical and dental officers and lower deck personnel. Initial procurement of such personnel was processed in the same manner as the personnel for the surface fleet.

The mission of this command was to prepare submarines for war and to bring them to the front line ready for sea. At that time, the submarines were placed under the operational command of 2 SKL. When they returned from sea, they again came under the cognizance of the U-boat Administrative Command. As pointed out in the discussion of the functions of 2 SKL, GrAdm Doenitz retained his title of CinC U-boats when he relieved GrAdm Raeder as CinC Navy in 1943. RAdm Godt (2 SKL) was responsible for their operations while at sea. Second Admiral U-boats was responsible at all other times.

New construction, trials, acceptances, repairs and overhaul of submarines and auxiliary vessels such as underseas supply ships, submarine repair vessels and tenders, target towing tugs, floating hotels, etc., were all matters coming under the cognizance of this command.

Its relation to the inspectorates, the Central Procurement Office, the Technical Procurement Office, the Intendanturen offices and technical bureaus was the same as that of surface force commands, in that the inspectorates, etc. procured the equipment required for the submarine arm. However, the research and development of equipment and material peculiar to submarines was performed by the U-boat Administrative Command.

All general supplies, spare parts, fuel, medical supplies, food and clothing were procured by the U-boat Administrative Command through normal

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channels by its cognizant heads of departments; viz., clothing, food and money by the supply officers, medical and dental supplies by the medical and dental officers and other non-technical supplies, spare parts and fuel by the engineering officers. Separate U-boat pay offices and accounts settlement offices were maintained. Foreign exchange requirements and messing and canteen matters were supervised by the senior U-boat supply officer, as were the preparation of U-boat budget estimates and the inspections of supply and disbursing activities.

The command maintained its own rest centers, clinics and other medical facilities, although the logistic support of these organizations was a responsibility of the medical and supply/administration divisions of MarWehr/G and C. In short, it was an autonomous organization, a navy within a navy, responsible only to GrAdm Doenitz, CinC Navy. Before Doenitz was promoted, the organization existed with Doenitz reporting only to GrAdm Raeder. However, because the U-boat Service was dependent upon the shore activities under CinC Group North/Fleet for logistic support, it was administratively subordinated to that command.

**The Naval Inspectorates**

The procurement of weapons, equipment and supplies for the naval establishment was as highly decentralized as were other functions of the bureaus and offices of the Navy. As has been explained under the organization of the bureaus MarRuest, MarWehr and MarPers, separate divisions were established for each major type of naval material.

MarRuest was responsible for the production of ships, their weapons and maintenance, and the general and technical supplies required to service and operate the ships and their fighting equipment.

MarWehr was responsible for lower deck personnel and their support, i.e., their food, clothing, medical treatment, salaries and welfare.

MarPers provided the Navy with officers.

Adm Qu III, the Fuel and Transportation Section of the Admiral Quartermaster Division of the Naval War Staff, while not a bureau, was a logistic agency and furnished fuel and lubricants necessary to run the ships after they had been equipped and manned and personnel needs provided.

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Each division of MarRuest responsible for the production of a type of weapon had a subordinated naval inspectorate that was charged with the procurement or production, storage and distribution of that weapon. These divisions and their subordinated naval inspectorates were:

MarRuest/AMA (Ordnance Division)	Ammunition Inspectorate
MarRuest/AMA (Ordnance Division)	Ordnance Inspectorate
MarRuest/TMA (Torpedo Division)	Torpedo Inspectorate
MarRuest/SMA (Mining and Blocking Division)	Mining Inspectorate
MarRuest/NMA (Communication Division)	Communication Inspectorate
MarRuest/K I/II (Ship Machinery Division)	Engineering Inspectorate

Charged with the procurement, storage and distribution of general and technical supplies required to service and operate the ships, but not procured or produced by any of the inspectorates listed above, there were subordinated to the Ship and Dockyard Section of the Warship Construction Division, MarRuest/K-4, two other logistic agencies:

The Central Procurement Office  
The Technical Procurement Office

Three divisions of MarWehr were responsible for the procurement and distribution of lower deck personnel and supplies required to support them. These divisions and the inspectorates and offices subordinated to them for the purpose of procurement or production, storage and distribution of supplies were:

MarWehr/Tr (Lower Deck Personnel Division)	Education and Training Inspectorate
MarWehr/G (Medical Division)	Medical Inspectorate
MarWehr/C (Supply/Administrative Division)	Naval Food Stores
MarWehr/C (Supply/Administrative Division)	Naval Clothing Stores

The naval inspectorates may be likened to the American Army's technical services in that each controlled its own supply distributive system in which was carried its own technical equipment and supplies. Example: The Mining Inspectorate had its own mine depots, the Medical Inspectorate its own medical supply depots. The details of the methods employed by them in the procurement of the equipment, material and consumables carried in their supply systems are contained in the chapter on Procurement, Storage and Distribution of Supply.

The missions and locations of the headquarters of the various naval inspectorates follows.

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<u>Name</u>	<u>Location of Headquarters</u>	<u>Mission</u>
<u>The Naval Ammunition Inspectorate</u> (Marine Artillerie Arsenal Inspektion)	Wilhelmshaven	Experiment, research, development in ammunition. Charged with storage of unfilled ammunition cases. Filling, storage and distribution of live ammunition. Inspection of ammunition dumps and arsenals. Return of shell casings, development of safety precautions and other administrative procedures.  Developed Navy's requirements for ammunition of all kinds for submission to MarRuest/Rue Wl. Was field activity of MarRuest/AWa.
<u>The Naval Ordnance Inspectorate</u> (Inspektion der Marine Artillerie)	Kiel	Experiments, research and development, storage, distribution of, accounting for and training in use of main and secondary battery guns for naval vessels, shore based anti-aircraft, coastal defense guns and optical and fire control equipment for such guns.  Was field activity of MarRuest/AWa.  Developed Navy's requirements for all types of ordnance equipment for submission to MarRuest/Rue Wl. Administered all experimental stations, laboratories, gun testing plants, ranges, gunnery school ships and specialist personnel.
<u>The Naval Torpedo Inspectorate</u> (Marine Torpedo Inspektion)	Kiel	Experiments, research and development, assembly (during the period 1934-42), testing, storage, distribution of and accounting for all torpedoes and anti-gas equipment. Administration of all torpedo depots, laboratories, experimental stations, schools and specialist personnel.

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Was a field activity of Mar-  
Ruest/TWa.

Developed Navy's requirements  
for torpedoes and materials  
necessary to manufacture com-  
ponent parts for submission  
to MarRuest/Rue WI.

The Naval Mining Inspectorate Kiel  
(Marine Sperrwaffeninspektion)

Experiments, research and  
development, production of  
component parts of mines and  
nets and minesweeping equip-  
ment. Storage, assembly and  
filling of mines. Distribu-  
tion of all mines, minesweep-  
ing equipment and harbor de-  
fense weapons and equipment.  
Administration of all mine  
and barrage depots, experi-  
mental stations, laboratories,  
testing stations and schools  
and specialist personnel.

Was a field activity of Mar-  
Ruest/SWa.

Developed Navy's requirements  
for mines, minesweeping gear,  
etc., and raw material neces-  
sary to produce them for sub-  
mission to MarRuest/Rue WI.

The Naval Communication Inspect- Kiel  
orate (Marine Nachrichten  
Inspektion)

Experiments, research and  
development, testing, storage,  
distribution of and account-  
ing for all communication equip-  
ment, including radar and search  
equipment. Administration of  
all communications equipment  
depots, laboratories and test-  
stations and specialist person-  
nel.

Developed Navy's requirements  
for communication equipment  
and raw materials, where re-  
quired for its production for  
submission to MarRuest/Rue WI.

Was a field activity of Mar-  
Ruest/NWa.

The Naval Medical Inspectorate Kiel  
(Marine Sanitates Inspektion)

Research development and ex-  
periments in medicine and  
dentistry and their techniques.  
Procurement, storage and dis-  
tribution of and accounting  
for all medical and dental  
supplies. Administration of  
all medical supply centers  
and depots.

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Was a field activity of Mar-Wehr/G and developed Navy's requirements for medicines, drugs and medical supplies for submission to the Medical Division of OKW where available medicines and medical supplies were allocated among the armed forces.

The Engineering Inspectorate (Schiffsmaschinen Inspektion)      Wilhelmshaven

Research and development, experiments and training in use of engines and machinery. Administration of engineering schools. Worked closely with MarRuest/K I/II and IV in the development of ship machinery. This inspection performed the same duties in relation to all kinds of engines as the Torpedo Inspectorate performed in relation to torpedoes at the outbreak of war. Development of the Navy's requirements for engines, spare parts, etc., for submission to MarRuest/Rue W1. Its storage and distribution functions were taken over by the Technical Procurement Office when that organization was established.

The Naval Warship Acceptance Inspectorate      Wilhelmshaven  
(Erprobungskommando fuer Kriegsschiffneubauten)

Responsible for the trial and acceptance of all vessels, except U-boats, which were tested and accepted by the U-boat Acceptance Command. Subordinated to MarRuest/K until the Speer Ministry was formed, when it became a part of the Ship Design and Construction Section of the Navy Division of that ministry. All the technicians required to put a ship through its trials were attached to this inspectorate. Took over and tested vessels when private shipyards and naval dockyards completed their construction.

Other Naval Inspectorates

There were two other naval inspectorates. One was the Naval Education and Training Inspectorate (Inspektion der Bildungswesens der Marine) with headquarters at Kiel. It administered the naval academy, naval war college, naval training stations and vessels, such specialist schools as did not properly come under the other naval inspectorates, and the Intendanturen offices, or Armed Guard Inspectorate. It procured such personnel material

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as text books and classroom supplies for students assigned to schools for which it was responsible.

The other was the Naval Armed Guard Inspectorate (Inspektion der Marine Flak Artillerie), with headquarters at Swinemünde, which had cognizance over the installation of guns on armed merchant cruisers, troop transports, supply ships, tankers, blockade runners and other armed merchant auxiliary vessels. It also administered armed guard personnel pools. It had no procurement or other logistic responsibilities.

These two inspectorates are included in this report only for the purpose of completing the picture of the naval inspectorate organization.

Offices

In addition to the inspectorates, the following offices had cognizance over the procurement, production, storage and distribution of equipment, spare parts and consumable supplies:

<u>Central Procurement Office</u> (Marine Zentral Beschaffungsamt-MZBA)	Hildesheim	Storage and distribution of and accounting for all general equipment, spare parts and consumable supplies not coming under the cognizance of the naval inspectorates or Intendanturen Offices, and required for the initial equipping, maintenance and repair of warships and auxiliary vessels. Developed Navy's requirements for these items and raw materials required in their production for submission to MarRuest/Rue Wl.
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This supply organization carried the type of equipment, material and supplies shown under the organization of the General Equipment Stores Section (GLW) and the General Consumable Stores Section (VLW) of the supply of the Main Stores Administration, Naval Dockyard, Wilhelmshaven. The history of its inception and subsequent development is contained in the chapter on Procurement, Storage and Distribution of Supply.

<u>Technical Procurement Office</u> (Technische Beschaffungsamt-TBA)	Hohenstedt	Procurement, storage, distribution and accounting for engines, auxiliary machinery and their spare parts for all ships and small craft. Developed Navy's requirements for these items and raw materials essential in their production for submission to MarRuest/Rue Wl.
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This supply organization carried the type of equipment, material and supplies shown under the organization of the Technical Equipment, Spare Parts and Consumables Section (TLV) of the Main Stores Administration, Naval Dockyard, Wilhelmshaven. The history of its inception and development is also contained in the chapter on Procurement, Storage and Distribution of Supply.

<u>Naval Supply Administrative</u> <u>(Intendanturen) Offices</u> (Marine intendanturdi- stellen)	MarWehr/C	Experiments, research and development, procurement, storage, distribution of and accounting for food and clothing. Also responsible for payments of military and civil payrolls; for the outfitting, maintenance and upkeep of all barracks and other living spaces ashore; administration of Navy garden projects and naval laundries, barber, cobbler and tailor shops. Were directly subordinated to MarWehr/C. Controlled all food and clothing stores, clothing factories and disbursing and account settlement offices. Developed Navy's requirements for clothing, provisions and barber, tailor and cobbler supplies and raw materials necessary in their manufacture for submission to MarWehr/C.
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This supply organization carried food, clothing, bedding and furniture for barracks and other quarters ashore and afloat. See chapter on Procurement, Storage and Distribution of Supply for details on its inception and development.

Naval Attache Office

Naval attache offices were maintained at Stockholm, Helsingfors, Madrid, Lisbon, Ankara, Tokyo and Buenos Aires. They are included in the logistic organization of the Navy because of the important part played by some of them in the Navy Secret Supply System.

Forces Supported

Germany's fleet came into being, flourished and died in a series of rapidly changing situations. These were the early build-up attending the 1935 British-German Naval Pact, the intensified submarine construction

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program, the large numbers of ships which were taken from defeated nations, and the final destruction of the remnants of a fleet. As a consequence of these events, the supply organization was constantly confronted with the problem of anticipating and supplying the requirements of a rapidly fluctuating force. From the standpoint of logistic support this presents an interesting problem and merits attention to the numbers and types of vessels operated throughout these periods of change. A tabulation for this purpose is included below. The figures which appear are presented to illustrate the scope of required logistic support at various stages during the war and should not be construed as representing a detailed analysis of new ship construction and ship losses suffered. Blank spaces indicate a lack of information about the period involved.

The build-up of the German navy commenced in earnest with the 1935 British-German Naval Pact, which gave the Nazis the right to build up to 35 percent of Britain's strength. The naval dockyards at Wilhelmshaven, Kiel and Emden and the private shipyards of the Deutsche Werke and Germania Werft at Kiel, Blohm and Voss at Hamburg, Deshmag at Bremen and Vulcan at Vegesack all hummed 24 hours a day turning out new battleships, battle cruisers, heavy and light cruisers, destroyers, submarines and smaller naval vessels. At the outbreak of war Germany had approximately 611 vessels in commission.

With the appointment of Gr dm Doenitz as head of the Navy in 1943, virtually all other naval construction was halted in order to concentrate all shipbuilding facilities on U-boat construction. Danish, Lowland country, French and Rumanian shipyards were all pressed to the task of assembling submarines for Doenitz's wolf packs. The supply organization was called upon to meet the needs of a fleet that was undergoing a rapid change in its composition of vessels.

When hostilities ended, Germany had 12 major surface units, only two of which were fit for combat. In addition she had 28 destroyers, 29 torpedo boats, 762 mincraft (layers, sweepers, etc.), 66 supply ships and tenders, 58 tankers, and about 1832 miscellaneous craft including auxiliaries,

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K-boats, R-boats, motor torpedo boats and small battle units (one man submarines, etc.) as well as 379 U-boats. She had lost six battleships, one uncompleted carrier, four heavy cruisers, four light cruisers, 53 destroyers and 944 submarines, a total of 1,064 major naval vessels, as well as a great number of auxiliaries such as raiders, blockade runners and prize tankers.

TYPE	1939	1940	1941	1942	1943	1944	1945
Battleships	2	3	4	3	3	2	1
Old Battleships	2	2	2	2	2	2	2
Pocket Battleships	3	2	2	2	2	2	2
Aircraft Carriers	*1	*2	*2	*2	*2	*2	*1
Heavy Cruisers	2	3	2	2	2	2	2
Light Cruisers	6	**7	**5	**5	**5	**5	4
Destroyers	38			28	36	44	28
Torpedo Boats	14			30	30	58	29
River Gunboats	6					12	10
1600T U-boats							
Supply	0				14	3	***0
Minelayers	0				6	5	***0
1200 T U-boats	0				20	26	17
750T U-boats	10				94	70	36
500T U-boats	21				279	310	304
200-300T U-boats	32				37	51	***22
Armed Merchant Cruisers	0	9	8	3	1	0	0
Minecraft	187				376	655	762
Fleet Supply Ships	4				4	2	2
Auxiliary Supply Shi	6				11	11	11
U-boat Supply Tenders	5				22	24	53
Tankers	26					63	58
Hospital Ships	0	13	13	13	10	6	5
Miscellaneous	22					12	13
Auxiliaries							
Miscellaneous	172					516	329
(other than auxiliaries)							
Motor Torpedo Boats	52					150	125
Midget Submarines	0	0	0	0			300
(Molch)							
Midget Submarines	0	0	0	0			300
(Riber)							
Midget Submarines	0	0	0	0			150
(Seehund)							
Explosive Motor Boats	0	0	0	0			300
One Man Torpedoes	0	0	0	0			300
Totals	611					3,166	

\* Launched but not completed

\*\* Includes NIOBE, former Netherlands light cruiser GELDERLAND

\*\*\* 99 additional had been prefabricated to March 1945, 66 of which were being assembled and fitted out.

\*\*\*\* 45 additional had been prefabricated to March 1945, 21 of which were being assembled and fitted out.

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Uniformed Personnel Strength

No documents have been found which segregate the personnel strength of the fleet from that of the shore establishment. The following, however, summarizes the development of uniformed manpower in the German Navy from 1939 to 1945.

<u>Date</u>	<u>Officers</u>	<u>Officials</u>	<u>Ratings</u>	<u>Total Personnel</u>
9/1/39	4,500	2,500	73,900	80,900
6/22/41	13,500	9,100	381,200	403,800
6/6/44	27,100	14,300	776,100	817,500
7/1/44	27,500	*13,300	779,400	820,200
4/1/45	***26,400	** 8,500	**653,100	**688,000

\* Many officials were commissioned as officers during this period.

\*\* Following the invasion of France (June 1944), a large number of naval personnel was drafted into the Army. This accounts for the great decrease during the period 7/1/44 - 4/1/45.

Not included in the foregoing table were about 26,000 women naval assistants (a counterpart of our WAVE corps but not uniformed), of whom approximately 300 were granted officer authority and privileges.

Summary

The organization of the Navy and those national and department of defense level agencies that affected naval logistics consisted of:

(a) Ten agencies of the National Socialist Government:

1. The Reich Cabinet
2. The Reichstag and Reichsrat
3. The Ministry of Labor
4. The Ministry of Economics
5. The Ministry of War Production and Armament (Speer Ministry)
6. The Ministry of Food and Agriculture
7. The Ministry of Transportation
8. The Ministry of Finance
9. The Reichsbank
10. The Supreme Court of Accounts

(b) Three Divisions of the High Command of the Armed Forces (OKW):

1. The Division of Military Economics and Armament (OKW/RueWi)
2. The Foreign Intelligence Division (OKW/Ausland/Abwehr)
3. The Medical Division (OKW/MA)

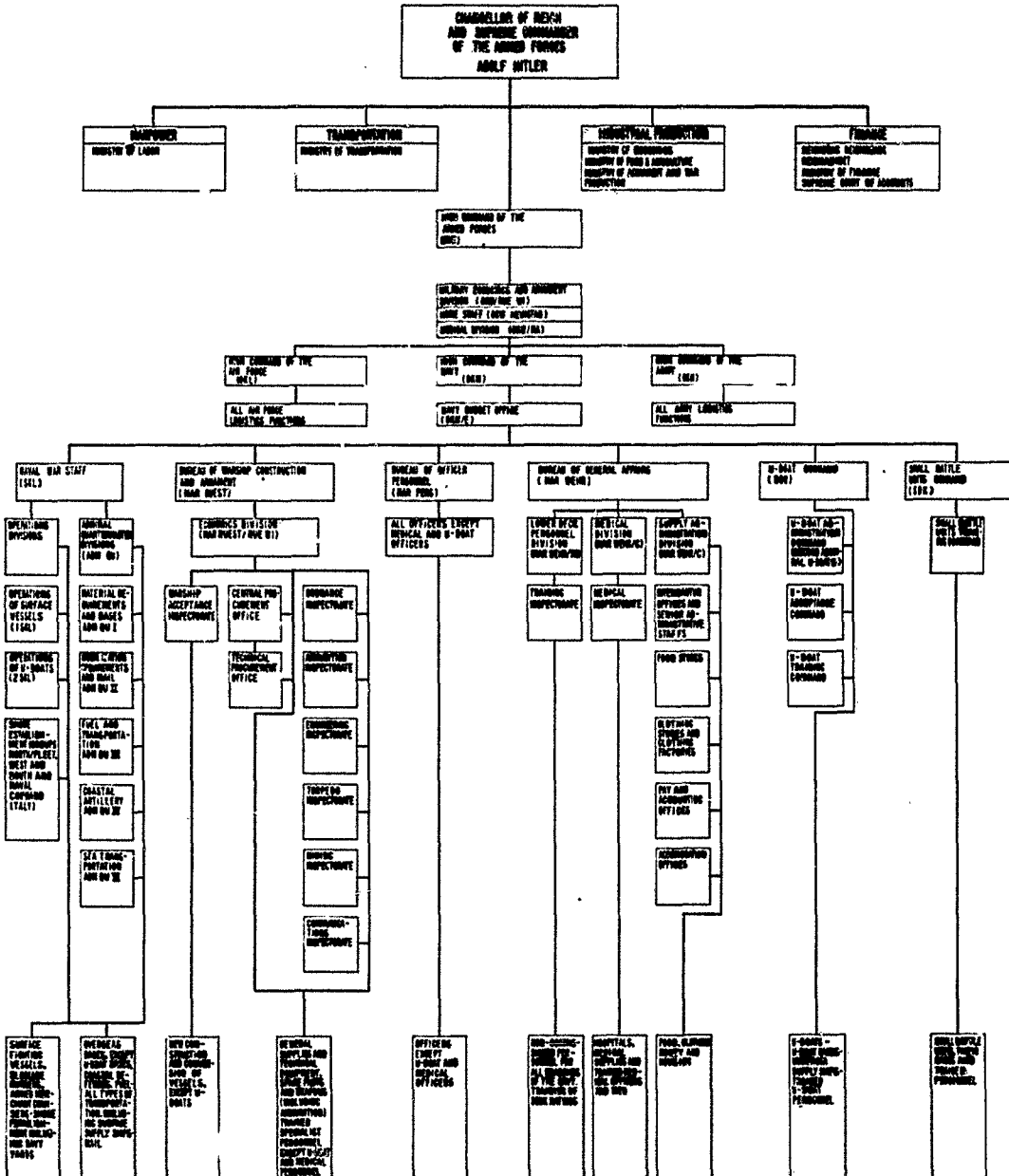
(c) The High Command of the Navy (OKM) with a Navy Budget Office (OKM/E)

(d) A Naval War Staff (SKL) and its Admiral Quartermaster Division (Adm Qu)

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- (e) Two technical Admiralty bureaus:
  - 1. The Bureau of Warship Construction and Armament (MarKuest)
  - 2. The Bureau of General Affairs (MarWehr)
- (f) The Bureau of Officer Personnel
- (g) Three logistic/operational commands:
  - 1. Group North/Fleet
  - 2. Group West
  - 3. Group South
- (h) Three independent commands:
  - 1. The U-boat Command
  - 2. The Small Battle Units Command
  - 3. Naval Command Italy
- (i) A naval shore establishment consisting of:
  - 1. Five main naval bases:
    - a. Kiel
    - b. Wilhelmshaven
    - c. Gdynia
    - d. Le Havre
    - e. Hamburg
  - 2. Five second class naval bases:
    - a. Swinemunde
    - b. Stettin
    - c. Danzig
    - d. Pillau
    - e. Koenigsburg
  - 3. Twelve third class naval bases
    - a. Emden
    - b. Heligoland
    - c. Cuxhaven
    - d. Glueckstadt
    - e. Sassnitz
    - f. Warnemunde
    - g. Rugenwalde
    - h. Stolpmunde
    - i. Kolberg
    - j. Muervik
    - k. Travemunde
    - l. Neustadt
  - 4. A U-boat Administrative Command
  - 5. Ten naval inspectorates
    - a. An Ammunition Inspectorate
    - b. An Ordnance Inspectorate
    - c. A Torpedo Inspectorate
    - d. A Mining Inspectorate
    - e. A Communication Inspectorate
    - f. A Medical Inspectorate
    - g. An Engineering Inspectorate
    - h. A Warship Acceptance Inspectorate
    - i. An Education and Training Inspectorate
    - j. An Armed Guard Inspectorate
  - 6. A Central Procurement Office
  - 7. A Technical Procurement Office
  - 8. Supply/Administrative (Intendanturen) offices consisting of:
    - a. Pay Offices
    - b. Accounting Offices
    - c. Food Stores
    - d. Clothing Stores
    - e. Clothing Factories
    - f. Accommodation Offices
  - 9. A Port Director Organisation
  - 10. A Coastal Defense Construction Organisation

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These agencies of the National Socialist Government, High Command of the Armed Forces and the Navy were tied together to logistically support the naval establishment as shown on the chart appearing opposite this text. The system followed was:

The ten agencies of the National Socialist Government controlled and allocated the basic logistic elements, namely, money, raw materials, finished products, plant production facilities, labor and transportation,

These elements, with the exception of money, were made available to the Navy through the High Command of the Armed Forces, where OKW/Rue Wi and OKW/Heimstab apportioned them to the individual services on the basis of over-all requirements. (See chapter on Procurement for detailed procedures.) OKW/Ausl Abw was responsible for the activities of the Secret Supply Service and its support of armed merchant cruisers and blockade runners. (See chapter on Secret Supply Service.)

Money was made available to the Navy by the Ministry of Finance, later by the Reichsbank, in accordance with the directives of the Reichstag and Reichsrat or Reich Cabinet. The Navy Budget Office (OKM/E) distributed and administered such funds for CinC Navy. The Supreme Court of Accounts finally audited their expenditures. (See chapter on Finance)

The Naval War Staff (SKL), in its operational planning, determined the Navy's needs for ships, bases and naval shore defenses. The Admiral Quartermaster Division of the Naval War Staff (Adm Qu) planned the material and personnel requirements for these operations and notified the cognizant bureaus of such needs.

The Admiral Quartermaster also managed all fuel and transportation, obtaining allocations thereof from OKW/Rue Wi and OKW/Heimstab respectively. (See chapters on Fuel and Transportation for details.)

Adm Qu was charged with the scheduling, dispatch and rendezvous of all logistic support vessels with ships at sea (see chapter on Distribution of Supply for details), including blockade runners and armed merchant cruisers, and, for a part of the war, all transportation via merchant marine vessels. (See chapter on Transportation.)

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The Bureau of Warship Construction and Repair (MarRuest) supervised the production of all ships, weapons, spare parts and the consumables necessary to operate and service them. Assisting this bureau as field activities on an operating level were seven naval inspectorates, a Central Procurement Office and a Technical Procurement Office. (See chapters on Procurement, Storage and Distribution of Supply for details.)

The Bureau of General Affairs (MarWehr) supervised the conscription, training and detail of non-commissioned personnel and supplied them with housing, food, clothing, medical treatment and money. The Naval Education and Training Inspectorate, Intendanturen offices and Naval Medical Inspectorate, acting as field activities of this bureau, performed these functions.

The Bureau of Officer Personnel (MarPers) procured, trained and detailed officers.

Three logistic/operational commands controlled the operations of the fleet and shore establishment. One of these, Group North/Fleet, controlled all bases and other logistic facilities in Germany, Norway, Denmark and the Baltic States as well as fleet operations in those areas and in the North Sea. Group West controlled the bases and other logistic facilities in the Lowland countries and France and fleet operations in the Atlantic. Group South controlled the shore establishment in the Balkans, Greece and Crimea and fleet operations in the Black, Adriatic and Aegean Seas.

The U-boat and Small Battle Unit commands and Naval Command Italy were separate organizations and retained independence of action.

The Naval War Staff (NWL) and the Admiral Quartermaster Division (Adm Qu) determined what was needed, where it was needed and when it was needed.

The naval inspectorates, Central and Technical Procurement Offices and supply/administrative (Intendanturen) offices made the equipment, material and consumables available. MarWehr/Tr and MarPers, through the Second Admirals of the Logistic/Operational Commands, made the personnel available.

The Fuel and Transportation Section of the Admiral Quartermaster Division (Adm Qu III), through its logistic support departments dispatched



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the supplies to forces afloat or in occupied countries. It also arranged for rail, air and inland waterway transportation where necessary. It scheduled the arrival of its supply ships, tankers, rail car, airplane or barge to arrive at the point of requirement when the tactical or other commander needed the supplies.

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CHAPTER II - SUPPLY OFFICERS AND OFFICIALS

A list of the line and various staff corps of the Navy, showing titles and comparative ranks of officials, appears opposite this text. In this list are three corps of officers and one corps of officials who performed supply, accounting, disbursing and logistic support duties. They were:

(a) The Verwaltungs Offizier Korps (Supply Officer Corps)

These officers, after 1935, were regularly commissioned graduates of the naval academy. They wore gold stripes on the sleeves of their uniform coats with a letter "V" (Verwaltung) with a bar below it as their corps insignia. They went to sea in naval vessels as supply and disbursing officers and, while on such duty, were responsible for the disbursement of funds, operation of the general mess, procurement and issuance of clothing and small stores, and the requisitioning and accounting for all general and technical equipment and supplies for the ship.

When ordered ashore, they were integrated into the Intendantur Korps (composed of officials), where they performed accounting, disbursing, commissary and clothing duties and those connected with the equipment of barracks and other quarters for naval personnel.

(b) The Intendantur Korps (Supply Officials Corps)

This corps of officials was divided into two groups, namely:

- (1) The Intendantur group (Most of the members of this group were commissioned in the Sonder Officer Korps in 1944.)
- (2) The Dockyard Intendantur group (Members of this group were not commissioned in the Sonder Offizier Korps.)

These were divided into four levels, viz:

- (a) The Senior Service (applicants required graduate study)
- (b) The Raised Service (applicants required a college degree)

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OFFICERS

Corresponding U.S. Navy Rank	Seeoffizieren (Line Officers)	Waffen Offizierien Korps (Ordnance Officer Corps) (a) Gunnery (b) Mining	Torpedo Offizierien Korps (Torpedo Officer Corps)	Marineartillerie- Offizierien Korps (Naval Coastal Artillery Offi- cers Corps)	Verwaltungs- Offizierien Korps (Reg- ular Supply Officers Corps)	Sonder Offizier Korps (Special Supply Offi- cers Corps)	Nachricht- Offizier (Comm. Office)
Fleet Admiral	Gross Admiral (5 stars)	-	-	-	-	-	
One	General Admiral (4 stars)	-	-	-	-	-	
Admiral	Admiral (4 stars)	-	-	-	-	Admiraloberstabs- intendant	
Vice Admiral	Vize Admiral (3 star)	-	-	-	-	Admiralstabs- intendant	
Rear Admiral	Konter Admiral (2 stars)	X	-	-	X	Admiralintendant	
Commodore	Kommodore (4 stripes)	-	-	-	-	-	
Captain	Kapitaen zur See (4 stripes)	X	-	-	X	Flottenintendant	
Commander	Fregatten-Kapitaen (4 stripes)	X	-	-	X	Geschwaderintendant	
Lieutenant Commander	Korvetten-Kapitaen (3 stripes)	X	X	X	X	Marineoberstabs- intendant	
Lieutenant	Kapitaenleutnant (2½ stripes)	X	X	X	X	Marinestabs- intendant	
Lieutenant Junior grade)	Oberleutnant (2 stripes)	X	X	X	X	Marineober- zahlmeister	
Ensign	Leutnant zur See (1 stripe)	X	X	X	X	Marinezahl- meister	

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# RANKS OF NAVAL OFFICERS AND THEIR EQUIVALENT IN THE RANKS OF OFFICIALS

<u>v. Offizier Korps</u> ial Supply Offi- Corps)	<u>Nachrichtenwesen</u> <u>Offizieren Korps</u> (Communication Officers Corps)	<u>Sanitätsoffiziere</u> <u>Korps</u> (Medical Corps)	<u>Musikmeister-</u> <u>offiziere Korps</u> (Bandmasters Corps)	<u>Baubeamte Korps</u> <u>Constructions</u> (Construction Officials Corps)	<u>Justizbeamte Korps</u> (Legal Officials Corps)	<u>Intendant</u> (Supply Corps)
-	-	-	-	-	-	-
-	-	-	-	-	-	-
aloberstabs- dant	-	admiraloberstabsarz	-	-	-	-
alstabs- dant	-	Admiralstabsarzt	-	Ministerialdirektor <sup>1</sup>	Admiralstakrichter <sup>1</sup>	Minister
alintendant	-	Admiralarzt	-	Ministerialdirigent <sup>1</sup>	Admiralrichter <sup>1</sup>	Minister
-	-	-	-	-	-	-
enintendant	-	Flottenarzt	-	Ministerialbaurat <sup>1</sup>	Flottenrichter <sup>1</sup>	Minister
hwaderintendant	-	Geschwaderarzt	Obermusikins- pizient	Oberregierungsbaaurat <sup>1</sup> Marinoberstabsingenieur <sup>2</sup>	Geschwaderrichter <sup>1</sup>	Oberregi
neoberstabs- dant	X	Oberstabsarzt	Musikinspient	Regierungsbaurat <sup>1</sup> Marinestabsingenieur <sup>2</sup>	Oberstabsrichter <sup>1</sup> Justigamtsman <sup>2</sup>	Regierung Amtsrat <sup>2</sup>
nestabs- ndent	X	Stabsarzt	Stabsmusikmeister	Regierungsbaumeister <sup>1</sup> Marineoberingenieur <sup>2</sup>	Stabsrichter <sup>1</sup> Justizoberinspektor <sup>2</sup>	Regierung Marineob
neober- meister	X	Oberassistaen- zarzr	Obermusikmeister	Marinebaufuhrer <sup>1</sup> Marineinzenieur <sup>2</sup>	Justizinspektor <sup>2</sup>	Marine ob
nezahl- ter	X	Assistenzarzt	Musikmeister	Marineingenieurwaerter <sup>2</sup>	Justizinspektoran- waerter <sup>2</sup>	Marinese

Footnotes  
1 officials of senior service  
2 officials of middle service  
X indicates ranks allowed in the corps

B

OFFICIALS

<u>Justizbeamte Korps</u> (Legal Officials Corps)	<u>Intendantur Korps</u> (Supply Officials Corps)	<u>Apotheker beamte Korps</u> (Naval Phar- macist Corps)	<u>Fachschullehrer Beamte Korps</u> (Schoolmaster Corps)	<u>Waffen Beamte Korps (Ord- nance Offi- cials Corps)</u>	<u>Zahnarzt Beamte Korps</u> (Dental Corps)	<u>Meteorologists Korps</u>
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
Admiralstakrichter <sup>1</sup>	Ministerialdirektor <sup>1</sup>	-	-	-	-	-
Admiralrichter <sup>1</sup>	Ministerialdirigent <sup>1</sup>	-	-	-	-	-
-	-	-	-	-	-	-
Flottenrichter <sup>1</sup>	Ministerialrat <sup>1</sup>	-	Oberstudien- direktor <sup>1</sup>	-	-	-
Geschwaderrichter <sup>1</sup>	Oberregierungsrat <sup>1</sup>	-	Oberstudien- rat	-	-	Oberregierungsrat <sup>1</sup>
Oberstabsrichter <sup>1</sup> Justizamtsman <sup>2</sup>	Regierungsrat <sup>1</sup> Amtsrat <sup>2</sup>	-	Studienrat <sup>1</sup> (over 10 yrs service) Fachschuldirektor <sup>2</sup>	-	Oberstabs- zahnartz	Regierungsrat <sup>1</sup>
Stabsrichter <sup>1</sup> Justizoberinspektor <sup>2</sup>	Regierungsassessor <sup>1</sup> Marineoberinspektor <sup>2</sup>	Oberstabs- apotheker	Studienrat <sup>1</sup> Oberfachschul- lehrer	-	Stabszahn- artz	Assessor <sup>1</sup> Oberinspektor <sup>2</sup>
Justizinspektor <sup>2</sup>	Marineobersekretär <sup>2</sup>	Stabsapotheker	Fachschullehrer	Ober- meister	-	Referendar <sup>1</sup> Inspektor <sup>2</sup>
Justizinspektoran- wärter <sup>2</sup>	Marinesekretär <sup>2</sup>	-	-	Waffen- meister	ter <sup>2</sup>	Sekretär <sup>2</sup>

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- (c) The Middle Service (applicants required secondary school education)
- (d) The Lower Service (requirements are unknown)

Members of the Raised and Senior Services of the Dockyard Group of this corps were recruited direct from civil life. Those of the Senior Service were required to be practising judges. Those of the Raised Service were required to hold a law degree. Members of the Raised and Senior Service of the Intendantur Group were, in some instances, members of the old Zahlmeister (Paymaster) Corps who had remained officials when the Verwaltungs Offizier Corps was established. Members of the Middle Service of both groups were recruited from civil sources. Some of them had completed their term of service in one of the armed forces or reserve units and, while in that service, had shown a particular aptitude for supply management work. They were required to have a secondary school education or its equivalent. Members of the Lower Service were stockmen and other lower level workers, and were not considered as officials.

Members of the Intendantur Corps wore the same uniform as officers. Their corps insignia was a winged staff of Hermes (similar to a Caduceus). Markings and insignia on their uniforms, however, were made of a silver-colored material instead of gold. Because of this, they were known as "Silberlings".

(c) Sonder Offizier Corps (Special Service Supply Officer Corps)

These officers performed the same duties as members of the Supply Officer Corps and those formerly performed by the Intendantur Corps (clothing, provisions, pay and allowances and accounting). They wore the same uniform as other officers, with gold lace and a corps insignia which was identical to that of the Intendantur Corps, a winged staff of Hermes.

They were former Intendantur Officials transferred to officer rank when the Sonder Offizier Corps was established on 1 May 1944. These officers had no experience in supply/dispersing duties afloat, and served ashore only.

(d) The Ingenieur Offizier Corps (Engineer Officer Corps)

These officers were regularly commissioned academy graduates. They wore gold stripes on the sleeves of their uniform coats, with a pinion wheel as a corps insignia. A part of this corps was assigned the responsibility

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for procurement, storage, distribution and accounting for fuel (of all types). Their duties in connection with supply and logistic matters were limited to the period during which they were assigned to the Fuel and Transportation Section, Admiral Quartermaster Division, Naval War Staff (AdmQ: III) or to a logistic support department. In all other assignments, they performed regular engineering duties only.

THE SUPPLY OFFICER CORPS

History

The Supply Officer Corps of the German Navy dates back to 1867, when the Navy, known at that time as the Royal Prussian Navy was first established. (The Imperial German Navy, successor to the Royal Prussian Navy was created in 1871, after Bismarck had formed the German Empire.)

This corps was originally known as the Marine Zahlmeister Korps (Naval Paymaster Corps). Its members were officials - not officers. It continued under that name and its members remained officials until 1935, when it was transformed into the Verwaltungs Offizier Korps (Supply Officers Corps) and its members commissioned the same as other officers.

Before Germany's defeat in World War I, naval paymasters were educated and trained separately from line officers. So were engineering officers. When the new Navy was formed in 1919, the necessity for a common education of all naval officers was recognized. A pilot run of a few paymaster midshipmen through the naval academy was made about 1923, even though they were being trained to become officials and not officers. Thereafter, a few were entered in each class. Replacements for the Paymaster Corps, however, continued to be procured mainly from supply department ratings until about 1933. All paymasters were required to graduate from the naval academy from that time on, although some of the paymaster midshipmen were not recruited direct from civil life, but were ex-supply department ratings who had demonstrated special aptitude for that type of work.

This joint basic military training of the line and paymaster midshipmen during the first part of their careers, followed by a specialized train-

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ing for the paymaster midshipmen served to promote a mutual understanding between young officers, and proved extraordinarily effective, even though their employment and promotion proceeded along entirely different lines.

Until this transition, however, it appears, from conversations held with many officers and officials, that with few exceptions, the background of the paymaster appointed prior to 1933 was such that he was unable to grasp many of the new supply procedures being introduced into the Navy. As in many organizations, the tree died from the top only and it was not until the middle part of World War II that the deadwood of the old Marine Zahlmeister Korps was eliminated by retirement and other means and the academy-educated paymasters reached positions of authority where their influence could be exercised. This, it was said, was one of the basic reasons for the limited scope of the duties of paymasters.

Procurement

In the Navy's officer candidate procurement program, there was an annual competition each year in Germany among youths between the ages of 18 and 20. Successful candidates were apportioned among the schools for Line, Pay, Engineering and Medical Corps according to the needs of the service and individual aptitudes. Civilian applicants were required to have graduated from the equivalent of American high schools and also to have completed two years of undergraduate college work. Those from the Navy had to be chief petty officers. Entrance requirements included a certificate of examination showing proficiency in second year college subjects. Applicants from civil life had to be between 17 and 20 years of age. This requirement was waived in the case of naval personnel. All had to have a good knowledge of modern languages. The number selected annually was a very small percentage of the number of applicants.

Training

When young men first reported for training as midshipmen, they were known as "aspirants". They reported to the Naval Academy at Mürwik, near Flensburg on the Danish border. In spite of the need for officers during the expansion of the German Navy between 1933 and 1939, there was no relaxation of standards. For the first five and one-half months, these can-



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didates were "aspirants" only. They had no position whatsoever and they were constantly reminded of this fact.

During the first 10 weeks of their training, they lived together in barracks, doing squad drill, scrubbing decks, etc. Their treatment and work was about the same as that of any newly conscripted recruit. When this phase of training was completed, the branches were divided. Line aspirants were sent to sea for three months' training in the sailing ships. Medical and engineering aspirants were sent to shore establishments. Paymaster aspirants were sent to the administrative offices and storerooms of the Intendantur Korps on shore, where they performed all sorts of tasks, including the rough work. However, they were not allowed to do it with kid gloves. They were treated as sailors. The object of such training program was to train them physically and at the same time allow their officers to get a clear idea of their general behavior and reactions in emergencies. They did not go to these new duty stations as a large group, but as individuals in small groups. They remained with each specialty long enough to gain a thorough understanding of its importance and functions as part of the whole.

It was not until this five and one-half month preliminary training was completed and their reports on the "aspirants" had been sent to the Admiralty in Berlin that they were given the rank of cadet. They then were sent to sea in training vessels and again merged with the line, engineering, and medical cadets.

As in all other phases of their training, there was nothing gentle about their lives in the training ships. They performed the work of seamen. While they were on board these ships they were actually given lower deck ratings, so that there would be no lack of understanding of a seaman's life and the conditions under which he lived. It was the poor living conditions of the German sailor which led to the mutinies in the Fleet in 1918 and to the Revolutions, and senior naval authorities had no intention of forgetting them or permitting a potential officer to form any misconceptions regarding them.

Paymaster cadets had been in the service about 13 months when they passed out of the training ship and, provided they passed a long and stiff

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examination, were promoted to midshipmen. Their lineal positions in the Navy were fixed at that time and they received their sleeve marking, the winged staff of Hermes, designating them as belonging to the Paymaster Corps. They then returned to the Naval Academy, where all midshipmen were mixed in their studies, places at the mess table, dormitories and everywhere else (except in the lecture halls and classrooms, where they naturally followed their own work), in order to ensure that they knew one another intimately. The training program continued to be tremendously hard. To ensure that they did not lose sight of the fact that the Navy came first in their lives, they were given no Christmas holidays or other breaks in the training routine of the academy. It was tough, but developed a muscle-hardened, serious-minded midshipman.

The curriculum for Paymaster midshipmen at the Naval Academy consisted of:

<u>Subject</u>	<u>Hours per week</u>
Administration and supply	7
Economics	4
Money, banking and foreign exchange	3
Law	4
Stenography and typewriting	2
The Naval Services and Regulations	2
Naval history	1
Foreign languages (mostly English)	8
Study periods	6
Watch duties within companies	5
Athletics	4
Horseback riding	1
	<hr/> 46

This phase of their training was seven months long. They had been in the Navy one year and eight months when it ended. They stood their first examination, after which they were sent to naval commissary departments, commercial packing houses, bakeries, clothing factories and other similar institutions on shore for a further four months' period of training. After that they stood a second examination. They were then distributed among the ships of the fleet as midshipmen for thirty months' intensive training in supply techniques.

All work aboard ship was not practical. Various papers, compositions, and reports were written, some in foreign languages, and individual log books were kept. Practical exercises in all shipboard supply activities, including accounting for and purchasing of supplies in foreign ports, were supplemented with reading and instruction courses. At the end of this final phase of train-

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ing (four and one-half years after entering the Navy), the fortunate received their commissions as Lieutenants sur Mer (Ensign). All of them did not make the grade, however, because of the custom in the Navy, inherited from old Imperial Navy days, which required election by officers with whom the midshipman had been serving. If his superiors were not satisfied with his behavior or qualities, and provided the Admiralty agreed with their verdict, he was debarred from the Navy.

The New Verwaltungs Korps

After the new Supply Officer Corps was formed, in 1935, its officers had the same privileges as those afforded line officers. This was not true in the Army and Air Force. Those branches of the armed forces retained the paymaster of the old type, the one usually promoted from non-commissioned ranks. Within the Navy, however, the supply officer was the military superior of his own department personnel and had the same personal disciplinary rights toward younger officers as any other officer although no general disciplinary powers were vested in him. On board small ships, this power rested with the captain; on larger ships with the second in command. The V with a bar below it replaced the winged staff of Hermes as the new corps insignia.

Unlike line officers, supply officers were not permitted to specialize. A supply officer had to be experienced in all phases of commissary, disbursing, clothing, and shipboard accounting procedures.

After 1933, all supply officers, both regular and limited service officers were graduates of the naval academy. No appointments were made direct to the supply officer corps from civil life. Men experienced in banking or other business, which would normally fit them for supply, accounting and disbursing duties, had to enter the Navy as lower deck ratings and stand selection for the naval academy if they wanted to become supply officers. Some civilians were directly commissioned as reserve line officers, but the Supply Officer Corps clung to its prewar policy of giving its officers a background in common with that of the regular line officer.

When asked how successful this program had been, Rada Schaubert stated:

"The training of supply officers, especially that of the younger ones, was very good, and the Verwaltungs Offizier Korps was highly efficient during the war.

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This was solely due to the fact that they underwent most of their training at sea.

"In the post-World War I Navy, supply department chief petty officers, who had proved successful and were well qualified, now and again were taken into the Zahlmeister Corps. During World War II, this happened more frequently, but not unless a man had undergone officer cadet training. These men, however, were only commissioned for the duration of the war. With exceptions, the former method proved a success. The latter did not, but here too there were exceptions.

"In peacetime, the selection of paymaster cadets from supply department ratings took place only after four and one-half years' service in the Navy. However, after 1936, and particularly during the war, everything was stepped up because of the great demand for subordinate commanders. Gradually the quality of the young non-commissioned officer corps (chief petty officers and petty officers first class) deteriorated. In peacetime, promotion to chief petty officer had taken place only after 6 years' service in the Navy at the earliest. Many candidates, with difficult special training, had to participate in chief petty officer expert courses, lasting one to two years or even longer.

"This thoroughness was also applied to the field of military training and proved highly efficient. The expedited training that took place later led to trouble. The education of those who were to become military superiors suffered from the haste under which training went on during the war. This resulted in difficulties to which the German armed forces were particularly susceptible, because non-commissioned officers could exercise their authority as military superiors even when off-duty."

The evolution of the German Naval Paymaster Corps was somewhat similar to that of the U.S. Naval Pay Corps, which later became our Supply Corps. Both were founded in the 1860s. Both obtained some of their personnel from the enlisted and warrant ranks. Both appreciated the desirability, and inaugurated a system, of giving its officers a naval academy background in common with that of general service officers, although our Navy did not pursue this policy to the same extent that the Germans did. Our Supply corps, from its inception, was engaged in a wider field of professional employment.

Logistics was not recognized by most navies as a facet of naval science until World War II. The German line officer performed a type of supply planning, closely resembling the American Navy's early attempts in this

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phase of logistics planning. The lack of opportunity for supply officers to take any part in it, however, was disheartening to those senior members of the Supply Officer Corps who were interviewed. Thinking undoubtedly in terms of modern concepts of logistics, they pointed out that while this type of planning is a command function and as such properly comes under the supervision of line officers, they were willing and anxious to assume more responsibility in planning the supply phases of operations, despite the contention of Intendantur officials that they were extremely limited in their capabilities. Although members of the U. S. Navy Supply Corps, in isolated cases, took part in this kind of planning during the early part of the World War II, it was not until the end of the war and the adoption of the Integrated Naval Supply Plan that that corps was able to make a coordinated effort to assist in this work.

Aside from its professional competence, the Supply Officer Corps was very highly respected throughout the German Navy, because during the naval mutiny in November 1918, the Marine Zahlmeister Corps sided with the line officers against the mutineers. RAdm Schubert said that they were "very true, very loyal, very reliable" and that the Navy was not so sure about the other staff corps.

Supply officers interviewed appeared to be very efficient, very alert and very intelligent, men with whom officers of our Navy could easily and pleasantly conduct business.

Supply Warrant Officers

There were no pay clerks or chief pay clerks in the Navy. The warrant officer corps was abolished in 1920, because, as RAdm Boening explained, "They were disloyal during the 1918 mutiny. They joined the sailors. For that reason, they never came back."

Other Non-Commissioned Personnel

In an attempt to reduce supply department personnel costs to a minimum, only supervisory storekeepers were rated as petty officers. All other storeroom personnel were seamen strikers. Supervisory storekeepers (petty officers known as Verwaltern), were assigned groups of storerooms. In the SCHARNHORST,

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according to RAdm Schubert, there were 20 storerooms. These were divided into four or five groups. The system of rating only thoroughly trained personnel, in this instance, eliminated about 15 petty officers, and saved the difference of approximately 750 reichsmarks per month in salaries. This system was followed, apparently, with all supply non-commissioned personnel, e.g., in the galley, bakeshop, pay office, etc.

In peacetime, a man had to serve at least 6 years in the Navy before becoming eligible for advancement to petty officer. He then had to attend a petty officer school before being rated.

Records, details, fitness reports and promotions

A personal data file was maintained for each officer. This provided details such as date of birth, next of kin, training, etc., and was kept up-to-date as regards all service performed (tour of duty in particular assignment, special courses completed, promotions, service ashore and afloat, service in the tropics, physical disabilities incurred in the line of duty, decorations received, etc.). One copy of this questionnaire was retained at the officer's duty station; one was kept in the Officer Personnel Section of the group command to which he was assigned; and one remained in the Bureau of Officer Personnel (MarPers).

Assignments of officers were made by MarPers annually. A senior supply officer, usually a captain, acted as detail officer for supply officers. As a preliminary step, MarPers advised the group and fleet commands of its intentions and plans and requested recommendations. Assignment of staff (ICdr, Cdr and Capt) and flag officers were made by MarPers without the benefit of such recommendations. During peacetime, a conference was held at MarPers in August of each year, at which the proposed changes in assignments were discussed. This conference was attended by the heads of the Officer Personnel Sections of Group Commands Baltic and North Sea and a representative CinC Fleet. Any special wishes and recommendations of these commands were made known at that time. All changes in assignments decided upon during this conference were then communicated to the group commanders and CinC Fleet. Divergent views were ironed out or referred to CinC Navy for decision.

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Finally, the Chief of MarPers transmitted the proposed changes in assignment to CinC Navy for approval.

Adm Patzig, Chief of MarPers from 1937-1942, was interviewed at the end of the war. Among other things, he said:

"The most fundamental rule is to recognize the aptitude and competence of younger officers very early in their careers and, through proper assignment, enable them to further their training and knowledge in preparation for more important assignments.

"In the assignment of officers to specialist duties, attention should be given to the fact that they do not lose contact with the operational navy, for their specialties will then serve their own purpose. In the field of technical development, the danger exists that experts become indispensable and thereby become dissociated from the over-all scope of their naval duties. I take the standpoint that the chief of a technical bureau or division in the Admiralty need not necessarily be a specialist; that he should have acquired wide experience in the operational navy. He will then be better able, without having had his vision narrowed, to give instructions to his collaborators in their special fields and, in matters requiring decision, be able to afford more consideration to the essential, less complicated matters.

"In the assignment of officers to ranking posts, I consider it vital that, besides ability, an officer should possess personality and character. Any lack of knowledge in the theoretical scientific field can be offset by the assignment of advisers or staff officers to his command. However, in difficult situations requiring the recognition and assumption of responsibility, this can only result if an officer is possessed of strong, reliable character. Even an excellent staff cannot make up for any deficiency in this respect."

The intelligence officer who interviewed Adm Patzig interpreted the last paragraph as referring especially to GrAdms Reider and Doenitz, because he felt it was their duty to take the lead in discouraging Hitler in his war-making policies which took the Navy into war before it was capable of waging it. This observation is included only as a matter of general interest.

VAdm Machens was interrogated about the system of assigning officers on a personality basis. He said:

"We knew not only the younger supply officers but also the commandants of the shore stations and the captains of the ships. All details were made in MarPers on this basis. Every attempt was made to separate personalities which would clash. If a captain was very strict, a perfectionist, we would detail a supply officer he liked to his ship."

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Fitness reports were prepared for junior officers biennially, and once every year for officers of the rank of LCDR and above, by the Officer Personnel Section of the group command to which they were attached. In addition, fitness reports were required to be prepared each time an officer was transferred. These reports covered details on performance of duty, efficiency, character, aptitude, qualifications for special duties, whether qualified for promotion and, in the case of senior staff officers, their competence to hold command. They were forwarded to MarPers via official channels. All commands through which the reports passed were required to take action thereon (concur, disapprove, etc.) and, where appropriate, add additional comments.

After the fitness reports had been acted upon by the chief of MarPers they were transmitted to CINC Navy, who in turn either approved the reports or entered supplementary remarks. Officers directly responsible to CINC (chiefs of bureaus and technical divisions, CINC Fleet, group commander, etc.) were reported upon by CINC Navy himself.

Fitness reports were prepared in triplicate. One copy was attached to the officer's jacket which accompanied him on every change of station. Supplementary remarks and comments therein were made by the command to which he was attached. The second copy was retained by MarPers, and the third copy was kept by the group command to which he was administratively attached.

Promotions during peacetime usually depended on whether the naval budget permitted them; however, the following shows the average time spent in rank:

Midshipmen	4½ years
Ensign to Lieutenant (jg)	3 "
Lieutenant (jg) to Lieutenant	5-6 "
Lieutenant to Lieutenant Commander	5-6 "
Lieutenant Commander to Commander	5-6 "
Commander to Captain	2-3 "
Captain to Rear Admiral	4-5 "
Rear Admiral upwards: Contingent upon needs and qualifications.	

Supply officers, with the sole exception of RADM August Boening, were not promoted above the rank of captain. Promotions were based on the running mate system. Commanders and above were selected. If an officer failed of selection, he was not forced into retirement. He was often assigned a running mate in the next junior naval academy class and retained, although



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he had failed of selection two or three times. RAdm Boening explained the method employed, when he said:

"It depended on why the man was not promoted. Perhaps he had done something wrong. Maybe he had been drunk. Then he had to wait a year or less. If he was inefficient, he would never be promoted. During the war we would keep them on duty, but in peacetime we usually turned them out of the service. There was no system to it. Sometimes they were able to perform service as a LCDR, but were not suitable for higher rank. In such cases they might stay on in the Navy for several years, depending on how long they had to serve to be eligible for a pension. We always considered such conditions. In most cases, we weeded out the unfit while they were cadets and midshipmen."

No professional examinations were required for promotion; the recommendations of an officer's superiors were the basic consideration. Decision regarding actual promotion rested with CinC Navy. His action was based on the recommendation of the chief of MarPers, whose recommendation was based on all available reports regarding officer concerned and his own personal knowledge of him.

Promotions out of the ordinary (spot promotions) were not normally made. There were a few exceptions to this policy during the war. Adm Patsig's point of view on this subject was as follows:

"I am of opinion that every promotion out of the ordinary, or the reservation of a promotion for a certain officer, is false. Through such a policy, ambition becomes a disease and promotions made out of the ordinary are made at the expense of the officer's colleagues. This also happens when for reasons of special consideration or particular qualifications an officer is placed in an assignment which is intended for higher rank. His qualifications to take over and fill a higher post are therefore not dependent on his rank but on his personality.

"The manner of fulfillment of duties in any assignment is not due to the rank held by an officer but attributable to his own qualifications and efficiency. A military rank is merely the means of giving expression to legal functions and the basis for an officer's personal existence (pay and allowances). Should an assignment be one which provides for higher pay and allowances, i.e., higher rank, then any officer assigned to such a position should draw the corresponding emoluments. No officer should ever be promoted to a higher rank simply to enable him to draw more pay, otherwise materialism would triumph at the expense of ideals."

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The results of this policy were noted in many instances in studying the organization of the Admiralty. A rear admiral would be assigned as the head of one division. The head of another would be a commander. Several admirals and officials were asked why all divisions or sub-divisions, as appropriate, were not headed by officers of comparable rank. They stated that such assignments were made on the basis of ability. One instance of such an assignment in the Supply Corps is that of Marineoberverftinspektor (official with the rank of lieutenant) zur Muehlen as the supply officer of a major supply center in Norway, a job filled in Italy and in the Balkans by officials with the rank of captain.

Retirement

Retirement of officers was not fixed by law. It was not an officer's privilege to remain in the Navy, barring physical disability and non-selection, until he reached a certain age. Generally, a line officer became a rear admiral at the age of 48-50 years. Two or three years after donning his stars, he would be told: "We have no further use for you," and he would be retired. In most cases, officers were retired earlier. When Karl Doenitz became CinC Navy, all officers senior to him were forced out of the service. VADM Machens explained: "No one could be senior to the Commander in Chief of the Navy."

Retirement pensions depended upon assignments, ranks held, and length of service. All wartime and foreign service counted double for retirement purposes. The first condition was that an officer should have ten years' commissioned service. That gave him 35 percent of his pay in the rank in which he retired. Every year's service after that, for the next 15 years, earned him a credit of two percent. After 25 years, he earned an additional one percent for each year's service. He could accumulate 75 percent of his pay as a pension, but he had to serve 35 years in the Navy to get it.

Personnel Strength

The Supply Officer Corps was small before World War II. In 1930, it consisted of:

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<u>Rank</u>	<u>Appointed</u>
2 Commanders	1889-1890
22 Lieutenant Commanders	1892-1902
48 Lieutenants	1902-1917
0 Lieutenant (jg)	
7 Ensigns	1923-1925

In 1937, the corps consisted of 120 officers and 80 midshipmen and cadets, broken down as follows:

<u>Rank</u>	<u>Appointed</u>
2 Captains	After 38-40 years service
8 Commanders	After 35-37 years service
37 Lieutenant Commanders	After 20-34 years service
39 Senior Lieutenants	After 9-19 years service
17 Junior Lieutenants	After 5-6 years service
17 Ensigns	After 4 1/2 years training
43 Midshipmen	After 13 months training
37 Cadets	

In 1939, the officer strength of the Supply Officer Corps was 275. During the war, this figure increased monthly. In April 1944, the corps had approximately 1600 members.

The strength of the corps was based on a ratio of one supply to about 15-20 other officers in the Navy. There were 20,700 supply department male ratings who worked directly under supply officers during the war. Approximately 26,000 marine helperinnen (women naval assistants) also came under the supervision of naval supply officers and supply officials ashore during this period. The Navy had no auxiliary corps such as that of our Waves. These women were civil employees.

THE INTENDANTUR KORPS

History

The Intendantur Korps was founded shortly before World War I, in an attempt to infuse new blood into the slow-moving, regulation-observing, hide-bound old Zahlmeister Korps. Graßm von Tirpitz, an official said, was responsible for its organization and was considered the "Grandfather of all Intendanturen." The corps had proved the soundness of his judgement in this respect during World War I and, when the naval clauses of the Versailles Treaty became effective, 50 percent of the supply officials allowed for the new Navy were appointed from the Intendantur Corps.

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The organization of a new navy, i.e., the reduction of the shore establishment and fleet from that of a first-class to a fourth-class power, afforded this new corps an opportunity to establish an entirely new system of supply. All the faults of the old one were reviewed and, where incompatible with the interests of the new navy, abolished. New qualifications for candidates for the Intendantur Corps were also formulated.

One of the first steps taken in reorganization was to separate responsibility for money, food, clothing and housekeeping items from general and technical stores. This was somewhat in keeping with a system employed ashore in the British Navy during World War II, wherein a Victualling Stores official handled all matters pertaining to food, clothing, bedding and household items and a Naval Stores official handled all general and technical stores. This division of responsibility called for the creation of two groups within the same corps, namely:

- |                            |  |
|----------------------------|--|
| Intendantur Group          | Responsible for pay, allowances, disbursements, financial accounting, and the procurement, storage, distribution of and accounting for clothing, provisions, bedding and cabin gear, table linen, mess and galley gear, etc. These functions came under the administrative cognizance of MarWehr/C.  |
| Dockyard Intendantur Group | Responsible for the procurement, storage, distribution of and accounting for all items of equipage and consumable stores not carried in the supply system of the Intendantur group or those of the Torpedo, Ordnance, Ammunition, Medical, Communication or Mining and Blocking Inspectorates. The Central Procurement and Technical Procurement offices and their supply systems, directly subordinated to MarRuest/K-4, were administered for that section by officials of this group. |

The Paymaster, later to become known as the Supply Officer, performed the functions of the Intendantur Group afloat. In addition, he maintained ship allotment records, stock control systems and performed all stores accounting afloat. When he was rotated ashore, he was integrated into the Intendantur Group (later called the Special Service Supply Officer Corps), not the Dockyard Intendantur Group.

Another change made when the post-war Intendantur Korps was established was to divide the Intendantur Corps into three levels, viz:

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- (a) The Senior Service, resembling U.S. Civil Service grades 14-15
- (b) The Raised Service, resembling grades 11-13
- (c) The Middle Service, resembling grades 9-10
- (d) The Lower Service, resembling grades 1-8

All levels, except the Lower Service, which was comprised of stockmen and others without authority, were considered officials.

Procurement

A high school education or its equivalent plus two years higher study at a technical school, was a prerequisite for candidates for positions in the Middle Service of the Intendantur Corps. Those aspiring for positions in the Raised Service needed a law degree. Persons seeking positions in the senior level had to have had postgraduate study in law and to have passed examinations as attorneys or assistant judges. Many practicing judges were attracted to this new career. A further requirement for all members of the Middle, Raised and Senior Services of the Intendantur Corps was that they should demonstrate a proficiency in English and one other foreign language. Thus the eligibility requirements for entry into new post-war Intendantur Corps were established.

There is another side to this story of the development of the Intendantur Corps that should not be overlooked. It was said that this was the real reason for the original establishment of three levels of officialdom. It is a reason that is totally alien to American philosophy. To understand it, it is necessary to recognize that the German class system, unlike that of England and France, was not based on birth or wealth but on family specialization. The fortunes of Germany's Junkers and other wealthy groups had been swallowed up by the country's defeat in World War I and by taxation. Its aristocracy was almost extinct. "Service to the Fatherland" was the watchword of the new generation. There was little room for pleasure or display; nevertheless a class system survived. In it the son of a distinguished family entered the military or diplomatic corps. That was where he belonged. His father, grandfather, and great-grandfather had always been a general or an ambassador. It was expected that he too would be one. The son of a great landowner usually entered the Army or the Navy. When he had completed his service, he retired to his estate. Writers, musicians, artists and scientists formed a closely knit group. The sons of bankers and industrialists

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married the daughters of bankers and industrialists. University professors clung together in the so-called university aristocracy. Teachers and government officials grouped themselves together.

It was inconceivable that the son of a storekeeper would leave his family and throw away an opportunity of inheriting the family's business. In the professions, outsiders had little chance of recognition. Each trade was like a guild. As in some of our trade unions, the younger members respected the older ones. They considered them as master craftsmen, a repository of especially communicated trade secrets to be passed on only to worthy apprentices. Villagers did not welcome strangers, although they helped one another in times of danger and misfortune. It was a severe, narrow system offering little inducement to enter a new field of endeavor, but one which left little to chance. It insured a permanent livelihood for everyone according to his ability, his training and his background but offered nothing whatsoever to the ambitious, the clever or the scheming. Inevitably it developed in every group certain mental characteristics, habits, qualities and faults, and the planners of the Intendantur Corps fitted them into the proper slots of their new organization.

Later, when Hitler introduced his equalitarian doctrine, provisions were made to fill vacancies in the lower and middle services by permitting petty officers of the Navy to prepare for such positions while still in service. Upon discharge, they stood examination and were placed on an eligibility list for appointment. Needless to say, storekeepers and other supply department ratings were attracted to this career. Some of them, through study and application of their jobs, rose over the heads of their fellow workers and reached Raised Service positions during World War II.

Many Middle Service Officials were recruited from the reserve corps of the armed forces. These men were promoted quickly because of their aptitude in general military subjects. Middle and Raised Service personnel had to serve an apprenticeship of about three years. Training was conducted at naval dockyards and other large shore establishments. Senior Service personnel stepped right into their jobs and were commissioned immediately.

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Others were commissioned upon completion of indoctrination. Training was rigorous and thorough.

Salaries and Allowances

Salaries of officials were about three-quarters of those of the officers before 1944. After that they were about equal. The difference lay in the retirement plans for the two groups. An officer usually retired about 15 years before an official. Thus the official was assured of his income over a greater period. Pay consisted of basic pay, lodging allowance (when free barracks accommodations were not provided), child allowance and local special allowances. The number of officials and officers on the payrolls of the Navy was determined by the budget for the year. Thus in lean years, the complement of the Navy was reduced to that which the Reich could afford. The ratio between officers and officials throughout the Navy, however, remained at about two officers to each official.

A study of the organization of the Navy revealed the repetition of the words "personal affairs of officials". Each bureau had a section to look after the affairs of the officials employed by it. Many officers and officials were quizzed on this point. To offset the difference between salaries and cost of living, they were given miscellaneous supplementary allowances. These fell into the category "local special allowances" referred to above. They covered such contingencies as moving from one post to another, births of children, expenses at convalescent homes and mineral baths and other unusual expenses.

VAdm Stiegel was asked if he considered the system of augmenting the salaries of officials with allowances for personal emergencies to be good practice. He replied:

"Yes, under the circumstances. Their salaries were low, 200-300 marks (\$80-\$120 before World War II). We would give them 100-150 (\$40-\$60) marks if their wives had babies. Otherwise, they couldn't afford families. They had to make application for these grants after they had actually paid their bills and to submit the paid bills for inspection. We always gave them less than what it cost them - about 75 percent. There was always, of course, the possibility that an official was a (Nazi) Party member at the same time he was on the Navy payroll and

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drawing a salary from the Party as well. In the latter stages of the war we shifted to the American system of paying an official enough to live on. It was much better. After their salaries were increased, they only paid for medicine and bandages, not for doctors' services, in the hospitals."

Strength of Official Corps

A detailed breakdown of the strength of the Intendantur Corps is unavailable. However, in 1930, the naval budget showed that the strength of officials in the Navy had attained the alarming ratio of 11.9 officials for every 100 officers and men or two officials for every officer and one official for every eight men. There was also one clerk for every official.

The Navy recognized the dangers inherent in such a top-heavy officialdom and, it was said, consistently tried to reduce appointments of officials to a minimum. Despite these efforts, the number of naval officials employed rose from 2003 in 1933 to 7741 in 1939. In 1939 alone, requests for the appointment of 2407 officials were received by the Admiralty, of which 2248 were approved.

During the period 1933-1939, the number of clerks rose from 2365 to 20,066 and laborers from 8610 to 43,700.

Promotions

Promotions were regular. As Flottenintendant Wulff, a Senior Service official (later a Special Service Supply Officer), put it:

"The normal procedure was for a man to enter the Navy after he had finished his university training. Much depended upon his age at the time he entered; however, the average age was about 30 years during the Imperial Navy days. When the Hitler Navy was built up, promotions were exceptionally quick, but in between those periods there was always the problem of current finances. Much depended on your luck when you entered the Corps. If you started out with those of us who entered when the augmentation of the Navy started, and got on top of the list, you could become a captain, but if you entered only two years later you had to wait quite a while. Your position on the lineal list meant quite a lot."

Marinoberinspektor zur Muehlen, a Middle Service official, stated:

"Although I became an official in 1936, I was not commissioned until 1938. That was in March. Then in September I was promoted to junior lieutenant.



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About the beginning of 1939, I was again promoted to lieutenant. In April 1942 I was further promoted to senior lieutenant. My promotions stopped there."

Retirement

Retirement benefits of Intendantur officials were about the same as those of the supply officer. The pension rate was 35 percent after 15 years with a two percent increase for each year for the next 15 years. Thus an official would receive, as a top pension, 65 percent of his pay after 30 years service, provided he was 65 years old. Retired officials were also given free hospitalization. This was not extended to their dependents, however.

Scope of duties

The official controlled all shore supply activities. Although the supply officer was integrated into such organizations to handle clothing, food and disbursing matters when rotated ashore, he still was subordinated to the official. Example: The supply officer of the operating base at Trondheim, Norway was a Dockyard Intendantur Official with the rank of senior lieutenant. The supply officer of Naval Command, Italy was an Intendantur official with the rank of captain. The supply officer on the staff of CinC Group South was an Intendantur official with the rank of commander. The senior assistant to the Director of the Navy Budget Office (OKM/E) in the Admiralty (a line captain), was a member of the Intendantur group with the rank of captain. The second assistant was an official with the rank of commander. Thus control of supply and accounting billets throughout the entire shore establishment was held by supply officials.

As a result of this situation, there was much discontent in the Verwaltungs Offizier Korps, and the senior line officers recognized it. An attempt to integrate the supply officials and supply officers into a unified supply corps was made in 1944. It was a failure, according to RAdm Schubert.

SPECIAL SERVICE SUPPLY OFFICER CORPS

This corps consisted of members of the Intendantur Corps formerly charged with duties in connection with pay and allowances, accounting, budgets, food, clothing and barracks arrangements.

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On May 1, 1944, the Special Service Supply Officer Corps was established to give those supply officials of all branches of the armed forces that were "servicing troops" parity with regularly commissioned supply officers. Various officials of the Navy stated that this was a move on the part of Army and Air Force supply officials to gain recognition for services rendered, because they had previously been considered "second class" personnel by line and staff officers of those services and, since they were performing duties equally important to those performed by their critics, they, the officials, had asked for regular commissions. The corps was established under the Hitlerian Equalitarian Program.

Within the Navy, the group of the Intendantur Corps handling clothing, provisions, pay, allowances, accounting and budgets, claimed that they were "servicing troops" regardless of where they were stationed, since they were responsible for the items that contributed most to the welfare and comfort of the troops. They were commissioned. The Dockyard Group of the Intendantur Corps, i.e., those who handled general and special stores, except provisions and clothing, were unable to support such claims. As a result, they were not commissioned in the new corps and remained officials.

This caused great dissension between the Special Service Supply Officer Corps and those members of the Intendantur Corps (predominantly members of the Dockyard Intendantur Group of the Intendantur Corps) who were not commissioned, ICdr H. Surow, an officer of the Supply Corps, stated that the Special Service Supply Officer Corps was established by order of Hitler and its acceptance forced upon the Navy against its wishes. He further stated that its establishment destroyed the Navy's plan for building a unified supply corps.

Comparison of backgrounds and duty assignments  
Supply Officers and Special Service Supply Officers

Capt. Wilhelm Boettcher, a supply officer who had been in the Navy for 35 years, and Flottenintendant Arend Wulff, a member of the Special Service Supply Officer Corps with the rank of captain, formerly a supply official of the Senior Service, with 11 years service, furnished biographies when in-

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terrogated. Pertinent information has been extracted from these biographies and is set forth below for comparative purposes.

Capt Roettcher

1891 Born at Kiel  
1910 Graduated from high school (19)  
1910 Entered the Navy (19)  
1911 Cadet aboard cruiser SEADLER in German East Africa (20)  
1912 Entered Naval Academy (21)  
1914 Midshipman aboard battleship BRANDENBURG (23)  
1915-16 Midshipman in lighter-than-air service (25)  
1916 Commissioned as paymaster (25)  
1916-18 Staff, CinC, Airships (27)  
1918-19 Minesweeping flotilla paymaster (29)  
1920 Naval Brigade Paymaster (29)  
1921-23 Assistant paymaster on cruiser BRAUNSCHWEIG (32)  
1924-28 Paymaster of a shore defense artillery division (36)  
1928-33 Assistant paymaster on cruisers EMDEN and KARLSRUHE (42)  
1933-35 Paymaster, Naval Air Station, Warnemuende (44)  
1936-37 Paymaster on a cruiser and old battleship (46)  
1937-38 Regimental paymaster, Receiving Station, Stralsund (47)  
1938 Promoted to commander (47)  
1938-41 Supply Space design section, MarRuest/K-4 (50)  
1941-42 Staff, Admiral Commanding Polar Coast as Fleet Paymaster (51)  
1942 Promoted to Captain (51)  
1942-45 Staff, CinC Group North/Fleet on Senior Administrative Staff in charge of salaries, food, and clothing (54)

Present Occupation:  
Insurance Broker

Flottenintendant Wulff

1905 Born at Hamburg  
1923 Graduated from high school (18)  
1924 Apprentice in an import firm (19)  
1925 Entered law school (20)  
1928 Graduated law school (23)  
1932 Graduated post graduate law school (27)  
1932-34 Attorney and assistant judge (29)  
1934 Entered the Navy with rank of Lieutenant (29)  
1934-35 Dockyard, Wilhelmshaven, handling fuel matters in the Supply Department (30)  
1935-36 Naval Station, Hamburg (31)  
1936 Promoted to LCDR (31)  
1936-38 Naval Station, Hamburg (33)  
1938-42 OKW/Rue W1, handling fuel and transportation allocation matters. Liaison duty with Adm-Qu III (36)  
1941 Promoted to commander (36)  
1942-43 Senior Administrative Staff, Naval Group Baltic (38)  
1943 Promoted to Captain (38)  
1943-44 Deputy Chief, Senior Administrative staff, Naval Group North/Fleet (39)  
1944 Staff, CinC Group South in charge senior administrative staff, handling clothing, food, housing and payrolls (39)  
1944-45 Senior Supply Officer, Naval Command, Italy (40)  
1945 Senior Supply Officer, Technical Supply Group, Hamburg (40)

Present Occupation:  
Maritime Lawyer

ORGANIZATION OF THE CORPS OF SUPPLY

OFFICERS AND SUPPLY OFFICIALS

The Verwaltungs Officer Corps, the Intendantur Corps and the Special Service Supply Officer Corps were, according to German law, a part of the Reichsverwaltung (Supply/administrative personnel of the various government agencies and armed forces of the German Reich). As a result, they were subordinated to the Chancellor of the Reich. However, after Hitler assumed the post of Chancellor, this subordination meant very little. It has been re-

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ported, Hitler delegated to CinC Navy wide authority over all affairs, including control over all finances, accounting, procurement, storage and distribution of equipment and consumables in the Navy. Once this was done, Hitler normally did not interfere in naval supply or accounting matters.

Supply officers, Special Service Supply officers and Intendantur officials were subordinated to the Supply/Administration Division of the Bureau of General Affairs (MarWehr/C). The chief of that division, Admiraloberstabsintendant Benda, (a Special Service Supply Officer with the rank of Admiral) was considered the chief of all three corps, even though management of the supply system run by Intendantur officials of the Dockyard Group rested with a section of another bureau, MarRuest/E-4, in which an Intendantur official with the rank of Vice Admiral, a Dr. Bokhardt, administered the affairs of the Dockyard Intendantur group, as a deputy for Admiraloberstabsintendant Benda. Supply officials assigned to MarRuest/E-4, for duty with the Dockyard Intendantur Group, fell into the same classification as Special Service Supply Officers assigned to accounting duty with the Mining, the Torpedo or the Ordnance Inspectorates, etc., or the field activities of those inspectorates. Assignments of Special Service Supply officers and Intendantur officials were made by MarWehr/C. Assignments of Supply officers were made by a senior supply officer in MarPers, who, where higher decision was required, apparently referred questions to Admiraloberstabsintendant Benda.

Under these top posts, MarWehr/C and MarRuest/E-4, were, before the war, the Intendanturen at Kiel and Wilhelmshaven. Their heads were Intendantur officials with the rank of rear admiral. These officials implemented the fiscal and supply policies of the Admiralty. Their offices were independent agencies. The Intendantur, Kiel was responsible for all supply, disbursing, general mess and accounting matters arising aboard vessels and at naval stations in the Baltic area. The Intendantur at Wilhelmshaven had the same responsibilities for naval units and activities in the North Sea area. As has been explained in the chapter on Organization of the Navy, both these two top field posts were absorbed into Group North and Group Baltic, later into Group North/Fleet, and became senior administrative staffs. They

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continued to manage the supply and fiscal affairs of the areas for which they were formerly responsible, but lost their freedom of action and decision and were subordinated to CinC Group North/Fleet. When the commands Group West and Group South were formed, similar senior administrative staffs were organized within those commands. The independent U-boat and the Small Battle Units Commands, likewise had their own senior administrative staffs. Naval Command, Italy did not have one, since the greater part of the accounting and other supply work in Italy was connected with the mutual assistance agreement between Germany and Italy.

These senior administrative staffs were charged with the tasks of preliminary inspection and checking of the accounts of the various supply officials and officers at the supply centers, supply depots, dockyards, arsenals, ordnance, mine and ammunition depots, construction battalion projects, clothing, food, and disbursing offices and all other supply, fiscal or accounting facilities ashore or afloat under the jurisdiction of the command to which they were attached. They were also charged with the preparation of the budget for such activities, the allocation of funds, and the general administration of all supply matters. On these staffs, a senior supply (Verwaltungs) officer, usually a captain, handled matters pertaining to salaries, food, and clothing. A senior Special Service Supply officer or Intendantur official, usually also one with a rank corresponding to a captain, was in charge of other supply matters. All three were subordinated to a Special Service Supply officer or Intendantur official on the staff, usually one with the rank of a rear admiral. It was said that the chief of one of the senior administrative staff had the rank of vice admiral.

Seagoing units based ashore, such as the U-boat Administrative Command, and all large vessels had their own supply organizations headed by a supply (Verwaltungs) officer. Destroyers, submarines, minesweepers, etc., were organized into flotillas. Each flotilla had its own supply officer.

Field agencies of the Inspectorates, e.g., torpedo testing stations, ammunition, ordnance and mine depots, communication equipment supply depots, spare parts distribution centers, etc., had their own specialist officers or

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officials in charge of actual storage and distribution. However, an officer of the Supply Officers Corps or Special Service Supply Officers Corps was in charge of payments of laborers and other non-service connected personnel and performed such accounting work as was required. These supply and special service supply officers and/or officials were subordinated to the commanding officer of the unit, the commandant of the base, or the commandant of the district, as appropriate. The channel of authority, correspondence, reports and returns, etc., ran through the supply officer, Special Service Supply Officer or official on the various staffs from the lowest to the highest level. An officer of the Supply Officers Corps on a staff was assisted by other supply officers in matters pertaining to food, clothing and disbursing matters - not by officials or Special Service Officers, even though his immediate superior was an Intendantur official or Special Service Supply Officer.

Hospitals were similarly organized. The flow of disbursing authority was from the supply officer through the medical officer, to a supply officer on the senior administrative staff, to the senior Intendantur official or Special Service Supply Officer on such staff, to the appropriate Special Supply Officer or Intendantur official in *MarWehr/G.*

This control of supply and fiscal functions by officials and Special Service Supply Officers rather than regular supply officers irked supply officers considerably, it was said, and caused a great cleavage between, and friction within, the *Verwaltung Officer Corps*, the *Special Service Supply Officer Corps* and the *Intendantur Corps*. Such a situation is understandable. However, Supply officers, Special Service Supply officers, Intendantur officials and others, were interrogated on this subject to determine what they themselves thought of the situation that had been created, what they believed the solution to the problem to be and, if the German Navy was reestablished, what they would do to alleviate it.

Adm Foerste Said:

"People who have studied occupy a dominating position in public life in Germany. This domination was transferred to the service. As a result, it took considerable time to find the middle of the road between those of the *Verwaltungs* and *Intendantur Korps* (includes Special Serv-

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ice Supply Officer Corps) as a whole, i.e., the supply officer or official who had great experience in ship-board duties or on foreign stations and those who worked in senior administrative staffs and in the Admiralty. The final aim was to discover the right proportion between those with and without university training, throughout the whole supply/administrative sphere, from the highest Intendantur official in the Admiralty to the lowest supply officer on board ship. In this way we tried to create a uniform supply corps based on personal capabilities and not discriminated by educational background or the corps in which a man was serving.

"Although the development of events did not allow us to start this experiment from the very lowest level, that is with cadets at the naval academy, we tried to accomplish it by interchanging appointments so that a supply officer was given an appointment formerly held by a supply official. It was also intended to make Intendantur officials Supply officers."

**Vikm Stiegel:**

"The officials had great power because they were responsible for the administration of funds. You had to take this into consideration when dealing with them. They reduced costs to a reasonable plane. There is a tendency of mankind to enlarge his own might and it played a role in this. If they had limited their action to their responsibilities, instead of enlarging their power, it would have been all right, but this is a universal tendency and they followed it.

"They were the brake on financial expenditures. A lot of our officers underestimated their capabilities and considered them unimportant. They reacted against this attitude. The officials were essential and had to follow definite rules and regulations. We could not do without them. The fundamental principles of any administrative system cannot be adapted to the personal wishes of officers at any moment they may desire action. There is a certain arrogance in officers one cannot stand. Therefore there was resentment and friction. We tried to balance and overcome it. We made good progress."

**Kahn Schabert:**

"Officials of the lower and medium ranks originated mostly from petty officers who had been discharged after their enlistments had expired and who, while serving had undergone preparatory training as future officials at naval specialists schools. During the war this was no longer possible. The higher Intendantur officials were people who had studied at a university as administrative lawyers. After they had passed state-approved examinations, they entered the Intendantur Corps. They were employed in the Admiralty and at other large shore establishments, where their legal knowledge in matters of administration was indispensable. Sometimes they were also employed in top-level financing of Navy-sponsored industries."

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"The Intendantur officials of the lower and medium ranks, like those of the senior and raised service, were not employed on board ship. Neither in the staffs nor anywhere else afloat did officials replace supply officers. They worked side by side, however, in supply/administrative work, the supply officers chiefly aboard ship, the Intendantur officials (part of whom later became Special Service Supply officers) ashore. In the last stages of the war, Intendantur officials were partly provided as officers of the "Truppensonderdienst" (special service officers not incorporated into the officers corps). They had no military authority. I consider the whole measure a failure."

Rear Admiral Boening:

"I think my ambition was that all the positions of the Intendantur official should be occupied by officers of the Supply Officer Corps. In the Engineer Corps, those adapted for higher ranks studied at the universities. It was my opinion that, if the supply officer should take over all these positions, he should study law. But it was not necessary that he study all phases of law. Criminal law was unnecessary.

"Naturally there was opposition between the supply officer and the official because the Intendantur official said, 'Only fully studied lawyers can do this.' I believed that the officers should be given more responsibility. These were special points of consideration in our Navy. They would not matter in the United States. All officials in Germany think that high positions should be occupied by lawyers. The Intendantur officials said, 'If you have conferences with all these people and are not a fully experienced lawyer, you will not be on an equal level.' I said, 'That's nonsense! It depends on the personality of the man and who is backing him.'"

All three groups, i.e., the Supply Officers Corps, the Special Service Officers Corps and the Intendantur Corps, recognized the need for a unified supply corps. The main stumbling block in its development seems to have been the decision as to which group should control it.

When Flottenintendant Wulff was asked what type of a supply corps he would develop were he unhampered in his efforts, he stated:

"The Intendantur Corps was comprised of lawyers, while in most cases the old Zahlmeister (Verwaltungs Offizier Corps) came from the ranks and, since the expansion of the Navy, the naval academy. This gave the new Supply Officer Corps a better basis for recruiting personnel and they obtained more qualified personnel. Before the corps could be merged, new standards of basic training would have to be established. This in turn involves forming a very different corps; perhaps a more flexible one, maybe not. But you can't rely on a man of limited background to



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make the decisions you have to make today. You have to get so much out of so little material. This requires a knowledge of many things.

"The Intendantur Corps in the Navy worked well; therefore, I don't think we could make a change rapidly. On the other hand, I should say the members of a corps that lacked basic legal training could not interpret many of the demands of business and industry. It might be well that officers of the Supply Officer Corps should serve for a limited time in the Intendantur Corps and, vice versa, the Intendantur Corps in the Supply Officer Corps.

"If I were unhampered in my efforts, I would draw up the whole scheme on a commercial basis with fewer personnel, not so many officials but more employees, so that I could make changes if a man proved inefficient. I would create over-all depots and have a small but very carefully educated staff of supply officers, a new corps, who deal not only with food or clothing but also take care of spare parts, etc., without being expert in high-pressure borrowing. They would have to know enough to be able to run a depot in which you could find everything and which you could transplant to another base, if necessary.

"I think it would be wise to organize a supply corps and to train its people to handle all the kinds of supplies which I would normally want. On the other hand, of course, our difficulty was, at least during wartime, that you couldn't train experts for all these areas. If you wanted an expert in clothing, then you would not want an expert in food. Therefore you need one large department in which all these experts can work."

Captain Boettcher:

"During the time of the Imperial Navy, supply officers were only officials. They entered the so-called Zahlmeister Corps. The highest rank attainable in this corps was equal to that of a lieutenant commander and there was no possibility of going higher. The retirement age was 65 years. Although most of the officials entered and stayed with the Navy, some left after serving about 42 years and tried to get along on their pension, which was a good one.

"The fact that one could never reach a higher rank than Lieutenant Commander and be only an official gave little incentive for a young man to stay in the service until he was 65 with no chance for further promotion. Therefore a new way had to be found. Finally, in 1935 the new Verwaltungs Offizier Korps was established. This development, in a few instances, permitted promotion to the rank of captain, and in one exception to that of a rear admiral. Young and efficient men were attracted to the new corps. They were given the same basic training as other naval officers.

"However, the ultimate goal in building a complete supply corps was to carry out a fusion of the Intendantur

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Corps and that of the Supply Officer Corps. It was intended that a part of this combined service branch would study at a University and thus be able to fill positions in the senior administrative staffs and in the Admiralty. I personally believe that this would have been a solution to our problem and that after some years of experience we would have been able to develop a good supply corps."

Ministerialrat Dr. Eggert:

"The official was an official for life. An officer was only an officer as long as he could do his duty. Unless he was ill, the service of an official continued until he was 65 years old. Candidates for the Supply Officer Corps, like all other candidates, had to graduate from high school but not from a university. With officials there was a difference between the lower and higher grades. The latter group had to have a university degree and in the Intendantur a full course in law. An official of the Intendantur Corps first had to spend three or four years at a university and then take a second examination, a main law examination. Then he could enter the Navy at the age of about 26 or 28 years.

"We also had lower officials such as the Inspectors, Oberinspektoren, Amtsmänner. Those men had only to graduate from high school like the candidates for the Supply Officers Corps. Despite this, the officers received more salary than officials of the higher grades. That is why the supply officers tried not only to prove that they could do as much as the lower officials but also as much as the higher officials. There was always a big fight between the two corps. The supply officer performed duties of a supply officer afloat. Ashore he only billeted the troops, and took care of their pay, food and clothing, because the officials controlled the whole supply organization. That is why we thought our men were better even though the supply officers were promoted to high positions as captains and admirals. They had a good reputation with the officers at the front, but they built a second grade office."

SUMMARY

As shown by the above statements, representatives of all three corps were interviewed, namely RAdm Boening of the Supply Officers Corps, Flottenintendant Wulff of the Special Service Supply Officer Corps and Ministerialrat Dr. Eggert of the Intendantur Corps, as were three admirals of the line, Adm Foerste, VAdm Stiegel and RAdm Schubert. Each one of these men felt the need of a unified supply corps in the German Navy. Foerste recognized the necessity for higher education in a supply officer. Stiegel saw the necessity for a tight control on the Navy purse strings.

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Boening wanted his corps to absorb the others. Eggert felt that the Supply Officer Corps was a lucky group of poorly educated officers who played a bluffing game in supply work. Wulff was realistic but dubious about the Supply Officer Corps ability ever to attain the qualities he considered so essential in a modern-day supply officer.

From the answers given to questions propounded to officers and officials with regard to a future German Naval Supply Corps and other source material studied, it is believed that, should the Western Powers become interested in a reorganized German Navy, the standard for entrance requirements to the supply corps should be such that all these criticisms could be overcome.

The Germans place great emphasis on university education. If a unified Supply Corps is to be developed in the German Navy in the future, a compromise could be reached whereby officers of the supply corps would be required to graduate from college providing a liberal arts/semi-legal education before being indoctrinated at the naval academy.

### CHAPTER III- THE LOGISTIC SYSTEM

#### The Logistic System

The logistic system of the German Navy was divided into four sections:

- (a) Requirements planning
- (b) Procurement and logistic support
- (c) Storage and distribution of supplies
- (d) Transportation

It has been explained, under the organization of the Admiral Quartermaster Division, that Adm Qu performed the logistic planning for the Navy and matched material requirements with the operational plans of the Naval War Staff (SKL).

Responsibility for planning the material and personnel requirements for operations was distributed among the various sections of Adm Qu as follows:

Section I	Technical and other material needs for the whole Navy, except the coastal defense system.
Section II	Personnel
Section III	Fuel and transportation
Section IV	Coastal defense system
Section V	Training in all its phases
Section VI	Sea transportation

Responsibility for conscription, training, production or procurement, storage and distribution of all personnel, money, ships, equipment, material and supplies required in the various supply systems was vested in the Bureau of Warship Construction and Armament, the Bureau of General Affairs and the Fuel and Transportation Section of the Admiral Quartermaster Division (Adm Qu III). A group of naval inspectorates, Intendanturen offices, logistic support departments of main naval bases, a Central

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Procurement Office and a Technical Procurement Office, as field activities of MarRuest, MarWehr and Adm Qu III, established the material, plant production capacity and lead time requirements for them and, when the finished items were received; stored and distributed them. (See chapter on Procurement, storage and Distribution of Supply for methods employed.)

Specifically, the following groups had cognizance over personnel, money, ships, equipment, material and supplies and their distribution.

<u>Item</u>	<u>Admiralty bureau or division</u>	<u>Field Activity</u>
Personnel	Adm Qu II and V MarWehr/TR MarPers	Second Admirals of Group Commands.  Education and Training Inspectorate.
Money	OKM/E	Intendanturen offices and senior administrative staffs.
Construction, repair and over- haul of ships	MarRuest/K	Naval dockyards and pri- vate shipyards.  Naval Warship Acceptance Inspectorate.
Ammunition	MarRuest/AWa	Naval Ammunition Inspec- torate.
Ordnance equip- ment	MarRuest/AWa	Naval Ordnance Inspectorate.
Torpedoes	MarRuest/TWa	Naval Torpedo Inspectorate.
Mines, minesweep- ing material, booms, nets, etc.	MarRuest/SWa	Naval Mining Inspectorate.
Engines, auxiliary machinery and spare parts	MarRuest/K (I/II and IV)	Naval Engineering inspector- ate. Technical Procurement Office.
Communication equipment	MarRuest/NWa	Naval Communication Inspec- torate
Medical equipment and supplies	MarWehr/G	Naval Medical Inspectorate
Coastal defense construction equipment and supplies	Adm Qu IV MarRuest/PiWa	Construction Battalion Staffs.
Food, clothing and equipment for barracks, food stores, clothing stores and pay and ac- counting offices	MarWehr/C	Naval Intendanturen Offices.

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General equipment, material and supplies not listed above	MarRuest/K-4	Central Procurement Office
Fuel, lubricating oil, distilled water, boiler feed water, air, rail and inland water- way transportation. Scheduling, despatch and rendezvous of naval logistic support ves- sels.	AdmQu III	Logistic support depart- ments of main naval bases
Sea transportation in merchant vessel	AdmQu VI	Sea Transport Offices

Several changes in the organization controlling the distribution of supplies were required during the war. They have been described in the chapter on Procurement, Storage and Distribution of Supply.

Before control of stock in the various supply systems was lost and later when control was regained, the Admiralty, it was said, was informed daily on the level of stocks in the various supply systems and in the supply pipelines. Example: The logistics support departments of the main naval bases and the logistics support unit at St. Nazaire reported the level of stocks in fuel depots, amounts received, the estimated withdrawals for the following 24 hours and deficiencies at bases within their sectors to AdmQu III. The naval inspectorates, the construction battalion staffs and the Intendanturen offices made daily reports of receipts and shipments of material, including anticipated shipments to be made the following day to their parent divisions in MarRuest and MarWehr. After the Technical Procurement and the Central Procurement Offices were established, they too rendered similar reports of transactions daily to MarRuest/K-4.

Thus it will be seen that, in the supply systems of the various field agencies, namely, the logistic support divisions of the main naval bases, the naval inspectorates, the Technical and Central Procurement Offices, the construction battalion staffs, and the Intendanturen food and clothing offices, the Navy maintained supply demand control points for each type of material.

The reports received by the cognizant Admiralty divisions from these supply demand control points were consolidated into Navy-wide stock status

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reports and deficiencies determined. These deficiencies were broken down into finished products, raw materials, lead time and plant production facilities required and submitted to OKW/RueWi monthly, where the requirements of the Navy were merged with those of the Army and Air Force and the total requirements for the armed forces established. These requirements were submitted to the Ministry of Economics (food requirements were submitted to the Ministry of Food and Agriculture) prior to 1942. After that, they were submitted to the Speer Ministry.

After scrutiny by the Ministry of Economics, the Ministry of Food and Agriculture or the Speer Ministry, such finished products, raw materials and plant production facilities as were available within the economy of Germany and the occupied countries were allocated to the Armed Forces. These allocations, in the form of priorities, were made available to OKW/RueWi, which in turn reallocated them to the three services, the Army, the Navy and the Air Force.

When the Navy's share of finished products, raw materials and plant production facilities was made known to MarRuest, MarWehr and Adm Qu III, those Admiralty divisions reallocated it to the various naval inspectorates, offices, etc., and let the contracts necessary for the production of new equipment, material and consumables. The inspectorates, offices, etc., supervised production and, when the items were delivered to the Navy, took them into their supply systems. Items being produced were considered to be in the supply pipeline and were added to the daily stock status reports as being on order. This completed the cycle. The same system of arriving at material needs was used again the following month.

RAdm Schubert explained this rather complicated organization as follows:

"For the supply and technical maintenance of weapons afloat and ashore (ordnance, mines, torpedoes, communications), each cognizant division maintained its own organization supporting the entire home coast and the coastal areas of occupied countries. The top expert staffs of these organizations, the Naval Inspectorates, were located in the home area and were directly subordinated to MarRuest in carrying out their special tasks. In naval bases at home, as well as in the main bases in occupied countries, central depots specialized for the different types of materials were established. They had huge stocks and maintenance capacities. Each of

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these arsenals (supply centers) was responsible for a certain area in which it maintained various establishments able to carry out local requirements. In all second and third class bases, naval forces had supply and repair stations for their weapons at their disposal, and in main naval bases there were facilities for taking care of large orders in armament, supply, provisions and repairs.

"To repeat, the logistic organization consisted of one top staff of technical experts for each type of material, specialized supervision and direction staffs in various areas and of establishments to answer the requirements in the various naval bases. It goes without saying that this organization did not only serve the units afloat, but was also responsible for the requirements of the coast, e.g., small battle units, smoke screen installations, coastal artillery and anti-aircraft batteries, radio stations and underwater listening stations, teletype installations, telephone, signal and radar stations, the links of which operated in close contact with dockyards and supply centers for shipbuilding and equipment.

"In areas where naval bases were endangered by enemy actions, e.g., occupied coasts and later also the coastal areas of the homeland, the local commandants of the coast were entitled to issue orders or directives to the representatives of these specialized organizations. It goes without saying that his interference could not be extended to the technical process of any type of work, but was limited to directives concerning the employment of manpower, and concentrating it on decisive tasks, depending on the military situation. Moreover, in case of enemy landings, riots, etc., local naval commandants were entitled to commit personnel under their command for a military emergency. To ensure the necessary power of command in cases of emergencies, the personnel of these arsenals or maintenance establishments was subordinated to them for disciplinary purposes.

"It is necessary also to mention that the staffs of medium and lower commandants were provided with officer specialists, who dealt with the local demands of the organizations mentioned. As the local commandants were responsible for the functioning of the whole base, the technical weapon specialists included in their staffs had the task of enabling their commandants to materialize this responsibility. Dockyard matters were organized in a similar way. The top of the organization was established in Marseilles. It directly conducted the employment of the large naval dockyards and supply centers in home bases. These in their turn, instituted supervising staffs for shipbuilding in civilian dockyards working for the Navy.

"Thus it was guaranteed that the technical administration of dockyards in the occupied countries could be controlled by the CinC of the proper Navy Group. As far as the group commander was concerned, he was responsible to CinC Navy for the effective functioning of the naval bases under this command, and to the CinC of the Armed Forces in the area (theater commander) for the proper streamlining of naval forces and



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naval authorities and offices of his area. In the occupied territories there were a number of naval dockyards which were under the control of the dockyards Kiel and Wilhelmshaven. These in turn controlled civilian dockyards situated in the immediate area. Some important bases (not dockyards) maintained special supply depots, some of which had repair facilities of limited capacity.

"The supply of the naval combat forces and the shore establishment, with food, clothing and general equipment was effected by the Intendantur Offices. They were also responsible for the administrative tasks of the station. In some of the larger bases, central food and clothing stores were established within the framework of large Intendanturen Offices.

"The professional command in this organization from top to bottom ran from the High Command of the Navy (MarWehr/C) via the senior administrative staffs of Groups North/Fleet, West and South to the executive offices in the bases. With the organization of the senior administrative staffs, the Intendanturen were built up on a large scale basis as working staffs, so as to enable the senior administrative staffs effectively to perform their part as the center of the over-all organization of logistics.

"In addition, the local Navy CinCs, as responsible military leaders of the Naval Area (e.g., Admiral Commanding Polar Coast, FOIC, Baltic Defenses, etc.) also had technical weapon specialists to assist him. Every commander of a medium size or small area also had administrative (supply) personnel in his staff who not only did the work of that staff, but also were responsible for carrying out the over-all Navy supply tasks.

"In short, on the one hand, the various organizations of this kind were built up in such a way that in all their functions they could easily be kept under control. On the other hand the organization made it possible for the responsible military CinCs (theater commanders) always to exercise command over the organization and its personnel if this appeared necessary for military and operational reasons, without affecting the mere technical execution of tasks. This organizational principle was based on the idea that the over-all responsibility for the functioning of naval activities rested with the individual local Navy CinC.

"Unfortunately this rather complicated organization is unavoidable in a modern war. It proved effective with the German Navy in World War II. Although its work often was hampered because of understandable disputes about competence, it was of utmost importance that, in the event of a sudden danger threatening the operational foundation of the Navy, it be possible for responsible CinCs to exercise their command in line with their responsibilities upon the logistic and supply organizations.

"The naval medical organization had its technical head in the Medical Inspectorate which was immediately responsible to MarWehr/C. The two large areas of the naval organization, Baltic and North Sea, each had a central medical office from which logistics, supply and procurement for the occupied territories was organized. These

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medical offices were placed under the command of CinC Group North/Fleet. Their technical instructions however, came from MarWehr/G. All naval hospitals and medical depots in the home areas were under these two central medical offices.

"In the occupied territories, the leading medical officers in the staffs of the local CinCs and flag officers were responsible for medical problems. They were technically controlled by the Medical Inspection. Owing to the integration into the staffs mentioned, it was guaranteed that the responsible military authorities could intervene in the work of the medical organization. It goes without saying that in the occupied territories also there were hospitals and medical supply depots to supply the naval combat forces at the bases. Close cooperation between the naval medical organization and those of the other services, and mutual exchange of scarce items resulted in practice in a large scale organization of an Armed Forces Medical Department, despite the individual organizations. The individual troop units and ships had ships and hospitals and sick bays of their own on a limited scale."

**The German Concept of Logistics**

The definition of the term "Logistics" is generally conceded by American military personnel and those who have written on the subject to be:

"That military science that provides the tactical commander with the proper amount of equipment, material, consumables and personnel in the right quantity, at the right place at the right time."

There are many variations to this definition but essentially they all mean the same.

RAdm Schubert was asked what, in his opinion was the German Navy's concept of logistics. He replied:

"In war, on any level, especially strategical, operational or tactical, the command dominates every other factor of warfare. That goes for any type of warfare including naval warfare. The command has to be supported by every organizational means to raise it to its highest efficiency. All conceivable competences needed (legal power and authority) have to be assigned to it to enable the commanding staffs to carry through their decisions. Directly linked with the command are communications and intelligence. It is the decisions of the commanding authorities solely that count for any measures taken within the vast organization of the Navy.

"The organization of command is very small compared with the huge organization of supply and logistics in modern naval warfare. I want to combine and concentrate this in the term 'foundation of naval war'. For example, a pretty substantial organization is needed for the protection of a coast against sea and air raids. That, in its turn, also needs additional supply facilities. Thus, it is obvious that any decisions of the command authorities radiates somehow to the vast organization of

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logistics. The higher the level of the command, and the more important a decision is, the more the components of the supply organization are effected.

"This procedure has to function automatically, because it is impossible for the command, being crowded with decisions to be made, to deal also with the problems of supply. To ensure a punctual, correct and automatic adjustment of these clumsy and branched out organizations to the efforts demanded of them, communications have to exist to the command organization, tight enough to receive the necessary information, but not so tight as to become a hindrance and irritation to the command in performing its operational measures. The best actions of command authorities are doomed to failure, however, if supply and logistics cannot keep pace with them. This is true particularly in modern warfare in our age of technique, which renders fighting forces particularly susceptible to stoppages in supplies or wrongly directed measures of logistics.

"The organization of the German Navy during the war tried to stand up to these demands, and generally functioned correctly. Along the route of command, from the Naval War Staff (NWL) down to the base of operating units, it was aimed to set up the necessary number of contact points connecting the command organization and the organization of supplies. At these contact points the supply organization had not only the opportunity to get new information from the command sector, but here the command authorities had also an opportunity to straighten out and direct supply activities, even to interfere with and alter them. On the other hand, in normal situations, the easy flow of supply and procurement had to be left alone to run smoothly in its general course as set up by experts.

"The most important contact point was the Naval War Staff itself. Here, within a firm organization, comparatively small beside the operations division, the Admiral Quartermaster Division was established, where the demands of the command to the supply organization were dealt with. The heads of the various divisions and sections of the Admiral Quartermaster Department received their supply requirements from the daily briefing on the situation and the intentions and decisions disclosed at this occasion. Moreover, there were additional directives by the Chief of Naval War Staff. In these briefings, the situation in the fields of the Army and of the Air Force was also reported, thus putting the entire development and the events of war at the disposal of the supply organization.

"From the Admiral Quartermaster the necessary demands were forwarded to the planning and executing supply departments of the Navy, operated by the top experts of all supply organizations, (Inspectorates and Intendanturen Offices). This means that in the Admiralty the demands for supplies were transformed into figures and time limits, and into form of orders issued to the executing and procuring inspections or other central procurement authorities. In addition, in accordance with instructions of the Naval War Staff, the Admiral Quartermaster directed the distribution of all supplies. In case the center of gravity shifted and it became necessary to divert supply activities accordingly, then corresponding directives were issued to the responsible commandants and their subordinated areas. They too, just as their subordinated commandants of smaller areas, had fixed contact points with the organization of supply and logistics reaching into their areas. Thus, at any

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point, any kind of diversion of supplies could be effected.

"When the war economy slid more and more into deadlocks, whether by scarcity of raw materials or by losses in industrial capacity, it was the task of the supply departments in the Admiralty (MarQuest/X and Rue Wi, MarWehr/C and G) to bargain with OKM/Rue Wi (or Speer Ministry) for satisfaction of the Naval War Staff's demands. During the peak of the crises towards the end of war, this task was carried out partly by the Naval War Staff or even by CinC Navy himself.

"Before starting to talk about the procurement of personnel, I have to mention the problem of directing the organization. Because of the continuously changing situation, the organization itself also had to be changed. The department executing this duty was my division, the Mobilization Requirements Section of the Admiral Quartermaster's Division. The direction of operations and organization stood closely together under a common head, in that the Admiral Quartermaster Division was a part of the Naval War Staff. The direction of organization was very strictly handled.

"Every command every authority needed a "birth certificate" before its creation. This was issued by my section. Until this certificate was issued, it was not able officially to live. In this certificate, officially called an "order of establishment," the name of the organization, its subordination, personnel strength, field post number, location and equipment was ordered. The name showed the task of the new establishment. The reports of personnel showed separately the type of personnel who was to be furnished to the command, where the personnel would come from and where it would be listed in the muster rolls.

"The sum of the strengths of personnel afloat and ashore determined the actual requirement in personnel. These calculations were centrally carried out at MarWehr in the Admiralty. The recruitment was executed by the large personnel departments, the Second Admirals, at the naval stations, Baltic and North Sea, later at the headquarters of Group North/Fleet. Moreover, personnel management, when calculating its requirements, took into account the probable demands originating from special changes in the situation, known to it by information from the Naval War Staff, and the losses that occurred. The recruited personnel was trained in what was called manning divisions and reserve formations and kept in readiness for employment. Assignments of personnel to ships, commands and formations ashore were ordered by the Second Admirals.

"Now something about the supply of the battleships SCHARNHORST and GNEISENAU when operating in the Atlantic. When departing from their home bases, the ships were equipped and supplied in a way that far exceeded normal requirements. Every conceivable space aboard ship was used to store additional material and food. Serious consideration was given to the flour stocks, partly stored in bags in passages in the lower decks, because of the danger of dust explosions in case of hits.

"Some large supply ships of the DITTMARSCHEN type or similar ones (tankers) had already departed to the Atlantic a long time before the battleships and kept cruising for months on the rendezvous lines ready to supply the units. It worked excellently. The direction

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of the operation and of the supply ships were carried out by CinC, Group West. Because of the danger of being located, the battleships could not contact their tankers by radio.

"These supply ships were provided with everything normally stored and stocked in large naval bases and suitable for ships, with the exception of personnel, which was not necessary anyway. Refuelling was performed by two hoses running from the stern of the tanker to the battleship's bow, together with the towing rope. This practice of refuelling over the tanker's stern had the decisive tactical advantage that in case of emergency, every connection with the tanker could be cut off immediately and the battleship would be ready for action.

"The most difficult job was the transfer of provisions in rough weather. This was carried out by boat and the provisions were handled in big nets carrying about a quarter of a ton. The nets were hoisted in and out of the boats by the ships' and the tanker's cranes.

"In addition, the tankers carried supplies of material, medical stores, provisions, spare parts for the engines and weapons, etc. The issue to the battleship was carried out by means of requisition and account papers just as it was performed at naval bases ashore, when dealing with food, clothing, etc. For issues and administration, the supply ships were staffed with Verwaltungs (supply) personnel of the Navy. They were manned by civilian crews, except the personnel manning the guns."

The Mobilization Plan

As a generalization, it can be stated that, although the German Navy had a mobilization plan for World War II, it did not have the scope of those plans prepared by the U.S. Navy. It consisted only of directives to put the fleet and shore establishment on a war footing. This study has revealed no plans for expansion of the Navy's logistic system, or the movement of forces outside the territorial waters of Germany.

The 1933 mobilization plan provided mostly for alerting the naval establishment and Secret Supply Service for war, getting commerce raiding vessels and submarines to sea, and repatriating or otherwise using as much of its merchant marine as possible for war purposes. As a result, on 5 August, although the actual mobilization order was not released until 15 August 1939, the supply ship ALTMARK left Germany for Galveston to take aboard fuel to support the GRAF SPEE in her raiding operations in the South Atlantic. She departed Galveston on 13 August for sea, with fuel, provisions, spare parts and general consumables but no ammunition for the GRAF SPEE. The GRAF SPEE sailed from Germany on 21 August. The Secret Supply Service was also alerted about 21 August.

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The supply ship **NORDMARK** also put to sea on 19 August to service the **DEUTSCHLAND**, which sailed from Wilhelmshaven on the 24th, on her operations in the North Atlantic. Fourteen submarines departed to take up station in the Atlantic on 19 August. The fleet supply ship **DITTMAR-SCHEN** reported the same day to Commander Group **NORTH SEA** as a standby mobile support ship.

On 25 August, all German merchant ships throughout the world were ordered to proceed to Germany if possible; otherwise to proceed to the nearest neutral port and report to the naval attache or consular representative. In doing this, they were ordered to leave the customary sea routes and to avoid the English Channel. Navy chartered tankers in the Atlantic were diverted to ports in Western Spain. Cargoes loaded in neutral tankers were diverted to Malmoe, Sweden, where they were sold to Swedish firms.

Secret supply agents reported to their group leaders, usually the German naval attache in the country in which they were serving, and obtained instructions regarding merchant vessels proceeding to ports in their area. Six merchant marine vessels were ordered to private shipyards for conversion to armed merchant raiders. Those surface units not already despatched to sea were dispersed as follows:

Battleships, pocket battleships and cruisers	Kiel or Wilhelmshaven
Destroyers and Torpedo Boats	Swinemunde, Bremerhaven Kiel or Wilhelmshaven
Minesweepers	Guxhaven, Pillau or Kiel

On 1 September 1939, the German Army entered Poland. As guarantors of Poland, Great Britain and France declared war on Germany on 3 September 1939, as also did Australia, Canada, New Zealand. The Union of South Africa declared war 6 September 1939. Thus World War II was formally launched.

Logistic Planning

Adm Qu was responsible for all logistic planning for the Navy. VAdm Machens was questioned about its volume. He stated that normally 30-50

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percent of the work of Adm Qu was devoted to logistic planning, and that during the Norwegian campaign the percentage stepped up to 70. It was evident from his replies and those of other officers questioned that, although the timely arrival of supplies was always considered in their operational requirements, the Navy did not prepare a separate logistic plan. A search of German captured documents failed to disclose much information on this subject. Therefore, in an attempt to determine what type of logistic planning was performed by them, German naval documents in the files of the British Admiralty relating to logistic support furnished to the Army and Air Force during the invasion of Denmark and Norway were studied. They disclosed the following:

On 4 March 1940, ISKL issued orders that all surface operations were to cease and that all vessels, including U-boats, not at sea were to be placed in readiness for the invasion.

The Navy had the sole responsibility for sea transportation for all armed forces. Inasmuch as adequate flow of supplies was as important for the success of the Norwegian campaign as the initial seizure of the most important coastal towns and fortifications, it was directed that supplies were to be sent in convoys of merchant ships escorted by naval vessels.

This was the Navy's first actual experience in an overseas movement of troops. SKL knew that British intelligence officers were watching its movements and, instead of transporting its first wave of invasion troops to the northern ports of Narvik and Trondheim in conventional transports, decided upon fast transportation by destroyer. The following conditions prohibited the retention of all of these destroyers and other escort vessels in northern waters and harbors:

- (a) Fuel supplies were available for a short time only and would not meet the needs of the total force for any extended period of time.
- (b) There were no supporting bases available for the forces in northern Norway. The harbors had limited anchorages against which a superior enemy could bring all kinds of weapons to bear. The German forces were to be split up in the several harbors and any delay would permit the enemy to affect a concentration of superior forces.

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In consequence of these circumstances, the whaling ship tender JAN WELLEM was directed to proceed to Narvik and the tanker KATTEGAT to Trondheim to furnish fuel and provisions to the destroyers and such U-boats as might participate in the operation at those ports. The battleships GNEISENAU and SCHARNHORST and cruiser HIPPER and 14 destroyers were engaged in the invasion of these ports. The heavy units, however, did not require refuelling. On 30 March 1940, SKL directed that two destroyers would remain in Trondheim and that the tankers detailed to that port would be loaded with adequate supplies of provisions to support those destroyers.

On 6 March 1940, SKL stated in an operation order that all preparations must take into consideration the fact that the operation would startle the western countries as well as the northern countries, that great secrecy of Germany's intentions was necessary. As a result, the embarkation troops and the departure of transports and supply ships was carried out under cover of darkness.

In addition to Narvik and Trondheim, troops were to be landed at Bergen, Stavanger, Kristiansand, and Oslo in Norway and at Copenhagen, Korsør and Middlefort in Denmark.

The KOELN, KOENIGSBERG and BREMER, the larger escort vessels for the Bergen transports, did not require fuel for their return voyage. KOELN and BREMER were to fuel the two torpedo boats and S boats (motor torpedo boats) that accompanied them after the invasion, after which S boats would be supported from supplies available in the harbor.

The BRUMMER and torpedo boats escorting the transports to Stavanger required no fuel for the return voyage. One tanker was directed to arrive two days after the invasion to support motor torpedo boats and other small craft and ensure that local supplies were adequate for their future support,

The KARLSRUHE, TSINGTAO and torpedo boats escorting the Kristiansand contingent likewise were furnished no fuel support. TSINGTAO was directed to fuel the two torpedo boats and the S-boats that were engaged in this operation immediately following invasion. Tanker STEDINGEN would provide support for torpedo boats and U-boats upon request from Commander Torpedo Boats and CinC U-boats.



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The BLUNCHER, LEITZOW and EMDEN and three torpedo boats taking part in the Oslo invasion were to be supported by the tanker HIDDENSEE.

No escort force was provided for the vessels engaged in the invasion of Denmark. The old battleship SCHLESWIG HOLSTEIN and a number of auxiliary vessels were engaged in that operation.

The task of the Navy in these operations was to land shock troops in small ships and small craft under the protection of ships of the line, transport battalions from Warnemuende to Gedser by means of the Gedser ferry, and send supply ships to Fredrikshaven and Skagen for the purpose of establishing those ports as supply points for Norway.

The warships scheduled to land the first troops during the morning of 9 April 1940 were to put to sea again in the evening of the same day. The troops landed would of necessity be left without artillery protection and with no means of defense against attacks from the sea. It was therefore necessary that the first ships bringing logistic support should arrive at the individual ports on the same day the invasion took place. They were to bring guns necessary to defend the harbor and adjacent area, personnel and material required to establish an Air Force ground organization and also a body of troops to occupy the ports captured. The second phase of logistic support planned was for seven convoys to sail at intervals of from two to four days in the course of the following two weeks. The second, third and fourth convoys were each to transport one infantry division. The other convoys were to take troops, personnel and material for coastal fortifications, together with the remnants of units previously carried.

On the day of the invasion, supply ships and transports were to put into all ports at which German troops had been landed during the morning. The second supply convoy, however, and all subsequent ones, with the exception of a few tankers, were routed to Oslo only. Supplies were then to be shipped from Oslo along the coast, or sent overland to their destinations.

A series of circumstances prevented the German logistic plan for the Norwegian campaign from functioning exactly as intended. After the third convoy, considerable changes had to be made because of loss, damage or breakdown of ships, either due to or independent of enemy action, and the

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unexpectedly strong British submarine activity in the Skagerrak and Kattegat. Unloading was considerably delayed by the slow progress of the battle ashore in Norway. For some weeks this also prevented logistic support from being sent overland from Oslo.

AdmQu VI was charged with the direction of the sea transportation. In the loading ports - Koenigsberg, Gdynia, Stettin, Travemunde, Kiel, Hamburg and Brunsbuettel - the Merchant Marine Shipping Offices (KMD) were ordered to requisition all ships suitable for transports, tankers, or supply vessels and refit them in the yards for their various purposes. Most of the ships for the convoys, which were merchantmen with civilian crews, had been converted into troop carriers by mid-March, and at the beginning of the last week of March were lying ready for loading in their ports. By 1 April the ships which were to arrive in Norwegian and Danish ports on the day of the invasion and two days afterwards had taken on their cargo of guns, miscellaneous weapons, ammunition, provisions, equipment and vehicles. During the afternoon of 2 April the directive to commence the Norwegian operation was released by the Admiralty. The time for the seizure of the Norwegian ports was fixed at 0515, 9 April 1940. Troops and horses embarked in the ships shortly before they sailed.

Each merchant vessel carried a supercargo (in most cases a naval reserve officer) as representative of the Navy (AdmQu VI). This officer received secret orders concerning the ship's destination and the object of her voyage and, when required, transmitted them to the captain.

The following ships were scheduled to arrive on the day of the invasion:

at Narvik	5 (2 of which were tankers)
at Trondheim	4 (1 of which was a tanker)
at Stavanger	5
at Bergen	2
at Kristiansand	4
at Oslo	6 (1 of which was a tanker)
at Copenhagen	1
at Middelfort	1

Two days after the invasion the following were scheduled to arrive:

at Stavanger	1 tanker
at Oslo	11 ships

Three days after the invasion:

at Bergen	1 tanker
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Four days after the invasion:

at Trondheim                      1 tanker

Six days after the invasion:

at Oslo                              14 Ships (1 of which was a tanker)

The Export Force

The "Export Force" was instituted because of the demand of the Army and Air Force that the troops put ashore from the warships should have artillery and heavy equipment to support them in every port on the day the invasion took place. In order to reach the furthestmost ports in time, the ships of this group because of their slow speed were obliged to sail from the home ports as early as six days before the rest. They were left entirely to their own resources. No escort could be provided because it would have attracted attention. SKL raised strong objections to sending these ships to sea without escort, objections which later proved wholly justified, but it had to give way to the requirements of the two other services.

The vessels of the "Export Force" were camouflaged as cokeships. They were given a six-foot high deck load below the hatches, and their papers were for Norwegian territorial waters. If possible they were to prevent Norwegian authorities from examining the real cargo and, in an emergency, if forced to submit to examination, were to give Murmansk as their correct destination.

The Force consisted of seven vessels, three of which were for Narvik, three for Trondheim and one for Stavanger.

The Narvik group sailed from Brunsbuettel Roads, at the North Sea entrance to the Kiel Canal, during the early hours of 3 April. The Trondheim group followed on 4 April, and the ship for Stavanger sailed on the 7th. Not one of these seven ships arrived at their destination at the time intended. As early as Kobbervig, at the beginning of the Norwegian Islands, some of the ships were subjected to considerable delay because the Norwegian pilot station claimed that there were no pilots available for them. Later in the voyage, one vessel was torpedoed by British forces in Vestfjord shortly before reaching its objective, the second fell into enemy hands, and the third put into Bergen on 11 April, only to be sunk there in a British dive-bombing raid on 14 April while

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discharging its cargo. Of the Trondheim group, one struck a mine and sank, the second was sunk by a Norwegian destroyer, and the third reached Trondheim on 12 April. The vessel bound for Stavanger was sunk by a Norwegian torpedo boat on 9 April.

These heavy losses wrecked all Army and Air Force hope for being immediately provided with artillery, ammunition, equipment and provisions for the troops landed in the northern harbors.

The Tanker Force

The tanker force was composed of three large and five small tankers carrying fuel support for the Air Force. Of the three large ships, two were to arrive in Narvik on the day of the occupation. The third was to be in Trondheim on the same day so that the ships which had put in there could refuel and put back to sea again the same evening. To accomplish this it was necessary, in the case of the Export Force, that the tankers put to sea before the invasion commenced and proceed independently to their destinations. The whaling ship tender JAN WELLEM had already been sent to Folyarny, the Secret Supply Service base in Kola Bay in the Arctic Ocean, during March and was awaiting orders there. Her sailing orders were issued on 6 April. When the destroyers entered Narvik this ship was alongside the dock. The other two large tankers sailed from Wilhelmshaven on 3 April. Both fell victim to enemy action. The loss of these two tankers was fatal for the Narvik destroyers inasmuch as they were unable to put to sea the same evening as planned and had no alternative but to await the anticipated attack of vastly stronger enemy forces.

Of the five small tankers which were scheduled to arrive in Oslo, Stavanger, Bergen and Trondheim between 9 and 15 April with cargoes of aircraft gasoline, one destined for Trondheim was sunk on 12 April by a British submarine.

The First Sea Transport Force

This force, consisting of fifteen vessels, of which five were for Oslo, four for Kristiansand, three for Stavanger and three for Bergen, carried only troops. The ships sailed from Stettin on 5 and 7 April.

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Thus by the time they entered the dangerous waters of the Kattegat and Skagerrak they had the naval forces which were heading for the various Norwegian ports either ahead of them or near them. To form these ships up into one or more convoys would have immediately betrayed them as troop transports when they passed through Danish waters. Each therefore proceeded independently in the disguise of an ordinary merchant vessel, with orders to keep within or near neutral territorial waters. All troops had to keep below decks in sight of land or other vessels.

Two vessels in the Oslo group were sunk. The other three arrived in Oslo on 11 April.

Of the Kristiansand group, three ships arrived at that port on 9 April and the fourth on 11 April. The Stavanger force arrived safely.

Only one ship of the Bergen group reached its destination, on 11 April. One vessel ran aground on 7 April north of Helsingborg and had to put into Oslo on 10 April, while the other was sunk by a British submarine on 8 April.

The Second Transport Force

This group, consisting of eleven vessels sailed from Gdynia on 8 April. As the Danish waters leading to the Great Belt were already in German hands by the time the ships reached them, it was not necessary for them to be disguised as ordinary merchantmen. The ships sailed in a closed convoy and were protected against enemy submarines by armed trawlers and escort planes. In the evening of 10 April, British submarines attacked the convoy in the Kattegat, north of Goeteborg. They sank two of the ships and dispersed the convoy. During 11 April, eight ships put into Oslo and one to Frederikshaven.

The heavy losses incurred by this force (900 men were lost through the submarine attack) were the occasion for SKL to make immediate changes in its logistic plan. In agreement with the OKW, it was decided that:

- (a) Troops were no longer to be transported in convoy. Instead, troop transportation was to be effected in fast warships or fast small vessels over the shortest sea route between ports in northern Denmark and southern Norway.

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- (b) Material was to be transported as before, and ammunition, material and provisions were to be ferried in fishing boats from Skagen.

The Third Transport Force

This force, consisting of fourteen vessels, was divided up according to speed into five groups and sailed for Norway on 13 April. One ship was sunk by a submarine and another ran aground in the islands west of Fraerder. During 15 and 16 April the other ships of the Force put into Oslo.

The Southern Force

This force, which sailed to Korsør, Copenhagen and Middelfart for the occupation of the Danish ports, arrived as scheduled without suffering loss through enemy action.

Once railroad communications through occupied Denmark were available, supplies were rapidly ferried across to Larvik or Oslo Fjord from the northern tip of Denmark. In this way 21,000 men were sent to Norway in four weeks. About 100 fishing vessels were used in 5 weeks to carry some 8,000 tons of Army and Air Force material from Denmark to Norway. No losses were incurred.

U-boat Transportation

After the Allies had landed in Namsos and Andalsnes, the position of the Army Air Force troops in Trondheim became critical. They were completely cut off. Supplies destined for them had sunk in the Export Force. Railroad communication with Oslo had been severed and could not be expected to be restored until the land between had been captured. Supplies could not be sent by air. The Army and Air Force therefore requested the Navy to send aircraft gasoline, bombs, anti-aircraft guns and ammunition by every possible means. Although SML and CinC U-boats were loathe to divert U-boats from operations, especially at that time, the perilous position of the other services compelled them to detail seven U-boats to duty as transports.

One U-boat carrying 12 tons, and a second carrying 18 tons of supplies, sailed immediately and arrived in Trondheim on 18 April. The other five boats underwent a rapid conversion first, so that they

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could take on larger quantities of cargo. Two were fitted for carrying 20 tons of mixed cargo and 30 tons of aircraft gasoline, three for 50 tons of mixed cargo and 80 tons of aircraft gasoline. An example of the quantities which these U-boats actually took to Trondheim is shown in the cargo list of "UA" on 27 April 1940:

42,400 gallons gasoline  
1,433 gallons aviation lubricating oil  
1,166 rounds of 8.8 cm ammunition  
1 8.8 cm anti-aircraft gun with accessories  
16 250 kg. bombs

These U-boats kept up an unbroken shuttle service between Germany and Trondheim until the beginning of June, when the Oslo-Trondheim railroad was repaired to the extent that supplies could be sent overland again. Transportation of aviation gasoline by submarine was then abandoned as an unnecessarily dangerous practice.

The transportation demands made upon the Navy during the Norway campaign were far in excess of the original plan, and far in excess of anything even dreamed of by those in authority. By 13 May 1940, 70,161 men had been sent by sea to Norway. Those lost numbered 1,242, i.e. 1.77 percent of all transported. By 1 November 1940 the number transported was 222,490 and 1,300 (.6 percent).

The following list contains a review of sea transportation furnished by the Navy from 3 April to 1 November 1940:

No. of ships	Tons Gross	Men	Horses	Vehicles	Additional Cargo tons
497	2,004,327	18,911	<u>OUTWARD</u> 20,912	26,488	227,204
		33,379	<u>RETURN</u> 7	886	19,891
			<u>TOTAL</u> 20,919	27,374	247,095
22*	114,058	1,300	<u>LOSSES</u> 400	1,425	21,648

\*Of the ships listed above, three totaling 21,939 tons gross were towed in by German salvage tugs.

Total number of voyages: 953 totaling 3,733,988 tons gross.

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In addition, between 10 April and 22 May 1940, 100 drifters totaling some 12,000 tons gross were sent to Norwegian ports with about 8,000 tons of Army-Air Force supplies. In August and September, 48 ships were engaged in coastal traffic along the Norwegian coast.

Despite the success of this campaign, the Navy, from a logistician's point of view, did not have a formal plan of action when preparing for the Norwegian invasion. VAdm Machens, when asked about his plans for this operation, stated:

"One day, I think it was in March, I was suddenly called to SKL and there I heard for the first time that we would invade Norway. Naturally, the first things I asked was 'What organization shall I use? Where shall I get the men?' I was told that it was hoped that there would be no difficulties. Of course we could only improvise because nobody could be told about the plan, so I said to the chief of Adm Qu II, 'Can we collect some people, some companies of personnel, some gunnery personnel and so forth?' About 500 Navy men were on the ships going to Norway but I never did get them. I think the only reason we were successful at first in Norway was because some of the ships were sunk, for example the EDENIGSBURG and the BLUCHER. You see, the people we had destined for duty with the naval commander at Oslo and also harbormaster at Oslo (men and officers) all died. As a result the personnel of the EDENIGSBURG and the BLUCHER were sent to us and with them we made it."

VAdm Machens was interrogated at great length regarding logistic planning, the establishment of overseas bases to meet new supply demands, mobile support and other logistic measures employed by the German Navy. Pertinent extracts have been made from this interview. They follow.



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**EXCERPTS FROM AN INTERVIEW WITH  
VADM BRUNO MACHENS, ADMIRAL  
QUARTERMASTER OF THE NAVY AND  
LATER ADMIRAL NORWAY, HELD AT  
KIEL AND BUTIN, GERMANY, ON 21  
AND 23 AUGUST 1951.**

- Q. Admiral Machens, what changes in the logistic establishment of the German Navy would have been desirable in order to increase the relative authority of the chief of the supply organization and therefore improve the control of its logistic functions?
- A. Well, you see, the chief of the supply organization must be a man who has some experience in operations too so that he can not only tell about his own tasks but also mix in operations himself.
- Q. What you mean by that, sir, is that he should be a man of great experience in line and tactical duties?
- A. He must also be a technical man. His education in the Navy cannot be confined only to the supply organization. For instance, we had supply officers. Their word would not carry the necessary weight. A man who has the Fuhrergehilfenausbildung in the German Navy, that means staff experience, is the one who must be a chief of a supply organization. Perhaps a chief of staff could be a supply officer, but not a chief of a supply organization.
- Q. For example, in your staff organization in Norway, were there any supply officers?
- A. Naturally. We had not only a supply officer (he did most of the accounting and such things) but we also had a Flottenintendant (an Intendantur official with the rank of captain). He was a very clever man and we worked very well together.

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- Q. Was his experience such that he would have been chief of a supply organization?
- A. No, I don't think so, because he knew nothing about operations. He had studied law.
- Q. To what degree did the personalities of particular senior officers affect the structural system of the supply organization and its functions?
- A. That is a most important question because in my opinion the chief of a supply organization must be a good housekeeper, especially in the German Navy. He cannot be a man who is used to waste. You see people are different. Some will hold and some will spend. I think that it should be one of his most important qualities. He must be a thrifty individual.
- Q. Did the personality of any one of your particular senior officers, perhaps Gross Admiral Doenitz, affect your supply system?
- A. Naturally. Not only Doenitz but also any one of the other officers, I'll give you an example: In Norway we had some commanding admirals. They gave us (Adm Qu) their demands. I knew them and therefore I knew in some instances that we must furnish 100 percent of what they requested or even more because that particular officer would ask for only absolutely necessary things. The other would get only 80 percent of his demands because he always longed for more than he needed.
- Q. What educational system existed for junior, intermediate and senior officers in supply procedures and in strategy and logistics?
- A. We had the so-called Fuhrergehilfenausbildung, a naval staff college. The course lasted two years in peace time. Naturally, there were classes in strategy and logistics. For some parts of the supply procedure, we went to OKM/E. They gave us lectures there so we would have an over-all view. At the naval schools, we were also taught to write operational orders and learn the necessity of close co-operation between the tactical commander, the strategic commander, the logistic officer on his staff and the supply personnel in the dockyard.

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- Q. Naturally, the writing of your estimates of the situation, etc., was the most important phase of operational planning, but was it not necessary that you have a fair understanding of logistics and supply procedures?
- A. You must remember that at that time we had just the North Sea Station and the Baltic Station and we never thought we would be going to Norway or Denmark. Our mission was to protect the coasts of Germany and to stop a foreign navy from going into the Baltic Sea. Those were our aims and therefore all these questions of supply were not so difficult.
- Q. That is very interesting, however, I got the general impression during one of the conferences held yesterday, when an admiral said that he never anticipated a war, that your logistics system could not keep up with your occupation forces.
- A. I did not even believe after the war had begun that we would get all of France. I thought we would be successful if we got the Channel coast up to Calais.
- Q. So your plans of war never included anything like occupation of Western France?
- A. I remember that we played what we called "War games between the Blue and Red". I played it for the first time in 1937; maybe some played it the year before. In 1937, we had the first game "Britain attacks the North Sea."
- Q. Britain and France?
- A. Yes. Britain would help France. Up to that time, in politics, we said England would help France. It was more instructive to play our war games against two opponents than one.
- Q. Can we discuss the authority of an area commander?
- A. Our concept of organization was that every little commander in his little district was a king in his own house. But some men in the Admiralty tried to build up their own Navy. Take, for example, ammunition. MarRuest/ANA controlled it through the Ammunition Inspector-

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ate, because the Inspectorate always got its orders from the Admiralty. Therefore, ammunition people could rotate between the Admiralty and the inspectorate. I think it started in the time of Tirpitz. He built up the Second Navy to a point where he was CinC. He was against the Admiral Staff and because he was a great person, he won, and from that time on was an important figure. Many tried to do the same thing themselves.

- Q. What in general was the concept of logistics in the German Navy?
- A. I told you that before the war we did not imagine that the war would be extended in such a way. It might be extended in the Baltic Sea. It might be extended in the North Sea up to Calais. In that case, the North Sea Station and Baltic Sea Station would be sufficient.
- Q. What about your mobilization planning? Did you envisage the necessity for any new supply facilities either at home or abroad?
- A. It would not have been necessary to establish new station commands, such as Norway and Black Sea, etc., so I do not think we had prepared any plans; none that I ever heard about.
- Q. What did you develop along those lines during the war? How did you take care of situations that arose?
- A. I told you about my experience just before the Norwegian invasion. There were no real plans for that.
- Q. As the war progressed, did you give consideration to an enemy country's economy in your planning?
- A. Yes, we tried to do that to a high degree in Norway. You see we had very few watching vessels, i.e., coast guard ships, so we took some of their trawlers and made contracts with the Norwegian dockyards for them to build us some trawlers.
- Q. What did you do about getting what supplies you could out of the occupied countries?
- A. We had a Reichskommissar. I think he was responsible for all supplies from the occupied country. Most of these things went to the Army. I remember seafood and blankets. We had to collect them and deliver them to the armed forces.
- Q. Did the Navy control the fishing industry?

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- A. We established some factories. The Norwegians did not have big freezing factories. They have now. One factory had just been built by the Germans, but was not finished. Afterwards we had some freezing factories in Trondheim, in Skolweg and in other parts of Norway.
- Q. Did you send these products to Germany to increase your food supply?
- A. There was not enough fish for that. The Norwegians in Tromsø, however, could always get fish when I was there.
- Q. In your logistics planning in Ådm Q1, do you know of any steps taken before the war to stockpile important strategic materials?
- A. I think we did. Captain Mommson will know about it.
- Q. Do you know how far Germany progressed into the war before the Navy developed any shortages?
- A. Yes. I recall that when I got my command as Ådm Q1, I stocked copper. That was in the last part of 1942. Copper was very limited. Afterwards we had enough copper because we did not use so much. In former times we used copper in many electrical fittings. Then copper began to be restricted. We discovered how to use aluminum as a substitute. When that was accomplished, there was no shortage of copper. I think steel or steel plate or any metal like that was a problem though.
- Q. I was just wondering, because you must have had some kind of stockpiling program in effect before the war.
- A. I think there was no stockpiling before the war. Perhaps some persons from the Speer Ministry can tell you.
- Q. You know about General Haushofer, the professor who taught geopolitics at the College of Munich? Do you happen to know whether his theory was used as a basis for any logistic planning?
- A. I'm not sure, but I remember that during the war, especially during the fall of Russia, that there were fights between Hitler and the General Staff because the General Staff only thought of things from the military point of view while Hitler had to consider the oil fields of Baku or the Dnieper and the electricity of that river. I think I found this theory used to a small degree at that time.
- Q. Do you know to what extent German losses were considered in logistic planning?

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A. Naturally. I remember minesweepers were one of the first tasks I got. We said, "How many losses will we have? How many minesweepers can be built?" If the losses went up, we had a conference. "Can we build more?" That meant we must get the material from other things, so we had stop this or that. I think one of my prime tasks was to decide what was most important. I remember we had to build landing craft. That was in spite of the wish of LSKL that destroyers be built. By and by all these ships were sunk, then submarines got up to first place. It was very difficult to build any type of big ship.

Q. I suppose in your planning you considered other kinds of losses?

A. Naturally. I also considered ammunition. You see at first we had to deliver very little ammunition to our coastal batteries because they did not shoot very much. After the Russians came though there was great consumption. This was also true in Norway.

Q. Weren't your naval artillery stations along the coast firing at English pilots too? Didn't you also have to have large quantities of ammunition there?

A. It was very difficult to get AA ammunition. The Army and Air Force needed it too. I gave preference to some sections. We spoke about this before. I remember that sometimes I got ammunition from other theaters of war and put it into Germany and if we had some bigger deliveries then I stocked the batteries. It was important at the beginning of the war that all our batteries should have a real supply in their ready rooms so we could draw on that supply.

Q. How was your logistic planning integrated with your strategic planning?

A. Well, I think that the logistic planning - I'll say it in another way. The strategic planning was not integrated too much with logistic planning.

Q. I see, not too much. But it developed as you went along? As you planned to go into the Mediterranean, how did you arrive at your requirements and how did you determine how you were going to get them there?

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A. In Adm Qu, when I saw during a conference that something was in the air and I, from my knowledge of things, saw that the supply problem would be of great importance, I went to Wagner (18KL) and said, "I think there is something going on where you will do something; you will not speak about it. Is that not right? If you will do this and that, from my knowledge of operations, then we have this and that thing and we must do this and that." You see all these things cannot wait. They must be done ahead of time because it is very difficult to handle such affairs at the last moment. If the order is given and you then interfere, it is too late.

Q. Do you know, Admiral, of any mistake that was made in the selection of any advanced bases in Norway or in France or other mistakes in planning for operations or in the selection of bases?

A. You could not select very many places in Norway because Nature gave you only certain places and they were the only places you could establish bases. . . was the same with the coastal batteries in Norway. It may be that nowadays there are not as many batteries as we had there during the war but if you had to build new ones, you would come to the same places. There are no other places because of the mountainous terrain. The supply bases had to be at important harbors such as Bergen, Trondheim and Kristiansand.

Q. Were they there already? Did you take them over from the Norwegian Navy?

A. Yes, we took the dockyards and the supply storehouses from the Norwegian Navy. We could not build new ones.

Q. Was the same true in France?

A. As I understand it, it was the same, but in France they also built the submarine pens. Maybe they built some underground storage.

Q. Were there any organizational weaknesses or conflicts of authority between OKM and the OKW?

A. There were always quarrels, I think because the OKW was not an OKH (High Command of the Army). It was an Inspectorate of the Army. The others (Navy and Air Force) were parts of the Armed Forces. We suffered in these quarrels because of lack of proper representation.

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At first, we only had Captain Assmann there and therefore we sent Admiral Voss. OKW was the highest level organization on paper. That is all very well if you have a head of OKW and then three separate heads of the different branches, but all three different persons will not conform if the chief of OKW has no personality. In the Navy it was just the other way. We had Doenitz and Raeder. Doenitz was a personality but Keitel was not. And if, for example, Keitel ordered 30,000 men from the Navy to the Army, I don't think Doenitz would do it. He would go to Hitler and say "Shall I do it or not?"

- Q. Along the same lines, Admiral, I have read of the story of Grädm Raeder's new appointment, after he apparently had a misunderstanding with the Fuehrer, and Admiral Doenitz's appointment as CinC Navy.
- A. As Admiral Inspekteur? That was only a title.
- Q. But Admiral Raeder was a very fine officer, was he not?
- A. I think his abilities, especially to educate the officers, were very great. I also think Doenitz was too specialized.
- Q. As a submarine officer?
- A. Yes, also at one time in torpedo boats. We all had been in torpedo boats at one time, when we had only two flotillas in the Reichsmarine.
- Q. What logistic problems did you have that were peculiar to the support of the fleet in Norway and France?
- A. In supporting the fleet and submarines in Norway, we had the problem of using certain caves. We had to dig them.
- Q. Were there any other problems that you recall?
- A. Yes. It was a very long way to Norway, so take potatoes. You know that the Germans eat a lot of potatoes. Most of the time we had them frozen. When I was in Tromsø, from January to March, I had only frozen potatoes to eat. Another problem in northern Norway was refrigeration space.
- Q. What were the methods by which these operational plans were translated into terms of supplies, for instance, requirements for spare parts and common supplies? I think that question has been answered by some of your admirals, but you might be able to shed some more light on it.



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- A. Here you had your operational plans and LSKL would say, "This is what we are thinking about. You take the plans or the hints of the plans and translate them into what you will need in Norway." LSKL would have to decide how many mines should be given for this or that operation.
- Q. You told me when we discussed your general difficulties that you would get these hints from LSKL and then you would go back to your staff and have them get you the information you needed.
- A. Naturally, if a mine operation had to be done, I went to Admiral Mueller in MarRuest and asked, "How many mines do you have and how many will you get in the next 14 days? What types of mines and when? I heard from the LSKL they need such and such", and they would give me the information.
- Q. Then the mining group had a good stock control system and were able to tell you right away. Was this also true for ammunition?
- A. Generally they could tell me at once, but sometimes they had to send telegrams to the Inspectorate. Then they would know.
- Q. Do you believe that they had a good stock control system?
- A. I had a book which I always kept to myself. It was a small book. I entered all the things they said we needed in it. When I knew that an operation would be discussed with Doenitz or Raeder I took it with me. When we needed more detailed information General Moller (OKW) was also invited but he only stayed as long as he was needed at the conferences.
- Q. What single service logistic responsibility for all the Armed Services was assigned to the Navy?
- A. Only sea transportation. All railroad transport, also all inland waterway transport was controlled by the Army, but in spite of that, we of the Navy picked up some transport of our own. For instance, we had some E-boats we wanted to send to the Mediterranean and, as long as we could, they would go on inland waterways through France. Part of the way they had to go on very large Navy trucks.
- Q. Did you have any other single service responsibilities?
- A. No.

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- Q. What relative emphasis was placed in your planning on logistics; what percentage of the whole effort?
- A. It is very difficult to tell because it embraces the whole process from the producer to the consumer, but in the planning itself I cannot give you these percentages. I think when we established the bases in Norway, the logistic planning was a whole lot, maybe 70 percent.
- Q. In the whole war effort then, as far as running your office was concerned, would you say it would probably be about 25 percent?
- A. It might have been about 30%.
- Q. How much emphasis was given supply space in planning new warship construction?
- A. You see, in designing a ship, there was always a big quarrel between all the different departments, especially between the torpedo, the gunnery and the supply departments. It was not only because of the organization but also because of the personalities involved. Before the war, we had Admiral Witzell, now the Russians have him. He was a man of very much knowledge but he looked at things only from the standpoint of weapons, therefore SKL always had to interfere to make sure that other departments were not neglected. We had some percentage factors worked out; for instance, in torpedo boats we would give 20 percent for gunnery and for speed such and such a percentage, etc., Of course you always had to take care that the supplies and stores were not neglected.
- Q. But that was primarily a job of Adm Qi to go over the plans and take care of these details, wasn't it?
- A. Sometimes. You see, if MarRuest/K was going to construct a ship, some reserve space was always left because new demands for new equipment always arose and we had to make sure that they did not take it from the equipment storerooms or from the navigation instrument storeroom or from the bridge. I think it was a famous English constructor who said, "I have built a lot of bridges, but no none has ever been satisfied with any of them."

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Q. The reason I ask the question, Admiral, is that on an inspection made abroad the PRINZ EUGEN when she was first brought to America, a commander in our Supply Corps made a report that many of the storerooms of the supply department were next to the skin of the ship, that they were long and narrow and that in order to get to the stores in the back of the storeroom, you had to crawl over boxes and crates or pull all the stores in front of them outside, and that your spare parts were on the skin of the ship. The one thing that attracted my attention as outstanding in the design of the PRINCE EUGEN was that you lined your flour rooms with hard wood to cut down condensation from the bulk heads. I have also been told since that some of your outer provision storerooms were constructed the same way. As a result I am wondering, how much attention was given to ship design as a logistic factor.

A. I think all this would have been developed by the by. It was not the way we did it. If you designed a ship, then you could lay out what you needed. From experience you knew that you needed this and that, but naturally, these rooms were often built in such places as were left over, because the engines, guns and magazines all those places had to be in certain spots. You put the provisions in what was left.

Q. Did you have a course in logistics at your Academy?

A. Not only for logistics. I told you that at the Naval War College we had lectures about logistic planning. If we made a plan for an operation, the teacher always asked us: "You did not neglect your supplies, did you?"

Q. Was that particular course conducted at Murwik, or where?

A. In the Admiralty at Berlin. It was not a special course but, during the general career of an officer, you went there before you were ordered to a senior job.

Q. What was your naval concept of living off conquered land? How did it work? Did it have any faults or any virtues?

A. Naturally, you will use as much of their materials as you can. I think it was quite different in the various countries, but I only can tell about Norway. We made contracts with the dockyards to build ships.

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At first when they had material all went well, but after a while we had to give them steel, etc., and it was always difficult because steel was always needed elsewhere. And when they said: "We must have it.", we only produced a percentage of what they said they needed.

Q. But in the contracts you made with them, was there any guarantee that you would pay them, or was their service just militarily requisitioned? .

A. No, it was not requisitioned. I would speak with the Reichskommissar. There were people who said: "When they don't do it, catch the owner and take him to prison." "That is nonsense", I said, "if you want to get something. If you do that, he will only be a martyr." Anyway, we made contracts just like we did in peace time. If a ship was to be ready on a certain date, the dockyard would get a certain sum. If it was ready earlier, they would get a bonus, and if it was late, they would have to pay a fine.

Q. Did the same conditions prevail in everything that you procured from this country, in everything you required for your operations?

A. I don't know. The Reichskommissar had to provide it. We dealt only with the dockyards.

Q. Which Kommissar?

A. The Reichskommissar. We spoke with the dockyard immediately. That was the job of our Flottenintendant.

Q. Can we discuss the subject of mobile support?

A. In peacetime we had in the Navy a lot of vessels, not only tankers like the DITTMARSCHEN, but also little small tankers and barges and naturally also tugs, etc. They were generally under the command of a main or second class base. The latter were small dockyards like we had at Swinemünde. They could make small repairs. But there were some tugs. When a cruiser went into the harbor of Swinemünde the supply depot had some tugs which could serve the cruiser and some motor launches or boats to carry food and water; also barges, etc.

Q. Did you have a service force like we have?

A. Yes, we had one but it was not very large.

Q. You had a very special method of supporting your ships in that each major fighting ship and every two or three smaller fighting ships had a special supply ship that accompanied the ships on voyages and

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furnished supplies.

- A. Yes, but in many instances they were chartered boats and were used for other things too.
- Q. Did they go to Norway when you had a special force operating there?
- A. Yes. We had some big battleships operating there and we had two or three tankers and some repair ships because it was so difficult to get repairs done locally. The only dockyard was in Tromsheim in the north. If we had a repair ship available, it went to Narvik, because there was a small dockyard there in Bogen Bay.
- Q. Did you have submarine tenders up there too?
- A. Yes.
- Q. And they were prepared to make the repairs and furnish sleeping quarters for the crews?
- A. Yes, some of them had sleeping quarters. We generally had some houses in Harstad near the naval base so they could sleep ashore.
- Q. In fueling at sea, making the transfer between ships, did you do that underway?
- A. Yes, we tried it in peacetime very often.
- Q. And is that the reason you built the DITTMARSCHEN-type of ship, so you could make transfers underway?
- A. Yes. We tried all types of transferring fuel, coming in a parallel line or from behind or with the destroyers going behind the DITTMARSCHEN.
- Q. What did you find was the most effective method of fueling? Do you happen to recall?
- A. I cannot remember exactly. I think going behind the DITTMARSCHEN was the best way because I remember that usually when taking on fuel, we set up the pipe lines with the fuel hose over the stern.
- Q. I read in the log of the ATLANTIS that she always fueled in tow behind the tanker.
- A. Yes, we fueled alongside underway in peace time once. We were just trying it.
- Q. What was the effectiveness of the DITTMARSCHEN as a mobile support ship?

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A. I think that these mobile support ships were very effective. I remember, when we were in Spain, we refuelled at sea without any difficulty.

Q. But I am not just thinking of fuelling. Was she an effective ship as a whole?

A. Yes. She had torpedoes, supplies and ammunition.

Q. Do you know of any defects found in her design, or any changes that were made after she was built?

A. No, except when she was first commissioned, but they were just normal changes.

Q. In the construction?

A. Yes.

Q. When you were in Norway, that was perhaps your longest supply line. How long was it?

A. I don't know exactly.

Q. Was that the first time your Navy had such a long supply line? And was it the longest one you had during the war?

A. Yes.

Q. Did you support your submarine bases in France entirely overland?

A. Yes, as far as I know.

Q. And what did you do in conquered countries to cut down the strain on Germany's economy?

A. When we came into Norway, rationing was introduced. All food and clothing was controlled through the Reichskommissar.

Q. In your preparations for the campaign of Norway, did you use a system of loading your ships where the first things needed when you arrived were loaded on top? (Combat unit loading system was explained.)

A. Yes. That is one of the most important things in sea transport.

I remember in 1923 or 1924 we had maneuvers with the Army and a loading problem of very small proportion, where we put the cannons on board. At the time we had horses to pull them. The carts were stored on topside, but the tongues of the carts were stored in the bottom of the ship. When we were unloading, we had everything but the tongues. It is such small failures that give you experience. I always thought of these tongues when I had to load a ship.

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- Q. And you actually loaded your ships that way when they were going to Norway?
- A. Yes, Adm Qu VI had a lot of merchant marine officers. They were told what was needed and in what order and they handled it.
- Q. Do you think it was effective?
- A. Yes, there were some mistakes, but the use of merchant marine officers was important since they had more experience than we had.
- Q. Can we now discuss the methods used to disperse your material in the event of mobilization? In talking to these various gentlemen today, we found that you had small storehouses built inland in back of the bases. Do you happen to know if these were built before or during the war?
- A. Such things as ammunition, torpedoes and other valuable things were dispersed. But food and clothing was more concentrated. After the beginning of the war, especially when air raids began, we had to disperse our stores even to Posen, especially the food and clothing. This was true all over Germany. We did not do this generally before the war. But during the war we put them in dance halls and other large covered spaces. When the war began, or just before, manufacture of the clothing was stepped up. During the first days of the war I went with my admiral through the clothing factory at Wilhelmshaven. They were working at high speed.
- Q. Was that because you had a lot of new men coming into the service and needed clothing for them? Were you able to get it all sufficiently in time?
- A. I think so. Mobilization contracts were made, especially for clothing and food. I remember in 1938 we had a logistic planning seminar in Goslar in the Harz Mountains. The Reichsnährstand (a farmers' organization) people had discussions with our Intendantur officials about how the Navy would get its food during war. The conference lasted about eight days. I was there. We had never had a meeting like that before. It was very interesting, inasmuch as a lot of problems arose.

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- Q. Then you never really considered logistic planning as very important before the war. I think you told me that you tightened up your whole supply system in 24 hours after mobilization, that price controls went on throughout the country and that issues or sales of all non-essential material was frozen.
- A. Well, take food. We had the Reichsnahrstand. Through this organization, it was possible for each village to produce a certain amount. It was then determined what percentage of it the Navy would get and from where.
- Q. In the tightening up of the organizational structure of your supply system and procedures you were still free with materials? If one screw driver would accomodate three men would only one screw driver be furnished? Is this the way you worked?
- A. Yes. One of the failures of this organization of the Admiralty, the Inspectorates and the Supply Centers was the duplication of material. In Tromsø we had an Ordnance Inspectorate Supply Depot. They had their own screw drivers and screws. And then one day a supply depot of another inspectorate told me it did not have enough screw drivers. So I went there and looked at the stock and I said, "You take some from the Ordnance Supply Depot. You only have a small stock but if we put them all together we will have sufficient." One of the weaker points of this system was that everybody, torpedo, gunnery, communications and mines, had their own stores. That was the reason why we, Schubert and I, always tried to have a horizontal organization. That means, that the commander-in-chief of an organization, as I told you, is king in his own house and is able to bring them together in a centralized store. When I went to a new place, for instance Harstad, I visited all the storehouses, not only the troops, because I thought maybe at some point there might be a want. The sailors in a communication station had no wardrobes. I went to the storehouses where the Intendantur kept his stock and he had a lot of them so I brought them together. I think that is the task of local authorities. I tried to strengthen the authority of the local commander but sometimes difficulties were experienced with the technical



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bureaus of the Admiralty.

Q. In Norway did you have any freight transit facilities? By that I mean, did you set up a place on your docks for sorting freight or did your ships send their boats alongside the supply ships to get their stores?

A. Generally it depended on the type of supplies being received. In the case of ammunition, it was brought alongside the ship in an ammunition lighter. But a destroyer would get it with its own boat.

Q. But you would not unload general stores on a dock and segregate or separate them?

A. No. Generally we got them from the ship itself.

Q. Did the manpower in Norway, the civilian manpower, all come under the Reichskommissar?

A. Yes, we had civilians paid by the Navy too, for instance night watchmen, etc., as we had in Germany.

Q. What was the effect, in your opinion, of a General Staff, the OKW on naval planning for mobilization, for weapons, ammunition and stores?

A. They did not do any planning.

Q. But they did have to approve your final plans in the OKW, didn't they?

A. I don't think they did before the war.

Q. Before the war?

A. In some ways, as you heard from Captain Schuler, one of the tasks of the OKW was to decide what percentage each branch of the armed services would get of available stores. I think, in a coming war, this task should be given more to the services, since they have to divide the material, especially if there is a run on material. This must come from a higher command. Otherwise, it will be as in Germany, where the Air Force got more than the other forces due to the fact that Goering had a strong control over industry.

Q. What would you say were the outstanding features of the planning for operations in France and Norway?

A. Let's take Norway. It was handled only in LSKL and in the General

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Staff of the Air Force and of the Army, but when things had settled down to a certain degree, a new staff was formed in Norway under the command of Falkenhausen. This staff was comprised of Army, Navy and Air Force personnel and they arranged all these things. I told you, I think it was in March, that I was called to Berlin to see GrAdm Raeder and Adm Bohm about the invasion of Norway. We had nothing to do with the landing but I had to write down our first order, what we would do in occupying the country after the landing. The political picture was drawn for us in such a way that we thought everything would be quiet, there was not very much to put down. I had to see that sealed orders were delivered to the different groups with instructions to open it when they were at sea. We only put down that their first task was to get into communication with the Commanding Admiral Norway and to put up a defense if the British followed. Not many instructions were given for future operations. I think, if I remember correctly, that we did very little, and after the first few days I was always wondering whether or not I had ordered the right things in the right quantity."

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#### CHAPTER IV - MOBILE SUPPORT

The Navy had no regularly organized service force or service squadrons such as we had developed at the outbreak of World War II. Instead, it had a small force of naval repair ships, supply ships and tankers whose mission it was to support the forces in the North Sea and Baltic. It was aware of modern naval thinking in this branch of naval science, however, and had plans to develop and provide its fighting units real mobile support, Example: The DITTMARSCHEN (now the USS CONECUH, AO-110) and NORDMARK (the ex-WESTERWALD) and ERMELAND, all 10,821 GRT fleet supply ships with a speed of 21 knots, and large bunker space for fuel for pocket battleships, were built in 1937. In 1939, fleet supply ships ALTMARK and FRANKEN both 11,000 GRT ships, also with a speed of 21 knots, were put into service.

##### Heavy Units

The German concept of mobile support was that a battleship or pocket battleship would always have a supply ship assigned to it. These supply ships moved with the battleship or pocket battleship at all times and were their main source of supply for everything, including food. In the two ships, i.e., the fighting and supply ship, a six months' supply of consumables, except fresh food and fuel oil, was carried at all times. It was distributed as follows: Ordinarily, three months' supply of consumables, such as hardware, cleaning gear, line, etc., stored in the fighting ship and a similar three months' supply carried in the supply ship. Transfers were made between the ships as required. Ammunition was an exception to the general rule, because requirements were indefinite. Ammunition resupply, however, was carried in the supply ship.

When on extended operation missions, such as the one the SCHARNHORST undertook in 1940-41, five or six supply ships were stationed at strategic

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positions in the Atlantic, such as in Norway, Northwest Africa, Greenland, Iceland and waters around the Lesser Antilles, so that one of them would be available in whatever sector the fighting ship might wish support.

These ships were combination tanker/supply vessels equipped with a reconnaissance plane and guns to defend themselves against enemy merchantmen, submarines or other light forces and aircraft. Space was provided for prisoners taken by ships supported by them. Example: The supply ship ALTMARK was captured by HMS COSSACK at Josing Fjord, Norway on 16 February 1940 with 299 British survivors of vessels sunk by the GRAF SPEE.

Although manned by civilian crews, these supply ships were provided with regular naval supply personnel, including an officer, to supervise the requisitioning and accounting for stores carried. A cargo officer, usually an ex-merchant officer with great experience in handling cargo, had charge of loading and making issues. Eight of these ships, according to Flottenintendant Wulff, each carried 11-12,000 tons of oil. The bunker capacity of a pocket battleship was 3,000 tons. Its consumption rate, Wulff estimated, was 60 tons per day at normal cruising speed of 19 knots. When a supply ship's 12,000 tons was added to the 3,000 tons of a pocket battleship, a great cruising radius resulted.

These supply ships carried all types of stores, spare parts, food, ammunition and other material necessary to support a fighting ship. Although they operated under the direct cognizance of the logistic support departments at Kiel, Wilhelmshaven or St. Nazaire, Group North/Fleet was charged with effecting their rendezvous with vessels to be serviced. Fighting ships were not permitted to use their radios to contact supply ships; therefore, Group North/Fleet directed them to proceed to a rendezvous point. The supply ship received a similar directive. Usually it was ready to service the fighting ship with fuel by hose (in tow with the fighting ship 500 meters astern the tanker, not parallel, at a speed of 7-10 knots, using two hose), and food and general stores (by boat, not high line transfers running parallel underway) when it arrived. Transfers of stores were usually made at night with both ships practically dead in the water, "a dangerous practice", by RAdm Schubert's admission. VAdm

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Machens stated that several trials of fueling and transferring stores steaming parallel underway had been conducted in peace time but that the method had been discarded as unsatisfactory. Some of the methods employed in mobile support in the Atlantic were discovered in the log of the pocket battleship ADMIRAL SCHEER, from which the following entries have been extracted:

10/27/40	ADMIRAL SCHEER departed Brunsbuettel accompanied by the supply ship NORDMARK
11/17/40	NORDMARK supplied U-65 and tanker EUROFELD (Raider ship #10's tanker)
11/18/40	NORDMARK serviced ADMIRAL SCHEER with supplies and ammunition
12/14/40	NORDMARK fuelled ADMIRAL SCHEER
12/18/40	ADMIRAL SCHEER captured DUQUESA a refrigerated ship, carrying meat and eggs from Argentina to the United Kingdom. Placed prize crew aboard and ordered her to rendezvous with NORDMARK
12/21/40	DUQUESA provisioned ADMIRAL SCHEER
12/22/40	DUQUESA provisioned NORDMARK
12/27/40	DUQUESA provisioned ADMIRAL SCHEER and Raider Ship #10
12/29/40	NORDMARK refuelled and furnished supplies to ADMIRAL SCHEER
1/2/41	NORDMARK refuelled Ship #10 and EUROFELD
1/5/41	DUQUESA provisioned STORSTADT, a regular supply ship that came to South Atlantic with spares for ADMIRAL SCHEER: also provisioned Raider Ship #10.
1/6/41	NORDMARK fuelled ADMIRAL SCHEER (diessel oil) STORSTADT refuelled NORDMARK (black oil)
1/8/41	NORDMARK fuelled ADMIRAL SCHEER
1/9/41	DUQUESA provisioned ADMIRAL SCHEER

Note: DUQUESA was a coal burning vessel. When fuel was exhausted and SCHEER, NORDMARK, Ship 10 and EUROFELD had taken aboard all provisions they could store, DUQUESA was sunk.

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1/24/41	NORDMARK fuelled and furnished supplies to ADMIRAL SCHEER and SANDEFJORD, a prize merchantman, preparatory to despatching SANDEFJORD to a French port with prisoners.
2/1/41	NORDMARK refuelled ADMIRAL SCHEER
2/17/41	KETTY BROVIG (prize tanker) refuelled ADMIRAL SCHEER. NORDMARK furnished ADMIRAL SCHEER with supplies.
3/10/41	ALSTERUFER furnished ADMIRAL SCHEER with supplies
4/1/41	ADMIRAL SCHEER arrived Kiel

This operation lasted 161 days. The ADMIRAL SCHEER steamed 46,419 miles, was furnished logistic support by the NORDMARK, DUQUESSA or KETTY BROVIG on fourteen occasions, and sunk or sent to French ports 21 enemy ships, totalling approximately 151,000 GRT.

Although an extravagant use of supply ship tonnage, this system of mobile support of battleships and pocket battleships worked very well, according to many persons interrogated. There were, they said, no failures in the system.

Cruisers

Cruisers, because of their reduced cruising range, had no supply ships assigned to them. They carried consumables sufficient for 33 days' operations. Fuel was furnished by tankers rendezvousing on orders from Group North/Fleet.

Destroyers and Torpedo Boats

Destroyers and torpedo boats had a very limited range of operation and therefore carried only a small amount of consumables. No repair or depot ships moved with them.

U-boats

With submarines a different situation arose. The 250 ton type U-boats were used for coastal defense only. They could operate away from port for only 14 days. They were replenished at their operating bases.

All other types were supplied by undersea supply ships known as "milk-cows". These undersea supply craft were built especially for this purpose. They were short but had a broad beam. They were constructed, according to

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Capt. Hans R. Roessing, Commander U-boats France, of parts from type VII submarines and had a large bulge around the hull. They carried, in addition to fuel, submarine spares, food, clothing, anti-aircraft and other ammunition and other essential supplies. They had a small machine shop, with tools and lathes, capable of performing small repairs for submarines. They had a quick release type of fueling hose, with a telephone connection running through it, that permitted cessation of fuelling underwater if an enemy was heard approaching during the operation, or a crash dive was necessary when fuelling on the surface.

A doctor, with medical equipment stores, was embarked on each trip. Supply ratings were attached to these ships, but they carried no supply officers. If they met a U-boat that had lost one or two men through injury or illness, they tried to replace them from their own crew.

In discussing these ships, Capt. Roessing stated:

"The number of subs supplied by the cows varied. It depended on the requirements of the individual subs which, of course, were cut to the extent that homeward bound subs were given only what was necessary to make port and those subs on transfer to their operational areas were given what they had consumed up to then. Thus, the quantities issued to the individual boats were normally rather small. With the capacity of the cows of about 350 metric tons of fuel, it was fairly possible to replenish ten or more subs, although the numbers were sometimes smaller. Often, five or six subs surrounded the cows when air surveillance was not too strong. The cow's skipper had to be a smart dealer as his clients often wanted more than they were entitled to and tried to bargain. Undersea torpedo carriers to replenish submarines with those weapons were commissioned during the latter part of the war but were never used in that capacity, although they were employed to transport torpedoes to Norway."

The U-boat command had 14 such undersea supply ships, also five surface supply ships, the **NORDWARD** (4,000 tons, speed 10-1/2 knots), the **KURLAND** (7,600 tons, speed 14 knots), which operated mostly in Norwegian waters, and the **KOTA PINANG**, **BULLAREN** and **PYTHON**, concerning which there are but few details regarding characteristics or area of operations. The loss of the **KOTA PINANG** and **PYTHON** on their first supply operation prompted the Navy to build the undersea supply ships, which normally operated from

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the port of Bordeaux. Some of the 1600-ton minelaying submarines were converted during the latter stages of the war into undersea tankers, according to Roessing, because (1) the mines developed had proved unsatisfactory, and (2) these submarines were so large that they could do little with them in certain mine fields.

Most of these underseas supply ships and tankers were lost during the spring and early summer of 1943 through bombing or air borne depth charges.

When asked why, Roessing said:

"The British built up west of the Biscay about that time a patrol of aircraft and subchasers, destroyers, corvettes, etc., where our destroyers could not reach them. Our air force was losing superiority in the air in that area. Another reason was at that time we had no schnorchel and the submarines had to surface. The return trip through the Biscay was the greatest risk of any mission, particularly for the cows, since they were very clumsy in movement and offered, because of their size, a better target for Asdic and water bombs. We lost one after another. It was an absolute tragedy at that time. We had our other subs outside starving and we had to send our regular torpedo carrier submarines to refuel them in order to get them back to the base. After that, the operational submarines would run out and have to return. Contrary to some opinions extant, the pocket battleship ADMIRAL SCHEER was the only surface vessel that serviced submarines operating in the Atlantic."

Small Units

Minesweepers, E/R boats and small battle units were all supported by the bases from which they operated, by other naval vessels in the same port or at a port nearby.

Supply Ships and Tankers

In addition to the five fleet supply ships, the Navy had nine auxiliary supply ships ranging from 5 to 14,000 tons, with load capacities from 7 to 20 thousand tons and speeds from 12 to 18 knots. In 1944, when the Navy's major surface units were blockaded in Norwegian and Baltic ports, one of these vessels was used as a destroyer tender, one as a U-boat tender and one as an ore ship.

In addition to these fleet and auxiliary supply ships, there were on 5 October 1944, 63 tankers of the following tonnage supporting the forces afloat in the many theaters of operation:



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1	14-15,000 tons	4	7-8,000 tons
2	13-14,000 tons	9	6-7,000 tons
3	12-13,000 tons	9	5-6,000 tons
2	11-12,000 tons	1	4-5,000 tons
6	10-11,000 tons	4	3-4,000 tons
2	9-10,000 tons	5	2-3,000 tons
5	8-9,000 tons	10	1-2,000 tons

These vessels, in most instances, carried general or special supplies, depending on their mission, in addition to fuel.

In addition to tenders, hospital ships and depot ships, the Navy had for mobile support purposes:

5 fleet supply ships	5 surface U-boat supply ships
9 auxiliary supply ships	14 undersized supply ships
	63 tankers

While the *SCHARNHORST*, *GRAFF SPEE*, *HIPPER* and *GNEISENAU* operated in the Atlantic in the early days of the war, it can be stated in general that German fighting forces, except U-boats and a few armed merchant cruisers, operated from nearby bases, returning there when their mission was completed for replenishment. The need for a service force or very highly developed method of mobile support was therefore unnecessary. Flottenintendant Wulff stated that submarines operating from Pola, Spezia and in the Black and Aegean Seas, and R-boats operating out of Augusta (Sicily) presented no support problems, that the stocks of all types of supplies in Group South were ample. He also stated that no submarines or raider vessels were forced to return to German or friendly ports because of lack of supplies.

Blockade Runners

It became apparent early in 1940 that the flow of certain critical raw materials, especially rubber, from the Dutch East Indies and other Far Eastern territories to Germany had to continue uninterrupted. Sixteen German merchant vessels were in Chinese, Japanese and Manchurian ports. Six other merchant ships operating on the west coast of South America had crossed the Pacific and joined them. Adm Paul Werner Wencker, the naval attache at Tokyo, was assigned the task of transferring them into the Navy and equipping them as blockade runners, collection carriers for the blockade runners or supply ships for the armed merchant cruisers and submarines which the Navy intended to send into the Pacific and Indian

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oceans as commerce raiders. An economic delegation, headed by Mr. A. Wohlthat, was established to assist in the work.

Most of the work of equipping the ships was performed in Japan. Ten of these 22 vessels were considered unfit for such duty and sold or chartered to Japan. The 18,000 ton, 21 knot, Pacific express liner SCHARNHORST, one of them, was later converted into the Japanese aircraft carrier SHINYO.

The SS KULMERLAND, MIENSTERLAND and REGENSBURG were equipped for duty as supply ships for armed merchant cruisers, and the SS QUITO and BOGOTA as collection carriers. The task of the latter was to pick up raw materials at the various ports in China, Thailand, Malaya, etc., and deliver them to Djakarta or Batavia, Java, the points from which most of the blockade runners departed for Bordeaux or the Denmark Straits. Seven vessels were equipped for blockade running duty by the Secret Supply Service at other points and assigned to this operation.

Twenty-four German merchant vessels in East Indian ports were seized by the Dutch and therefore were not available to the Navy for this purpose. A total of 14 merchant vessels, as shown below, were finally used as blockade runners.

RIO GRANDE	BERGENLAND	OLDENWALD
RHAKOTIS	SPREEWALD	BREMERHAVEN
DRESDEN	PORTLAND	SAARLAND
TANNENFELS	OSORNO	WESERLAND
ANNELIESE ESBERGER		OSTFRIESLAND

This operation, designed to improve Germany's raw material position, proved very successful.

This study has disclosed that the Far Eastern branch of the Secret Supply Service took over full control of blockade runners from the Ministry of Transportation on 3 February 1941. The first blockade runner left Japan in May 1941. During that year, four out of five of these ships successfully evaded the blockade. In 1942 about 50 percent avoided interception. In 1943 success waned and four out of five ships that sailed either from Java to France or from France to the Far East were sunk. The SS OSORNO, arriving at Bordeaux in December 1943, was the last blockade runner to reach France from the Far East. According to GrAdm Doenitz,

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the use of surface vessels as blockade runners and commerce destroyers was abandoned after that because of the effectiveness of the reconnaissance patrols established by the allies in Biscay. 1600-ton submarines, stripped of torpedoes, guns and ammunition, were then utilized for this purpose. An example of the overall success of the mission, however, is contained in a report that during the period 1941-43, 21 surface ships sailed from the Far East with 69,300 tons of raw commodities, and 15 of them with 62,500 tons of raw commodities and 26,500 automotive tires reached a European port. In addition, 2,500 tons of Far Eastern cargo was carried in these ships for Italy. During the same period, 35 blockade running surface vessels with 257,000 tons of supplies for submarines, and armed merchant cruisers operating in the Indian Ocean or special equipment for Japan sailed from Western France, and 16 of them arrived in the Far East with 111,490 tons of cargo.

Bases for blockade running operations were established at Yokohama, Kobe, Saigon, Singapore, Batavia, Djakarta and Soerabaya. Blockade runners were also used to replenish such U-boats and armed merchant cruisers as may have been operating in the areas through which they passed on their voyages to and from the Far East. This offshoot of the regular logistic support system, operating as it did half-way around the world from the Navy's active European theater of operations, was very valuable for the purpose of exchanging important military and commercial goods and afforded bases to which armed merchant cruisers and submarines could proceed for repairs and supplies.

An illustration of the type of raw commodities Germany obtained through this operation is contained in the cargo list of two blockade runners:

SS BERGENLAND

Sailed Djakarta, Java  
on 25 November 1943

Rubber from Saigon and Singapore  
Tin from Penang and Singapore  
Wolfram brought to Singapore from  
Japan

Opium, partially processed, from  
Yokohama (Had been flown from  
Manchuria to Japan)  
Quinine and tungsten from Batavia  
Soya bean and coconut oil from  
Yokohama

SS RIO GRANDE

Sailed Djakarta, Java  
on 28 October 1943

Tung oil from Yokohama  
Wolfram from Singapore (brought  
there from China)  
Rubber from Saigon and Singapore  
Fats and edible oils from Saigon  
Tin from Singapore  
Resin and quinine from Batavia

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Submarine Blockade Runners

When the use of surface blockade runners was no longer profitable, this scheme, as stated before, was discontinued. A plan to use submarines for this purpose was then devised, and 15 German, five Japanese and seven Italian U-boats were assigned to this duty. The Italian submarines, among which were the CAPPPELLINI, TORRELLI, RAGNOLINI and GIVLANI, were converted at Bordeaux in April/May 1943 for this duty. German U-boats were converted at German shipyards. Tubes and main armament were removed to provide maximum fuel and cargo space.

U-boats returning to Germany from patrols in the Indian Ocean, among which were U-178, 219 and 861, were diverted to Malaya to take on cargoes of critical war essentials and transport them to European ports.

Regular blockade running submarines operated between Penang or Singapore and the French Atlantic ports of Bordeaux, La Pallice and L'Orient. They transported natural rubber, tin, quinine, ores of metals were used in special steels (wolfram, molybdenum, etc.), opium, caffeine, vitamin concentrates and other vital war essentials for Germany. They returned with mercury, formic acid, refined steels, optical goods, radio apparatus, radar equipment, machine tools for fine work, small arms, plans for aircraft and samples of shells and other munitions for Japan. They also transported exchange technical personnel. No evidence was discovered that these submarine blockade runners afforded mobile support for submarines operating in the Indian and Pacific Oceans. However, since they relieved surface blockade runners, because of the dangers involved in bringing vitally needed raw materials through the allied blockaded waters of the eastern Atlantic, it appears reasonable to believe that they continued the support of these submarines.

In return for the assignment of Japanese submarines to this operation, and the release of interned Italian submarines for use as blockade runners, Hitler gave Japan a 740-ton U-boat in 1943. Two of the Italian submarines were used as collection ships in the Far East and brought materials to the blockade running submarine stations at Penang or Singapore. In the latter part of 1943, two or three Japanese submarines arrived at L'Orient, France, with cargoes of rubber and personnel for training and manning German U-boats destined for Japan.

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Although, submarines were used as blockade runners from 1943 to 1945, Adm Nomura, the Japanese Naval Commissioner to Berlin, stated at the end of the war that this effort to obtain critical materials was unsuccessful, that only three Japanese and five German submarines successfully ran the blockade into French and German ports.

Submersible Supply Trailers

This study has also disclosed that the Navy designed and built streamlined, non-self-propelled submersible supply trailers for use by blockade runners between East Asia and Europe, it being intended that operational U-boats should only take over the tow for the shorter stretch of the route, i.e., from the South Atlantic to western French or German ports. As many as three of this type trailer could be towed by a submarine. It was also intended that these trailers would be used as floating supply bases for submarines in the South Atlantic. RAdm Wagner stated that the Navy did not expect the percentage of losses in this type of craft to be high.

The first trials of these trailers were conducted in October 1943. GrAdm Doenitz had been adamant in his disapproval of such a venture for some time. However, the designer of these trailers successfully demonstrated one of them to Doenitz and Dr. Albert Speer at that time and orders were issued in May 1944 for the construction of fifty 90-tonners. By July 1944, three 90-ton general supply and one 300-ton fuel oil trailers were completed and a 700-tonner designed.

At the same time, i.e., July 1944, it was suggested by the Navy that Japan should build these trailers for the interchange of essential raw materials. Tokyo replied that experiments were already being carried out on 30-, 75- and 100-ton trailers, that the first one was already in use in Saipan. The Japanese models, called "cargo tubes", were somewhat similar to midget submarines and could be towed three or four in train. The Japanese had had difficulty with theirs, due to towing speeds, battery capacities and shortage of suitable towing lines, but agreed to build a limited number of the German type, provided Germany would guarantee the technical efficiency of the system and would pass on all of its experiences in trials and operations of the trailers.

The 90-ton trailer had a cylindrical body with spherical nose and a

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finned conical tail. It was 63 feet long, had a beam of 10 feet and was tested with a tow line 230 feet long. It performed satisfactorily behind a submarine at periscope depth, or when towed by surface craft. The chamber capacity was 51 tons. The details of towing speed, turning, positive buoyancy and other data are contained in ONI files. It was not definitely determined whether the Navy actually used these trailers for the purpose intended. It is suggested, however, that other navies may have captured some of them with the view to developing a new type of mobile support vessel.

Submersible Fuel Barges

A seaworthy, submersible fuel barge was developed in June 1944. Its capacity was 25 tons and it could be lowered to depths of 49 feet. The purpose of this barge was to provide fuel storage which could be submerged in harbors and coastal waters without danger from bombing. Many persons were interrogated about this barge, as well as a collapsible rubber tank, reported anchored at Socorro, San Nicolas and Santa Rosa Islands off the coast of the Yucatan peninsula. None of them could furnish any information about them.

Blockade Running from and support  
of Submarines in Spain

The use of submarines as blockade runners was an expensive, long haul of the much-needed raw materials. As has been stated, it was not a successful venture. Attempts were made to supplement the amount obtained in this way by purchases in Spain and running the blockade of the western coast of France.

Much evidence has been found to indicate that Spain was unofficially sympathetic to Germany's problems. Many reports of the release and smuggling of interned submarine personnel over the border into France and the lack of interest on the part of Spanish officials in the fuelling operations of submarines from interned German tankers at El Ferrol on the north Spanish coast have been studied. One Secret Supply Service document related that 24 fuelling operations were carried on unnoticed and according to plan from the harbors of Cadiz, Vigo and El Ferrol, Spain and Las Palmas, Canary Islands.

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Anglo-American intelligence officers were very active in Spain and both the Spanish and German governments desired to avoid protests from Britain and America lest pressure thus brought might embarrass Spain or swing that government over to the Allied cause. Despite this, however, several attempts were made to run the allied blockade with chartered Spanish fishing boats and other small vessels. The final results of these attempts are unknown. The vessel VULCANO, 375 tons, however, is recorded as having sailed from Vivero (Bay of Biscay port) on 28 December and arrived at the Gironde Estuary (Bordeaux) on 31 December 1944.

Operational Submarines in Far East

As early as April 1940, Germany requested Japan to afford bases for her submarines. In 1941, armed merchant vessels had taken prize ships to Japan. Germany had sought refuge for them in Yokohama. Permission was granted only after much negotiation. German/Japanese relations were strained. Japan signed a non-aggression pact with Russia. In May 1941, Germany demanded that Japan break it. Japan declined. Distrust between the navies was apparent. Each kept secret from the other its fundamental methods of conducting naval warfare. Because of these conditions, it was not until December 1942 that Japan granted Germany and/or Italy U-boat bases in the Far East. Penang, the Japanese headquarters of CinC Submarines Indian Ocean, Sabang or a port in the Andaman Islands were offered, along with necessary fuel supplies.

No facilities other than a sheltered anchorage and Japanese workshops, with a slipway for very small ships, and a fuel stock of 1,000 tons were provided at Penang. The Navy found the Penang offer attractive, however, and in June 1943, the first U-boats started operating from that port. Between June 1943 and May 1945, 19 submarines operated from Penang or Batavia, Java. The food situation was bad. The Navy had to import most of the food used underway in its surface and submarine blockade runners. Singapore was more desirable, because of dock facilities, etc., and some repairs were effected there, but until Germany capitulated, the Navy continued to operate its submarines from Penang because of intelligence gained from Japanese submarine personnel stationed there. Batavia grew more important during the last months of the war, because of its proximity to Australian waters in which stepped up operations were taking place,

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but Penang continued to remain the major operating base. Soerabaya, while used as a submarine base, was not satisfactory because of the lack of any repair facilities. Some U-boats were sent to Kobe for repairs, especially if they needed new batteries. The SS CHARLOTTE SCHLIEMANN, a tanker, was assigned in March 1943 the task of supporting submarines operating in the Far East.

Armed Merchant Cruisers (Raiders)

The conversion of merchant vessels into raiders took some time, because the Navy decided, due to the effectiveness of air reconnaissance, to abandon the old method of rough-and-ready preparation of fast ships that could be recognized from afar and instead to convert and carefully camouflage innocuous looking freighters with the greatest possible speed, provide them with modern devices and arm them strongly. Ship 16, the ATLANTIS, for example, carried a crew of 350 officers and men and had accommodations for 150 prisoners. Pressure of priority work on warships and U-boats further delayed the completion of these ships. Thus the first armed merchant cruiser only came into operation in the Spring of 1940.

Generally speaking, at the commencement of raider operations, the strategic situation was such that the Germans assumed that once a raider had sailed from Germany she would have to rely entirely upon her own resources, apart from certain supplies from the Secret Supply Service, and that when her supplies were exhausted, or if she ran short of any essential stores, she would have to return to Germany, or at worst, lie up in a neutral port. Ship 16 operated under these conditions one year, eight months and eleven days before she was sunk by the British heavy cruiser DEVONSHIRE. With the occupation of Western France it was possible for Adm Qu III, through its logistic support departments, to institute an organized supply system through which raiders were supplied with fuel, weapons, ammunition, provisions and general stores and, if necessary, with spare parts and medical supplies.

Ships 10, 14, 16, 21, 23, 28, 33, 36, 41 and 45 were completed during the war. Five other raiders under conversion were not completed. Ship 14 was bombed and damaged in the Channel on her way out for her first operation. She had to return and was paid off.



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To illustrate the support furnished these vessels, a list showing the raiders involved, the periods and areas in which they operated and the supply ships, prize supply ships, tankers, prize tankers and blockade runners that serviced them follows:

<u>Ship No.</u>	<u>Name</u>	<u>Period Involved</u>	<u>Operating Area</u>	<u>Serviced by</u> T - Tanker PT- Prize Tanker S - Supply Ship PS- Prize Supply Ship BR- Blockade Runner
10	Thor	6/5/40-4/23/41	South Atlantic	Rio Grande (BR) Eurofeld (T) Rekum (T) (2) Turicum (T) (2) Nordmark (S) Storstad (PT) Duquesa (PS)
		1/17/42-4/20/42	South Atlantic	Regensburg (S) Doggerbank (S)
		4/21/42-11/30/42	Indian Ocean	Regensburg (S) Dresden (BR) Tannenfels (BR)
16	Atlantis	3/11/40-4/12/41	Indian Ocean	Ole Jacob (PT) Storstadt (PT) Ketty Brovik (PT) Durmitor (PS) Speybank (PS) Tirrana (PS) Teddy (PT) Tannenfels (BR) Advocate (PT)
		4/13/41-7/10/41	South Atlantic	Dresden (BR) Babitonga (PS) (2) Alsterufer (S) Nordmark (S)
21	Widder	5/1/40-10/24/40	North Atlantic	Eurofeld (T) Rekum (T) (2) Koenigsberg (T)
23	Stier	4/24/42-9/47/42	South Atlantic	Charlotte Schliemann(T) <sup>(3)</sup> Doggerbank (S) Tannenfels (BR)
28	Michel	3/10/42-2/15/43	South Atlantic and Indian Ocean out of Capetown	Charlotte Schliemann(T) <sup>(4)</sup> Regensburg (S) Doggerbank (T) Uckermark (S) Rhakotis (BR)
		6/4/43-10/17/43	Indian Ocean and South Pacific	Osorno (BR) Bergenland (BR) Dresden (BR) Rio Grande (BR)
33	Penguin	6/15/40-1/5/41	Indian Ocean	Storstadt (PT) (2) Nordvard (PS)

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Ship No.	Name	Period Involved	Operating Area	Serviced by
		1/6/41-2/27/41	South Atlantic and Antarctic	Duquesa (TS) Ole Jacob (PT)
		2/28/41-5/2/41	Indian Ocean	Alstertor (S) Turicum (T)
36	Orion	3/30/40-6/24/41	Indian and South Pacific	Winnetou (T) (2) Miensterland (S) Kulmerland (S) (2) Ole Jacob (PT) (2) Ermland (S) Alstertor (S) Tropic Sea (PS)
		6/25/41-8/23/41	South Atlantic	Ship 16
41	Kormoran	12/4/40-3/22/41	South Atlantic	Nordmark (S) Spreewald (BR) Portland (BR) Rudolf Albrecht (T)
		3/23/41-11/19/41	Indian Ocean	Kulmerland (S) Alsterufer (S)
45	Komet	7/9/40-11/1/41	Pacific and Indian	Kulmerland (S) Alstertor (S) Miensterland (S) Regensburg (S) Anneliese Essberger (BR)

The method employed in effecting rendezvous between tankers, supply ships and armed merchant cruisers was, according to VADM Rogge, that SKL issued instructions regarding the dates and grid area in which the supply ships and raiders would operate. Absolute radio silence was observed by both ships. They cruised in the area until contact was effected.

Lists of the grid areas were held by 1 SKL, the raiders and logistic support vessels. These positions, which were in the open sea well clear of shipping routes were grouped under oceans. There were about a dozen such positions in the Indian Ocean. For the sake of security each position was given a code name so that the transmission of latitude and longitude was avoided.

The positions remained constant, but the cover names were changed at regular intervals or if their compromise was suspected. A raider requiring fuel or stores informed 1 SKL by short signal. 1 SKL, taking into consideration the raider's position and the enemy situation in the area, selected the rendezvous position for the raider and the tanker or supply

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ship. Both were then ordered by short signal to rendezvous within a given period, the nearest listed rendezvous position being used as a reference position. If bad weather precluded refuelling or the transfer of stores, the supply ship usually remained with the raider until the weather moderated. Thus it will be seen that one can hardly speak of a regular supply or refuelling area for these vessels. Gaselle Bay, in the Kerguelan Islands, however, was used as an overhaul base by raiders operating in the South Indian Ocean and the Antarctic.

This system, according to Flottenintendant Wulff, was very effective until the ESSO GDYNIA was captured by the British and the codes used in directing logistic vessels in their operations were seized. The British, he said, using the code, directed eight or nine large tankers that were operating with the PRINZ EUGEN and DITTMARSCHEN, to proceed to certain areas where they intercepted and sunk them. The system was, of course, compromised. When this was discovered, the system was discontinued.

Stores Transfer Techniques

It is evident from the great mass of documents studied and the number of persons interviewed that the Navy had no real need for a regularly organized service force before the war and that, once their supply lines were extended and they were confronted with the need for fast supply operations, they developed nothing to facilitate them. The following are examples of some of the methods employed:

All ships, including warships, fuelled in tandem. Hoses were run out astern of the tanker and taken over the bow of the vessel being fuelled. Battleships were provisioned in the open sea by boat transfers. Undersea supply ships usually fuelled other U-boats on the surface through hoses attached to floats. Stores were transferred by rubber rafts. Torpedoes were lowered into the water with floats attached to the noses and tails. Men went over the side to steady them. The receiving submarine took the torpedo aboard by partially submerging and surfacing under the torpedo.

An American who was captured by Raider Ship 16 wrote an account of that vessel's fuelling and supply operations. He said:

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"The ships spent several days supplying one another with fuel and food. The fuel was pumped through red and green hoses, supported on floats. The stores were loaded on tubular rubber rafts with canvas bottoms supported by wooden slats. The ships' launches towed the rafts from one ship to another."

Support of bases and  
fleet units in Norway

During the time Norway was occupied by German forces, its many ports and fjords were used by various fleet units, some as operating bases for submarines and forces raiding convoys along the coast, others as refuges from allied warships. It is interesting to note that during this period the Navy developed no freight centers or freight sorting or transit sheds, nor cargo handling battalions or a regularly organized service force to support the great number of vessels employed in this area.

A small number of repair ships and submarine tenders were retained in the major ports. Supply ships and tankers made irregular trips along the coast, stopping at the ports to discharge stores, but even this service was infrequent. The whaling ship tender JAN WELLEM was used at Narvik to supplement shore fuelling facilities. Submarine personnel generally slept on submarine tenders during rest and overhaul periods.

A few supply ships/tankers were stationed at Polyarny, the Secret Supply Service base in Kola Bay on the Arctic Coast of Russia, during 1939-40, when the Germans were carrying out their operation of getting their merchant vessels, e.g., the BREMEN and ST. LOUIS caught by the outbreak of war in mid-Atlantic, back to Germany along the Norwegian coast. This operation was quite successful in that between 48 and 50 percent of all merchant vessels that were not placed at the disposal of the secret supply agents and tried to make German ports did so.

The raider vessel KOMET, Ship 45, crossed the Arctic Ocean in July-August 1940, from Murmansk to the Bering Straits and thence into the Pacific. Russian ice breakers assisted in this venture, but logistics support was afforded by the German Navy while the KOMET was preparing for the crossing.

The supply depots at Tromso, Harstad and Hammerfest were regularly supplied by the SS GOTANIA, SS STRASLUND. A fleet of small boats made

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frequent irregular runs from these depots to ports in which the vessels to be supported were anchored. VAdm Machens stated, "When battleships were operating from northern Norwegian fjords, a repair ship was stationed at Narvik in Bogen Bay." The fact that the only dockyard capable of servicing large ships in northern Norwegian waters was at Trondheim and major units requiring overhaul or repairs had to go there or return to Germany indicates a lack of forehandedness on the part of the Navy in constructing floating drydocks or fleet tenders large enough to render such service. This should undoubtedly have been done when the new Reichsmarine was being built. This failure, however, bears out the statements of VAdm Machens and RAdm Schubert that the Navy was not planning to extend its lines of communication beyond the North and Baltic Seas. The difficulties encountered by the Navy in obtaining funds for construction of its fleet and supporting units also undoubtedly militated against such construction. (See chapter on Finance for details).

## CHAPTER V - PROCUREMENT, STORAGE AND DISTRIBUTION

### PROCUREMENT

#### Introduction

Before discussing the Navy's rather complicated procurement system, it should be explained that there were two groups of inspectorates. One group was composed of armament inspectorates. It was subordinated to the Military Economy and Armament Division of the High Command of the Armed Forces (OKW/Rue Wi). The other group, known as naval inspectorates, were subordinated to the Navy's Bureau of Warship Construction and Armament (MarRuest) and Bureau of General Affairs (MarWehr). Both these groups of inspectorates took an active part in the procurement and production programs of the Navy.

The first group, the armament inspectorates, did not procure or produce anything. They merely established procurement policies on an inter-service basis, assisted industry in manpower problems, co-ordinated production orders and finally accepted and passed equipment, material and supplies manufactured for the armed forces. Later, their mission was limited to inspection and acceptance and their organizational name changed to the Armament Acceptance Inspectorate.

The second group, the naval inspectorates, actually supervised the production of an item from the time the raw material and plant production facilities were made available to them until the finished item was placed in their individual supply systems. They also stored, distributed and accounted for the item after it was received in their supply systems.

Although the military services were integrated into a High Command of the Armed Forces (OKW), the Army was by far the largest service and the

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Supreme Commander of the Armed Forces was Hitler and after 1941, CinC Army; therefore, the lines of distinction between OKW and the High Command of the Army (OKH) were not clearly drawn. As a result, the OKH acted in some procurement areas for the OKW.

The responsibility for estimating requirements for all three services was essentially a staff function of OKW, since it involved present and future operations. Inasmuch as OKW was the staff of the Supreme Commander of the Armed Forces and assisted in planning all operations, it was logical that one of its divisions, OKW/Rue W1 would be assigned the responsibility.

The three services, the Army, the Navy and the Air Force, stated their requirements for common use items of equipment to OKW/Rue W1 (later to the Speer Ministry), and for major items such as armored vehicles, special anti-aircraft guns for submarines and bomb release mechanisms, the respective CinCs discussed their requirements with Hitler.

OKW/Rue W1, after conference with the Ministry of Food and Agriculture (for raw food and processed food) and the Ministry of Economics (for all other raw materials) and after 1942 with the Speer Ministry decided what raw materials would be allocated to the requirements and advised the individual services of its decision. The services then placed the contracts with the firms designated by OKW/Rue W1 or the Speer Ministry as having the necessary plant production capacities. All letting of contracts was done at a central contract board in Berlin and no provisions were made for contracting in the lower echelons within the armed services, except for necessary local purchases of perishables and minor items.

Armaments orders were placed by the inspectorates of the respective services (e.g. those for naval mining or minesweeping material for the Navy were placed by the Naval Mining Inspectorate). As buyers, the naval inspectorates also inspected work progress, expedited it when necessary and paid for all orders.

Sub-contracts were let by prime contractors for spare parts and components such as gears and maintenance materials.

On the production side, as stated above, OKW/Rue W1 and/or the Spser Ministry, through their regional armament commands and armament inspectorates

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had a decisive influence on the selection of firms, coordination of armament orders with other orders, labor questions, scheduling, supervision over production and final inspection and acceptance.

The testing of common use ordnance equipment and ammunition and their acceptance at the armament factory was the responsibility of the Army Acceptance Organization, a branch of the Army High Command.

This, in general, was the procurement co-ordination system employed, but there was some abuse on the part of the armed forces in obtaining allocations of raw materials, plant production facilities and priorities. As a result, allocation and production functions were taken away from the armed forces and vested in the Speer Ministry in mid-1942. Therefore, for clarity, the description that follows must be broken into four periods: before 1934, between 1934 and 1942, from 1942 to 1943, and from 1944 to 1945.

Prior to 1934

Before 1934, each branch of the armed forces procured its own equipment and supplies. Procedures employed were similar to those employed by the American Navy, in that proposals were solicited from at least three qualified bidders and the lowest bid was accepted. Contracts contained the customary clauses regarding specifications, inspection, completion dates, delivery to naval activities, percentage of profit allowed, etc. Material was inspected by naval inspectors before acceptance and delivery to a naval supply organization.

Period 1934-1942

The Military Economy and Armament  
Division, High Command of the  
Armed Forces (OKW/Rue Wi)

From 1934 to 1942, the Military Economy and Armament Division of the High Command of the Armed Forces (OKW/Rue Wi), established in 1934 and working in close collaboration with the Ministry of Economics, determined what part of the national resources and productive capacities of Germany and, after war broke out, of the countries occupied by its troops, could be made available to the individual services for the production of weapons, equipment, material and supplies.

The general scheme followed was that the individual services estimated



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their requirements and submitted lists of them to OKW/Rue W1. These lists were broken down into raw materials and time requirements. OKW/Rue W1 then prepared a consolidated list of requirements for all armed forces, and submitted it to the Ministry of Economics or, in the case of raw and processed food, to the Ministry of Food and Agriculture. These ministries then determined what part of the national and occupied countries' resources and productive capacities was required for the various civilian economies, and what part would be allocated to the armed forces. It then informed OKW/Rue W1 of the quantities of ore, coal, lumber, steel, textiles, guns, radio transmitters and other raw and finished products which the armed forces could have, and which plants, mines, shipyards, machinery, automobile and aircraft producing factories, etc., they could use to produce their equipment, material and supplies.

The Armament Commands and  
the Armament Inspections

To assist OKW/Rue W1 in these tasks, there were established throughout Germany a series of armament commands and armament inspectorates. These organizations were subordinated directly to OKW/Rue W1 and were top-level technical organizations which co-ordinated production of weapons or material required by the armed forces and ensured that satisfactory equipment and material was produced. The armament commands controlled certain areas, somewhat like our Army Corps commands; i.e., Bavaria would be in one armament command, Schleswig-Holstein in another.

Under each armament command was a number of armament inspectorates serving as field activities. There were a great number of them. They were established by districts. Some of the larger industrial areas, like the Ruhr area, might have several inspectorates. Another might have only one. Their location depended on the volume of work to be done.

Armament inspectorates were headed by military officers, known as Armament Inspectors. One armament inspectorate would have an Air Force officer in command. Another would be commanded by an Army officer, another by an officer of the Navy. Inspectors of coastal districts were usually naval officers.

Each armament inspectorate had a Central Department, an Army, a Navy and an Air Force Department. The Central Department performed the administrative

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work. The others co-ordinated the orders of the three services, scheduled production at the plants and in general expedited production. A naval department of an inspectorate was staffed with naval officers. The same personnel staffing system was followed by the other service departments, e.g. army personnel in an army department, etc.

Capt. Mommson stated that the main duty of an armament inspectorate, insofar as the Navy was concerned, was to ensure that industry in its district was able to carry out the production expected of it. Thus an Inspector had to be thoroughly acquainted with all industrial activity in his area and to know the plant capacities to the final detail. Also, he had to determine which plants were most suitable and to be in a position to undertake the orders received from the naval or inspectorates of other services. The reports of these armament inspectors to the Navy, he said, formed the basis upon which naval inspectorates placed orders with plants in a district. It was also necessary that the armament commands and armament inspectorates be kept posted on the priority of the numerous orders placed with industry in their areas by naval inspectorates and those of other services, and to know the types and extent of orders which could be placed. Therefore, before a naval inspectorate placed an order for material, careful consideration had to be given to the information regarding the industrial plants furnished by the armament inspectorates.

To recapitulate, the mission of the armament inspectorates was:

1. To contact all industrial plants in their area, to ascertain which types of equipment, material and supplies they were best able to manufacture.
2. To maintain a file of all technical drawings, instructions and specifications for use by industry in production.
3. If required, to regulate the availability of plants, their machinery and other equipment within their district.
4. To give assistance to industry in their districts in manpower, transportation, power and fuel difficulties.
5. To represent industrial economic interests with the military services in industrial manpower problems, such as when workmen were conscripted for service. In this connection, they prevented the drafting of great numbers of both skilled and unskilled labor engaged in industry.

The Military and Central Departments  
of the Armament Inspectorates

The duties described above were initially performed by the military

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(Army, Navy and Air Force) departments of the armament inspectorates, since those departments had their own technical personnel. When war broke out, however, these tasks were more and more taken over by the Central Departments of the armament inspectorates, which were composed of civil officials. The result was that the military departments could no longer perform the tasks for which they were created and thus lost their influence in industrial circles. As a result, military personnel eventually became technical advisers to the armament inspectors.

This reduction of service influence in industry had an unfavorable effect and resulted in increased difficulties in expediting production. The Central Division, since it represented the Armed Forces as a whole and none of the individual services, had to consider not only the over-all production program of the armed forces, but the civil needs of the population as well. Thus it could not intercede for any individual military service. This threw an additional burden on the naval inspectorates in that, in addition to actually producing the Navy's equipment, material and supplies, they had to detail some of their technical personnel to ferret out new production facilities. At the same time, cognizance over manpower, transport, power and coal for military needs was also transferred from the armament inspectorates to the Central Departments of the armament commands. According to Capt. Mommson, this transfer was justified, since these questions could only be solved regionally in cooperation with the state and municipal authorities and industrial leaders. However, these were problems constantly affecting all plants in which the naval inspectorates had placed running production orders.

The Naval Departments  
of the Armament Inspectorates

The Navy constantly strived to obtain the appointments of as many naval officers as possible in the armament inspectorates. Wherever possible, naval officers were appointed as inspectors in the coastal regions. They were also proportionately placed in OEW/Rue W1, and occasionally in the Central Departments of the inspectorates and commands. These officers, however, were directly subordinated to the Inspector and, as a result, were obliged to support his policies in the over-all armament program. In this way, the Navy's interests suffered, since the Army and Air Force were larger services and politically

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more powerful.

To repeat: until the outbreak of war, the naval departments of the armament inspectorates were responsible for all naval interests in the armament inspectorates' work. They had to contact industry and arrange for taking over plants designated to produce naval material. It was also their duty to make any preliminary preparations required at such plants. They rendered assistance when troubles or difficulties arose in such matters as manpower, transportation, electric power and industrial supplies. This involved discussions with the plants and offices involved. However, when war broke out, they were forced to turn over to the Central Departments of the armament inspectorates the job of equalizing the workload of the different services in the plants and dealing with municipal and state authorities.

When these responsibilities were handed over, representation of naval interests within the armament inspectorates became increasingly difficult. This caused great dissension within the naval inspectorates. As a result, the Navy constantly tried to regain its influence in industrial circles and its control over plants made available to it for production of its equipment and supplies.

Dr. Albert Speer, who took over all war production in the Spring of 1942, recognized this internal strife and attempted to eliminate all influence by Army, Navy and Air Force personnel in the inspectorates, since he was of the opinion that his was the sole responsibility for production. As a consequence, the military departments of the armament inspectorates were dissolved in mid-1944. Thus all direct representation of the armed services in the inspectorates came to an end. Despite this, naval officers were retained in the armament inspectorates at the Navy's request. However, their position was insignificant. At best, they served only as technical advisers and, after this change was made, any complaints or interservice disagreements over production had to be reported to the Speer Ministry.

The Speer Ministry controlled production through a group of committees, and used the armament inspectorates only in inspection/acceptance duties. Thus the Armament Acceptance Inspectorate was established. According to Capt. Mommson, this proved impractical, especially during the latter part of the war.

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VAdm Stiegel stated that the Armament Acceptance Inspectorate was merely a paper organization, full of red tape and serving no useful purpose.

New plans were evolved to divide the entire country into a few armament regions, each of which was to enjoy complete economic independence. This plan, however, was never put into effect. Thus, the Navy's direct influence in the armament inspectorates steadily diminished during the period 1934-1942 and finally, in 1944, was entirely eliminated by the Speer Ministry.

Armament Acceptance Inspectorate

As has just been related, the Armament Acceptance Inspectorate was an outgrowth of the military departments of the armament inspectorates. It was organized, by the Speer Ministry, as a political sop, to remove what that ministry considered a roadblock to the over-all production program. Despite the remarks of Capt. Mommson and VAdm Stiegel, however, this organization functioned until the end of the war. RAdm Dose, Inspector of the Hamburg armament acceptance inspectorate district, when interrogated, stated that there were 230 naval officers and naval officials detailed to the organization, in addition to those from the Army and the Air Force; and that, in working directly for the Speer Ministry, rather than for the three services, his organization was better equipped to expedite production. At the same time, he continued, naval personnel attached to the Armament Acceptance Inspectorate were able to keep the naval inspectorates informed of conditions in their districts and assist them in many ways with their manufacturing problems.

All equipment, material and consumables manufactured for the armed forces were required to be inspected and passed by this organization before title to the articles could be taken by any military service. However, VAdm Stiegel, who was responsible for the procurement, storage and distribution of all general and technical equipment, consumables and spare parts stated that, despite the rule that the Armament Acceptance Inspectorate should inspect and pass all equipment, he directed that inspection teams made up of civil and marine engineers and supply officials from MarRuest/K 4 should visit the dockyards and plants and inspect and accept the material that went into the Central and Technical Procurement Office supply systems. "If they got into trouble", he said, "they referred the matter to me, and I made the decision as to what to do. There were no difficulties."

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From the foregoing, it will readily be seen that procurement/production of naval equipment, material and consumables was complicated, fraught with interservice and political maneuvers for gaining influence with industry and control of the economies of Germany and the occupied countries. It is not within the scope of this study to judge whether or not steps taken and methods used were justified. They are reported, however, to demonstrate conditions that can exist even under a totalitarian form of government when a too highly centralized procurement/production program is developed in the armed forces of a country.

The Navy Inspectorates and Other  
Naval Logistic Organizations

In addition to the armament commands and armament inspectorates (later an Armament Acceptance Inspectorate) described above, which were units of the High Command of the Armed Forces (OHN/Bue W1) and not a part of any individual service, the Navy had:

1. A Naval Ammunition Inspectorate
2. A Naval Ordnance Inspectorate
3. A Naval Torpedo Inspectorate
4. A Naval Mining Inspectorate
5. A Naval Communication Inspectorate
6. A Naval Engineering Inspectorate
7. A Naval Medical Inspectorate
8. A Naval Education and Training Inspectorate

These organizations were concerned with the actual production, storage, distribution of and accounting for all weapons, medical supplies, educational and training equipment, engines for all kinds of naval craft and the spare parts and consumables required to repair and maintain such equipment.

The Navy also had four other logistic organizations, not called inspectorates but with the same responsibilities; which were concerned with the procurement, storage and distribution of and accounting for equipment and supplies.

They were:

9. The Fuel and Transportation Section of the Admiral  
Quartermaster Division of the Naval War Staff (Adm Qn III).
10. The Intendanturen Food and Clothing Offices
11. The Central Procurement Office
12. The Technical Procurement Office

Adm Qn III dealt with fuel and lubricant. The Intendantur Offices handled food, clothing and equipment for offices, barracks and other quarters ashore. The Central Procurement Office was concerned with equipment and consumable

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supplies not coming under the naval inspectorates (1-7), the Intendanturen offices (9) or the Technical Procurement Office (10). The Technical Procurement Office, successor to the Naval Engineering Inspectorate, was responsible for engines, auxiliary machinery, spare parts and consumables required for the overhaul, maintenance and upkeep of engines and auxiliary machinery.

These inspectorates and offices were not subordinated to the High Command of the Armed Forces (OKW/Rue W1), but worked under the supervision of the following divisions and sections of the Admiralty:

- |  |   |
|--|---|
| 1. Naval Ammunition Inspectorate                                   | MarRuest/AWa (Ordnance Division)  |
| 2. Naval Ordnance Inspectorate                                     | MarRuest/AWa (Ordnance Division)  |
| 3. Naval Torpedo Inspectorate                                      | MarRuest/TWa (Torpedo Division)   |
| 4. Naval Mining Inspectorate                                       | MarRuest/BWa (Mining and Blocking Division)   |
| 5. Naval Communication Inspectorate                                | MarRuest/MWa (Communication Division)   |
| 6. Naval Engineering Inspectorate                                  | MarRuest/K I, (Shipbuilding, Ship Machinery, Ship and Dock yard sections of Warship Construction Division) .<br>II and IV |
| 7. Naval Medical Inspectorate                                      | MarWehr/G (Medical Division)  |
| 8. Fuel and Transportation Section, Admiral Quartermaster Division | SKL/Adm Qu (Logistic planning divisions of Naval War Staff)   |
| 9. Intendantur Offices   | MarWehr/G (Clothing, Provision, Welfare Billeting, Pay and Allowance Sections)  |
| 10. Central Procurement Office                                     | MarRuest/K 4 (Ship and Dockyard Section)  |
| 11. Technical Procurement Office                                   | MarRuest/K 4 (Ship and Dockyard Section)  |

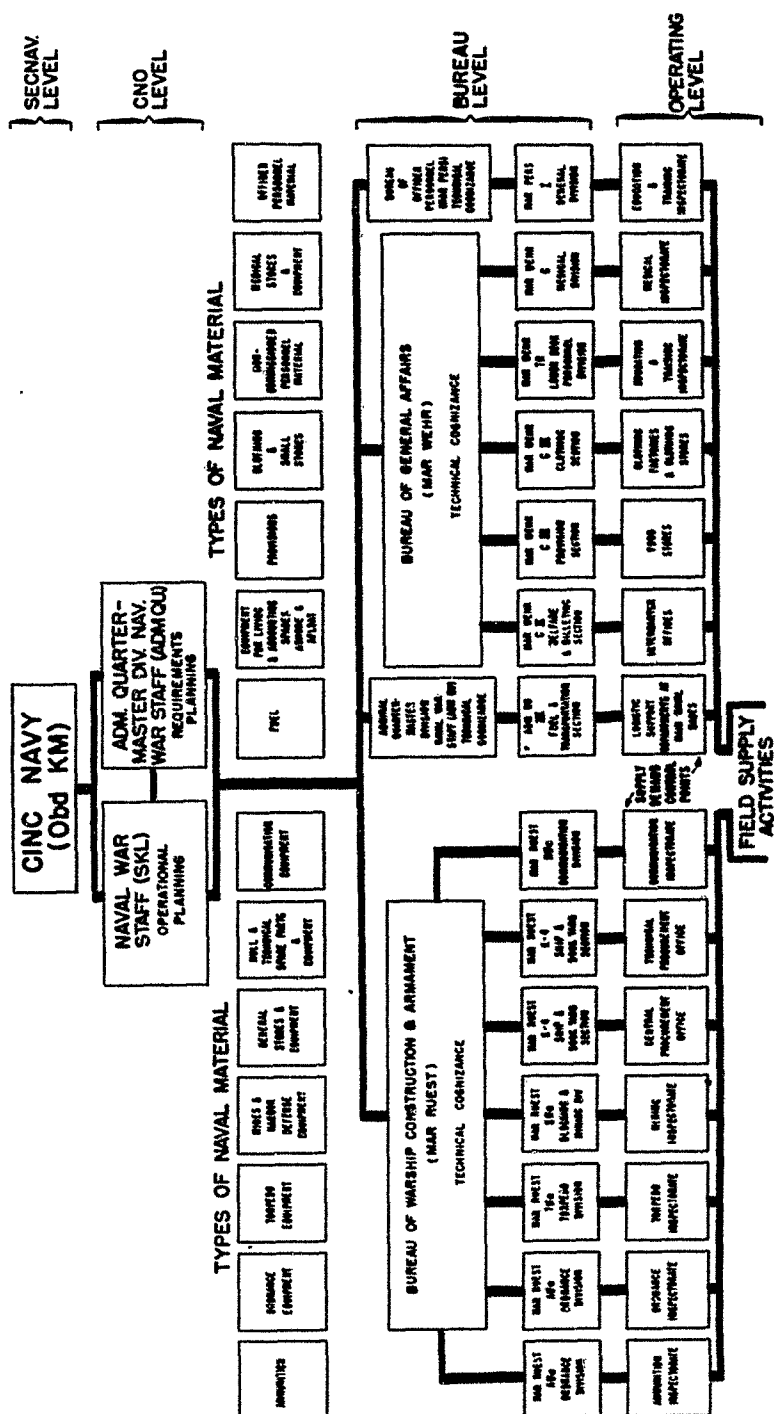
**Summary**

At the head of the whole armed forces procurement/production organization from 1934-1942 was OKW/Rue W1. To this organization were detailed the top economists and technicians of the armed forces. General Thomas, an Army officer, headed the organization. His job was to bargain with the Ministry of Economics and the Ministry of Food and Agriculture for the armed forces' share of the raw materials and productive resources of Germany and occupied countries.

Directly subordinated to OKW/Rue W1 were the armament commands which controlled the various armament inspectorates in their areas.

The armament inspectorates, through the armament commands kept OKW/Rue W1 informed of German and foreign plant capacities. They advised that agency of the availability of factories not yet converted to armament production, in case plants already engaged in such work were partially or wholly destroyed by bombing or other disaster. They also advised OKW/Rue W1 about lead time required by the plants to produce the various items of equipment and supplies, the

**NAVAL SUPPLY SYSTEM**





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availability of production facilities for other branches of the armed forces, and which factories could manufacture identical items for all three services. Representatives of the armament inspectorates made frequent inspections of the factories in their district to ensure that they were used to the maximum capacity. They also assisted industry in manpower and other labor problems.

These three agencies, OKW/Rue W1, the armament commands and the armament inspectorates, were on a department of defense level and as such were theoretically concerned with the overall military procurement program only. Power politics, however, played an important role within the armament inspectorates, and all three services were constantly struggling to get as much raw material and factory space as possible for the production of the many items they required.

There were eleven naval inspectorates and other naval logistic organizations charged with the actual production of equipment, material and supplies, once the raw materials and plant production facilities were made available to them by OKW/Rue W1. Each had its own supply system and was responsible for its own distribution.

Procurement Procedures During  
Period 1934-1942

The chart appearing on page 194a shows the supply system of the Navy, the bureaus and divisions having technical cognizance over the material in it and the naval inspectorates and other logistic agencies responsible for the procurement and/or production of equipment, material and supplies.

Operational and material requirements were tied together in the Naval War Staff (SKL). The operational planning agencies of SKL decided what strikes the Navy would make against the enemy and the time and place. The Admiral Quartermaster Division of SKL (Adm Qu), determined the material and personnel requirements for such operations and transmitted them to the cognizant bureaus. Those bureaus and their divisions passed these requirements on for fulfillment to their naval inspectorates, logistic support departments and offices. According to VAdm Machens, this was the system

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used in matching operations and material requirements each time an operation was planned.

In estimating the needs of its supply system, however, each naval inspectorate, section and office prepared its own list of material requirements. These were assembled by the bureau divisions having cognizance over the material.

In the Bureau of Warship Construction and Armament (MarRuest), there was a division, the Economics Division (MarRuest/Rue Wi) which assembled the material requirements for the Naval Ammunition, Ordnance, Torpedo, Mining and Communication Inspectorates and the Central and Technical Procurement Offices.

In the Bureau of General Affairs (MarWehr), there was also a division, the Supply/Administration Division (MarWehr/G), which assembled the Navy's requirements for food and clothing. Another division in the same bureau, the Medical Division (MarWehr/G), assembled the Navy's requirements for medicines and medical and dental supplies. A third division, the Lower Deck Personnel Division (MarWehr/Tr) assembled non-commissioned personnel material requirements.

In the Admiral Quartermaster Division of the Naval War Staff (Adm Qu), the Fuel and Transportation Section (Adm Qu III) assembled the Navy's requirements for fuel and lubricants, distilled and boiler feed water and transportation.

The Bureau of Officer Personnel (MarPers) assembled the Navy's requirements for officer personnel material requirements.

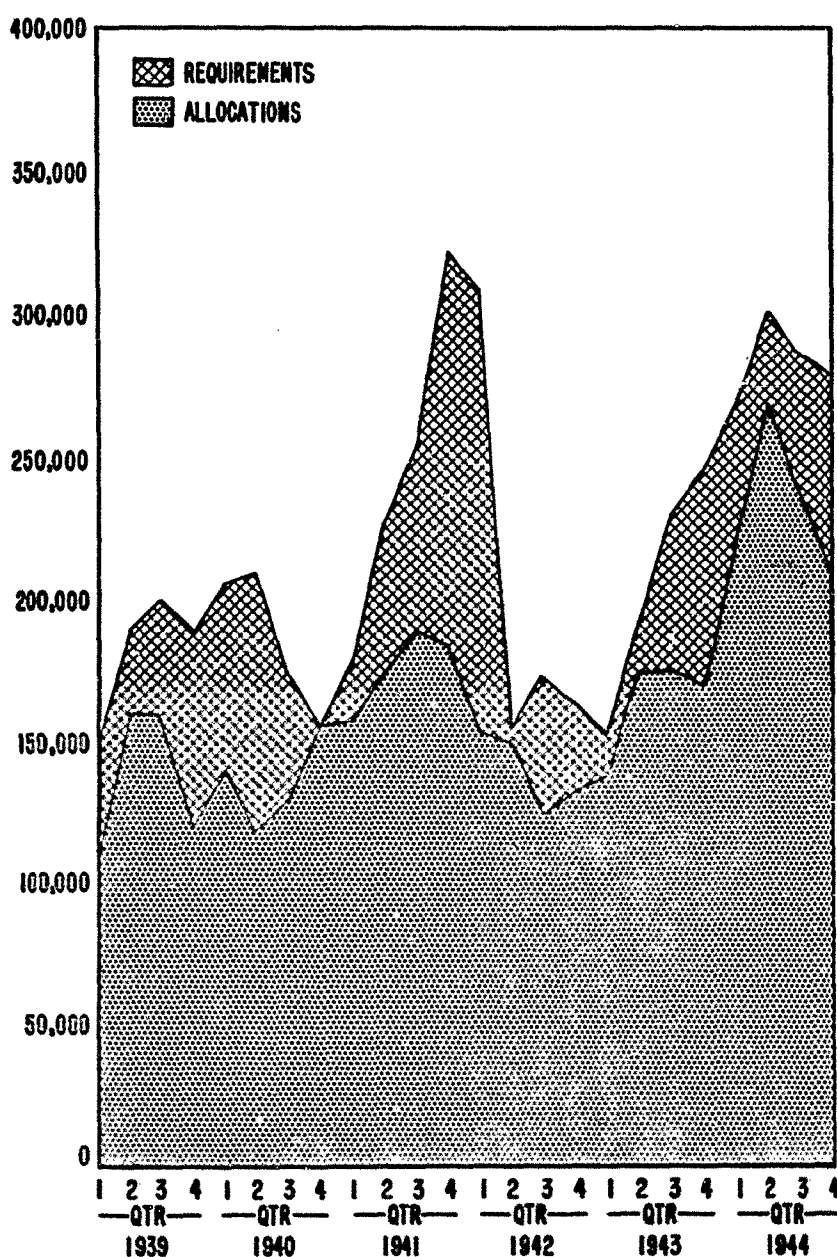
Most of these activities translated their requirements into raw materials and production lead time. Requirements for food, personnel, drugs and common use items of equipment and supplies were, of course, stated in items.

These requirements were transmitted to OKW/Rue W1, where they were consolidated with the requirements of all other armed services, and an armed forces requirements schedule was prepared.

This consolidated schedule was then presented to the Ministry of Economics where the civilian needs of Germany and/or the occupied countries were weighed against the military requirements, and raw materials and plant

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## NAVY REQUIREMENTS AND ALLOCATIONS OF IRON AND STEEL 1939-44



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production facilities allocated through OKW/Rue Wi to the armed forces. An exception to this general rule was that food and fodder requirements were presented to and allocated by the Ministry of Food and Agriculture.

An inter-service conference would then be called by OKW/Rue Wi, at which time the raw materials and plants facilities would be distributed among the various services according to their stated requirements.

At these conferences, the service needing the greatest number of an item of equipment or supply would be designated as the procuring/producing agency. Example: The Army needed 1,000 telephones, the Navy 100 and the Air Force 500. Only 1,000 could be produced with the material and facilities available. General Thomas would order the Army to produce the telephones and allocate the raw materials and factory needed for their production to the Army. At the same time, he would direct delivery of six percent, or 60 telephones to the Navy when production was completed, 66 percent, or 665 telephones to the Army and 275 to the Air Force. In such instances, that part of the raw material, the steel, copper, etc., which went into the manufacture of the Navy's 60 telephones would be deducted from the Navy's allocation of raw materials for the period involved.

If the telephones were already in stock, OKW/Rue Wi having advanced raw materials required for their production, the telephones would be furnished on the same percentage basis and the Navy's allocation of steel, copper, etc., charged.

If the item required was not a common-use one, but was needed for only one branch of the armed forces, the plant production facilities and the necessary raw materials would then be allocated to that service.

It should be noted that these allocations were made by OKW/Rue Wi on the basis of stated requirements. This was said to lead to abuse, because some (if not all) services inflated their requirements to get as much equipment and material as possible. Another complaint registered by officers and officials interviewed was that the Army and Air Force used their preponderant position in the military hierarchy to influence the judgement of OKW/Rue Wi in such matters. In this connection, attention is invited to the chart on page 196a, showing the Navy's requirements and allocations of

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iron and steel during the period 1939-1944.

Raw materials and plant production facilities were allocated to the Navy by OKW/Rue Wi for the production of ships, their weapons, fuel and general and technical equipment. Other material and supplies were turned over to MarRuest for redistribution. MarRuest/Rue Wi divided these materials and facilities among Adm Qu III, the Naval Ammunition, Ordnance, Torpedo, Mining and Communication Inspectorates and the Central and Technical Procurement Offices.

MarWehr, through its supply/administrative, medical and lower deck personnel divisions, divided its allocation of raw materials and plant production facilities among the Naval Medical and Education and Training Inspectorates and the clothing factories and food stores coming under the cognizance of the Intendantur Offices. MarPers likewise reallocated its share to the Naval Education and Training Inspectorate.

These naval inspectorates, food and clothing stores and Adm Qu III, through a Central Procurement Board in Berlin, then contracted with the designated factories for production of their equipment or material, advised the naval departments of OKW's armament inspectorates of the work to be performed for them by plants in their districts, and obtained from them any necessary information regarding production lead time. Their own inspection service ensured that work commenced and continued on schedule and that material in production conformed to naval specifications.

When the equipment, material or supplies was produced, inspected and accepted by the inspection groups of the various inspectorates and offices and Adm Qu III, the items were taken into the appropriate supply systems of the Navy. In the case of mines, ammunition and torpedoes, ~~component~~ parts only were produced under contract during this period. Mines, shells, powder bags and torpedoes were assembled as required by the responsible naval inspectorates in their own assembly depots.

During Period 1942 - 1945

In 1941, it became apparent to Nazi Party leaders that radical changes were required in procurement and production procedures and policies. Russia had become the aggressor on the eastern front and the German armies had been thrown back. The Army had suffered enormous losses in men and material. Production had fallen considerably below that of former war years. The

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reserves of arms and munitions had been used up by the middle of November. The great superiority of arms which had enabled the Army and Air Force to gain easy victories over their first opponents was gone. No longer were unlimited resources present.

The mobility and striking power of the armed forces were directly dependent on the productive strength of industry. Large numbers of men engaged in armament production had been called into the Army to train for the 1942 Spring offensive. Hitler had relieved the Cinc Army, von Braunschitz of command and had assumed the job himself.

Allied air raids were becoming effective, and to add to all these difficulties, winter came exceptionally early in 1941 and was much more severe than in previous years. A coal shortage developed in December. This led to dislocations in industry, and many factories had to shut down. Transportation was crippled. Sufficient fuel could not be produced to operate trucks on Hitler's much publicized autobahnen, and the railroads were overloaded. Railway cars were in critically short supply. Food and clothing shortages developed. Synthetic butter, made from coal appeared for the first time in the markets. The potato ration was reduced to  $4\frac{1}{2}$  pounds per person per week. Clothing and shoes were unobtainable.

To counteract these unexpected reverses, the Ministry of War Production and Armament was formed under the Emergency Program of 1942. Dr. Mansfield was appointed Production Dictator and was given wide powers to:

1. Make available more armament workers by closing down or converting to war purposes what little remained of the commodities industry.
2. Increase production by reorganizing plants.
3. Mobilize more workers by tapping the reserves still available within Germany, but above all, by bringing in foreign workers from the occupied countries.

Dr. Mansfield was removed from his post after two short months, because, according to Max Seydewitz, "he was not rigorous enough in shutting down on commodities and did not have the iron hand necessary for assembling the needed workers of Germany and other countries." Gauleiter Sauckel, an SS leader, was appointed to the post in March 1942. Dr. Albert Speer was appointed Minister of War Production and Armament during the Spring of 1942

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and in the latter part of that year, jurisdiction over the armament commands and armament inspectorates was transferred from OKW to his organization.

From 1942-1945, the Speer Ministry, as the Ministry of War Production and Armament was commonly called, controlled the procurement of all raw materials, production of armament, aircraft, ships and their accessories, the inspection and acceptance of completed items of stock and their allocation among the various services of the armed forces. The Navy and other services continued to determine their material requirements, but submitted them direct to the Speer Ministry, not to OKW/Adm Wl.

After Hitler assumed his position as CinC Army, OKW, according to Col. Gaul, had no co-ordination powers. He said it became an Army General Staff, the sole purpose of which was to promulgate Hitler's directives.

**The Speer Ministry**

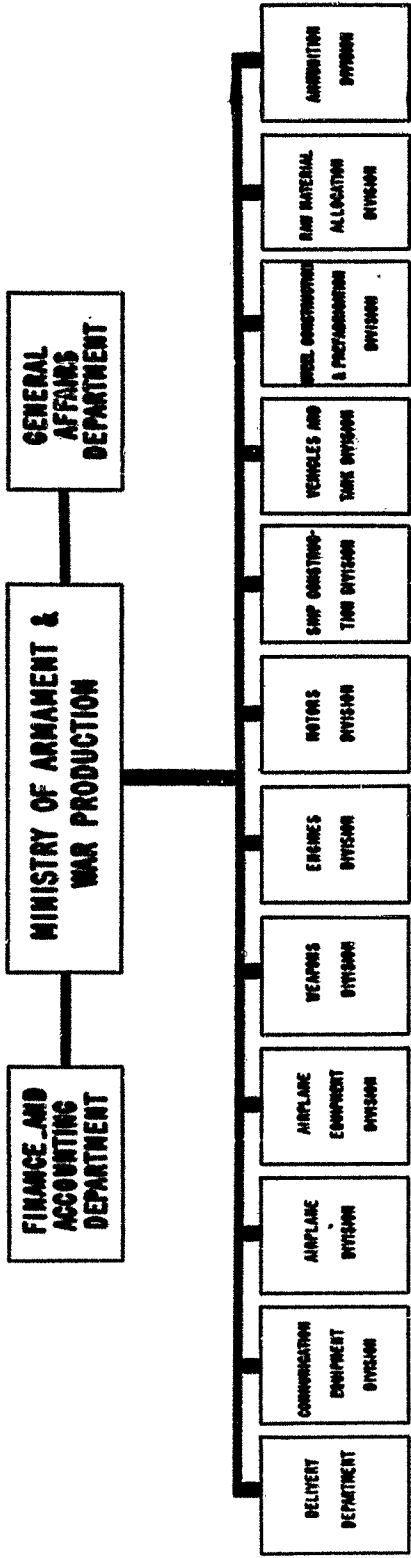
The evolution of the Speer Ministry must be divided into two periods. The first is the one between 1942 and 1943, when the Speer Ministry absorbed the functions of OKW/Adm Wl but permitted the naval inspectorates, AdmQu III, the Intendantur Offices and the Central and Technical Procurement Offices to continue to administer their own production. The second period is that of 1944-1945, when the Speer Ministry took all production away from the Navy and left the naval inspectorates, etc., with their storage and distributive functions only.

An organization chart of this ministry appears opposite this text. Attention is invited to the fact that it embraces ten production divisions and a raw materials allocation division. During the period 1942-43, these newly formed production divisions merely supervised the activities of the armament commands and armament inspectorates, attempted to reduce inter-service friction as best they could and stepped up production. In 1944, however, having gained control of industry and a knowledge of what they thought the armed forces should have, they converted the armament inspectorates into an Armament Acceptance Inspectorate and relieved all naval inspectorates, AdmQu III and the other logistic agencies of the Navy of all responsibility for production.

A description of the functions of the production divisions of the Speer Ministry follows. This description given refers to the period 1944-1945.

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MINISTRY OF ARMAMENT AND WAR PRODUCTION  
(SPEER MINISTRY)





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For clarity, it must be repeated that during 1942-1943, in addition to these functions, these divisions also had the responsibility of determining what plant production facilities could be made available to the various services of the armed forces. During that period the raw materials allocation division determined what raw materials those services could have for their production programs.

The words "produced" in the following text means "contrasted with industry for production, inspected material and methods employed during production, assisted industry with its production problems and delivered material produced to the cognizant branch of the armed forces after inspection and acceptance by the Speer Ministry's Armament Acceptance Inspectorate".

The Weapons Division of the Speer Ministry produced all torpedoes, mines, booms, nets, minesweeping gear and ordnance and optical equipment and instruments. When they were turned over to the Navy, they were taken into the Naval Torpedo, Mining and Ordnance Inspectorate supply systems.

The Engines Divisions of the Speer Ministry produced all ship and small craft engines and their spare parts for the Navy. After 1 January 1944, they were received into the Technical Procurement Office supply system. Before then, they were taken into the supply system of the Engineering Inspectorate.

The Steel Construction and Prefabrication Division of the Speer Ministry prefabricated the sections of U-boats that were assembled by Speer's Ship Construction Division. This latter division also controlled all new construction for the Navy. It is unknown whether or not trials and acceptance of newly constructed vessels were conducted by the Ship Construction Division of the Speer Ministry or by the Naval Warship Acceptance Inspectorate of the Navy. It is believed, however, that during the period 1944-1945, this naval inspectorate was subordinated to the Speer Ministry.

The Ammunition Division of the Speer Ministry produced all shells, powder, fuses, etc. The Naval Ammunition Inspectorate, however, continued to assemble its shells and fill its powder bags after component parts were received by it.

The Communication Equipment Division produced all communication equipment.

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When received by the Navy, it was taken into the communication supply system controlled by MarRuest/NWa. Before the establishment of the Speer Ministry, production and/or procurement of naval communication equipment had been a function of the Naval Communication Inspectorate.

Allocation Procedures During Period 1942-1945

The Speer Ministry planned the total military production from the material requirements lists submitted by the three services and allocated material on hand or in the supply pipeline on a percentage basis proportionate to their needs. During 1942-1943 materials and production facilities were made available to the individual services and they produced their requirements. Common-use items were produced by the service having the greatest need for an item. However, during the period 1944-1945, procurement and production was, as a general rule performed only by the Speer Ministry. The armed services informed it of their needs and took such percentage of the total stocks available as the Speer Ministry determined they should have.

As was the case when OKW/Rue W1 controlled raw materials and plant facilities, the percentage of available materials allocated was usually based on the relation of the personnel strength of a service to the over-all strength of the armed forces. This meant, of course, that the Army received the lion's share of the finished products, raw materials or plant facilities, that the Air Force was then given its share and that the Navy received what was left. CinC Navy, it was said, often had to present the Navy's requirements personally to Hitler to keep naval production rolling. Translation of some SKL files corroborates this. In the section relating to March and April of 1943 a report of one of the conferences between GrAdm Doenitz and Hitler states that CinC Navy stressed the need for an increase in its iron allocation. Its quota for the second quarter of 1943 was thereupon raised by some 45,000 tons.

Some of the reasons given by GrAdm Doenitz in justification of this request were:

"At the beginning of the war, steel allocations for the Navy amounted to 160,000 tons a month and rose to an average of 177,300 tons a month for 1941. In 1942, despite increased German steel production, the level of allocations started to fall, and for the second quarter

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of 1943 the figure was down to 119,795 tons a month. This quota was dangerously low for the Navy. Of the iron available for the Navy, normally up to 50% was used for warship construction, the other 50% being used for the production of guns, torpedoes, mines and ammunition (about 25%) and for the development of bases (dockyards, fortifications, schools; equipage, food and transportation equipment - about 25%).

"The minimum steel requirements for the Second Quarter 1943 and actual allocations for that period were:

Branch of Industry	Allocation	Minimum Requirements
Shipbuilding	58,000	85,000
Gunnery	20,490	30,495
Torpedoes	8,650	13,132
Mines	9,490	12,490
Buildings	7,575	16,650
Dockyards Development	3,300	4,300
Armament	1,200	3,200
Fortifications	1,200	3,165
Air Raid Damage	3,700	4,700
Copper Substitutes	2,300	2,300
Food	1,300	1,300
Boiler Repairs	1,500	2,561
Navigation Meteorological Service, Clothing Equipage and Motor Transport	1,090	2,190
<b>TOTAL</b>	<b>119,795</b>	<b>187,483</b>

"Hence the fixed monthly steel allocation of 119,000 tons fell short of the Navy's minimum requirements by some 62,000 tons. The deficiencies were dangerously large. The most vital industries had to be given priority over other important projects. In gun manufacture, certain lines of production had either to cease completely or be severely restricted so that full gun and ammunition production for U-boats was not impaired.

"Requirements demanded 2,000 torpedoes and 170 torpedo tubes, but only 1,170 torpedoes and 124 tubes could be manufactured from the steel allocation. There was a danger that the U-boat war would be brought to a standstill within a few months, as consumption exceeded production and stocks could not be maintained at the required level.

"With mines, requirements could only be met up to 50% for mining and barrage, up to 34% for minesweeping and up to 30% for net manufacture.

"Building was subjected to heavy delay, in some instances construction of fortifications ceased completely. Industrial armament development was seriously curtailed, and the reduced allocations for the development of bases also made itself felt.

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"The most serious effects of these deficiencies, however, were in shipbuilding. After the capture of Norway, the Lowland Countries and France, SKL in August 1940 had decided on the following strength in light units;

103 destroyers, 120 torpedo boats, 156 E-boats, 400 minesweepers and 400 motor minesweepers.

"None of these requirements was fulfilled. A temporary increase in steel allocations was of no use against the ever-increasing shortage of materials.

"By March 1943, it had not even been possible to keep to the target figure of 22½ U-boats a month laid down in the U-boat Program. As all steel requirements for U-boats construction had to be fulfilled completely, more and more curtailments had to be made in the construction of light forces. The development by the Navy of standardized multiple purpose craft instead of individual submarine chasers, minesweepers and anti-aircraft vessels had not succeeded in offsetting the difficulties.

"While the steel shortage affected the Navy's over-all shipbuilding program by 33%, it restricted the construction of light naval forces by as much as 46%, as full allocations had to be given to U-boat construction and Mediterranean commitments. This led to disorganization in the shipyards, as every quarter - almost every month - craft already under construction had to be deleted from the list because of lack of material.

"The principal task for patrol vessels was to keep the sea communications open for U-boats, armed forces' supplies and trade. Maintenance of imports of high grade iron ore by sea was a matter of vital military importance for Germany. Forty-three percent of Germany's crude iron production depended upon shipping. The Navy's request for an increased steel allocation of 62,000 tons monthly, which would at least enable the restricted shipbuilding program to be carried out, was little compared with the danger to which Germany's entire steel production was exposed by the lack of patrol vessels. The best way of ensuring production was to safeguard the iron imports program."

In an effort to keep abreast of changing requirements and to maintain harmonious relationship, a conference was held each month at the Speer Ministry, to which each service sent its representatives. During these conferences it was determined what changes in design of equipment were desired, what changes had developed in material construction, shortages of critical metals, alloys, etc., how much of the combined armed forces material requirements claimed could be produced and what portion thereof would be given to the Army, the Air Force and the Navy. The system employed

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by OKW/Rue W1 prior to 1942 was followed; i.e., a proportionate allocation giving a percentage of the production whole to each service, based on the requirements of that service to the total number of units required for all three services.

Here again, it was claimed, there was much wrangling between the services over the amount of raw materials, production facilities or completed items made available to them.

Most of the Speer Ministry personnel who attended these conferences were former executives in industry, persons of wide practical experience who required justification for every ounce of metal being taken from Germany's impoverished economy. Therefore, it was a natural consequence that the representatives of the armed forces, striving as they were to get as much equipment and material as possible resented having to explain in detail to these men their reasons for needing certain items.

An example of the Navy's attitude in such conferences is contained in Mr. Otto Merker's story about one of his experiences at the Admiralty, when he first took over the job of prefabricating submarines. Mr. Merker said:

"When I joined the Ministry in 1943, my first conference was held in Berlin in the presence of Doenitz and Speer. The whole Admiralty was assembled there. I personally had invited about half a dozen of the most important directors of the shipyards. The purpose of this conference was to discuss the submarine program. The Navy presented a plan. At that time, the submarine war was almost lost and the Admiralty had staked their hopes on the 21 and 23 types of submarines. At this conference the first designs and rough plans were presented.

"The timetable of production, in the view of the Navy, was about this: A thorough design would take one year, that would be 1944; then the construction would start, that would take another year. In 1946, we would have reached a series construction and in the middle of 1946 we could start the new submarine campaign. I, however, said: 'That is quite impossible. We must try to complete the whole layout much earlier.' My suggestion was that I would assemble the best designers, so as to complete the construction of the first boat in the Spring of 1944, and immediately prepare the production line before even the first boat was completed. In that way we would be able to have the first 100 or so completed boats at the end of 1944. Then one of the admirals said: 'You are not a ship's constructor. You are a newcomer in the business. This is mere nonsense. We are the experts and we do not believe it can be done.' He said it in such a dignified way that I got angry. I smashed my fist on the table and said: 'Gentlemen, do you realize that we will have lost the war by then?'

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"I finished the design of the submarine in December 1943. The first submarine was launched in April 1944, and by the end of 1944 about 130 of type 21 and about 80 of type 23 were completed. Submarine warfare would have started again in the Spring of 1945 if the Allies had not landed on Europe.

"Of course, the admiral who made the above statement never apologized."

Some of the officers and officials interrogated during this study denounced the Speer Ministry and the manner in which its representatives handled allocations. Others stated that they thought that the material and supplies available were very fairly distributed. Some of the statements may have been prompted by the belief that procurement of military equipment and consumables should be left in military hands. Here in the United States the armed forces have always claimed this responsibility, because of the intimate relation of military operations and military supply, including procurement. Americans believe that the supply process starts with research and development and requirements, which are dependent upon tactics and strategy. It then moves through storage, distribution, issue and finally salvage. Lifting procurement out of that chain breaks the chain.

It is believed that most military men willingly accept any organizational change that will help them win a war, if they feel that those directing the effort are competent. German naval officers and officials interrogated during this study appear to be no exception to that general rule. Dr. Albert Speer, his assistant, Mr. Otto Merker, and many other industrialists associated with the Speer Ministry brought much technical know-how into the armament production field, but Nazi Party affiliations being what they were, some men with great authority but little qualification for their jobs were charged with the production of military equipment. It is recognized that parallel conditions can be found in most government wartime operations; however, the lack of understanding of naval requirements displayed by some inexperienced executives of the Speer Ministry led to confusion and discontent in the Navy.

Personnel interrogated about the Navy's experience with the Speer Ministry were unanimous in their opinion that what military success Germany

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had during the latter years of the war was directly attributable to Dr. Albert Speer's efforts. It was said that production was almost tripled during the years 1943-1944, and that without the Speer Ministry the nation's armament program would have bogged down. However, the failure of some responsible officials in the organization to understand that the Navy's requirements were peculiarly its own and not necessarily identical or similar to those of other branches of the armed forces, left deep scars of frustration and antipathy on the memories of many naval officers. Their experiences led them, six years after World War II had ended, to speak out.

VADM Steigel was emphatically against civilian control over military procurement. He said:

"I reported my demands to the Speer Ministry. It told me what materials were available. It allocated the raw materials to the manufacturers, and I placed the orders with the firms. Take for example U-boat batteries. Speer believed the Navy had plenty of them. I convinced him that a new factory should be erected at Posen. Even though they built the factory, there still was a shortage of submarine batteries at times.

"At regular intervals conferences about the Navy's needs were held between Speer officials and my staff. Representatives of the steel industry, the shipyards and engineering plants and their branches took part. We would need batteries on a certain date. Speer's group would promise them. Promises in wartime are not enough. Delivery must be assured. We would hold another conference. Again they would promise delivery. 'In two days, we will deliver them', they would say. In the meantime, the factory could not meet Speer's promises. I would bring pressure on the factories to do so and in this way meet the Navy's requirements.

"If we had not followed up, they would have never met our demands for material. Although Speer had the responsibility for delivery, Doenitz shifted this responsibility but not the power to me. Speer had all the power and no responsibility. Doenitz would not back me up. I did all the work. Speer got all the credit. The Speer Ministry promised much more than they could deliver. If I emphasized my needs and showed that the plants were unable to produce, Speer would take action to speed up production by overtime.

"The Navy had to watch that the Speer Ministry did not meddle in acceptance. They were only interested in quantity production...not quality production. Speer wanted to speed production even through lax inspection rules. He didn't believe the phase of acceptance important. Only quantity meant anything to him. Example: There were some textiles to be inspected. I knew that only specialists could inspect textiles. Speer believed that non-specialists could do the job as well. I adhered to my opinion and forced textile specialist inspection.

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"The Main Ship Commission of the Speer Ministry repeatedly interfered with the technical procurement and supply for ships and boats in commission, as it confiscated spare motors for MTBs, R-boats, naval barges and war fishing cutters to further new construction programs, without fulfilling its promises to replace the equipment from current production. Although I protested against this procedure it showed no result since Grädm Doenitz could not be induced to oppose the Speer Ministry. In many cases long repair periods were the result, while on the other hand new construction still had a long way to go before completion. This bore bitter fruit during the fighting and evacuation of our troops from the Baltic States, when shortly before the crisis, the last six spare motors and stocks of spare parts for fishing cutters had been held up by the Speer Ministry. As a consequence, six fishing cutters which, with these spare motors could have been re-fitted in time, never came into action and others broke down because of lack in spares. The result was a bitter lack in support of a fighting Army.

"In all justice to Speer, I must say that his organization was an effective one. They produced huge quantities of material. They believed, however, that they could do much more than they actually could. They wished to appear as brilliant producers and tell Hitler: 'My Fuehrer, I have produced such and such a quantity of this or that material.' Actually what they produced was insufficient, but Hitler only heard Speer's reports.

"Doenitz would not tell Hitler the truth. As a result, Hitler got a lot of misinformation. Afterwards, the Navy was blamed for not fulfilling acceptance promises. 'If Speer had had all these responsibilities from the beginning,' it would be said, 'We would have won the war. The Navy is no good.' This was also true in the Air Force and the Army."

Adm Bachenkoehler, Chief of WarRuest was much milder. He said:

"The Navy sent various representatives to the Speer Ministry. It was good cooperation. Of course, the attempts to overcome the deadlocks led to hard fights. Most of the heads of bureaus and divisions had to fight to get their requirements filled. All material was too scarce when the many organizations requiring allotments of raw material lined up to share the small amount available.

"If decisions could not be reached during the conferences, I personally called on Speer. He always tried to cooperate, especially since the requirements of the Navy were small in comparison with those of other services.

"One of the greatest difficulties we had was in obtaining anti-aircraft crews aboard the Navy auxiliary vessels. This was quite apart from the need of ship construction material. This led to the decision to abandon the construction of large ships. Everything available had to be utilized for construction of submarines, motor torpedo boats and small fighting units.



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"It turned out to be a fight for existence. Every man tried his best. The cooperation of the simple laborer and everyone else connected with the war effort was excellent. I frequently pointed out to the industrial people that they could not abandon the fighting man at the front. I had always had commands afloat or on foreign shore and had never been assigned to Berlin before 1940. These conferences were always very serious. The difficulties of the people in the front lines, when pointed out by me impressed the industrial people very much.

"If I was not successful in my conference with Dr. Speer or his ministry, I would see Gräde Doenitz and relate the facts to him. He would then go to the Fuehrer and tell him about our difficulties over raw materials and point out the serious consequences that might result.

"You know, there were different types of priorities, Admiral Doenitz would get the highest priority for obtaining allocations once in a while. At the end of the war, however, one first priority stood next to the other. The efficiency could be stepped up no longer. There were only priorities."

Marinebaudirektor Dr. Heins Friese, Chief of the Technical Procurement Office, said:

"It was the intention of the Speer Ministry to combine and take over the entire procurement of our spare parts - new construction had already been turned over to it. The Navy only had a type of supervision over construction - but the Navy always held the view that, in carrying out its operational tasks, its units should be supplied with spare parts in the shortest possible time and that it was therefore necessary that procurement of spare parts be kept in its own hands."

Ministerial Direktor Dr. Guido Trittlar, Chief MarWehr/MWS, said:

"Our organization was a small but very active one. At first there was no great lack of material. It was sufficient to work with, but when, through air raids, the great need for and shortage of materials arose, a larger organization was required. The Speer Ministry alone made the success of the building program possible. All planning was done by the Navy. The construction itself was done by Speer. Most of the naval construction officials were assigned to his ministry. Only those charged with maintenance of buildings remained with the Navy. I was subordinated first to the Navy, as chief of the Construction Department, and at the same time to Speer for naval construction work. By this method, it was assured that all work was done as the Navy wished it. Because all personnel working in construction was subordinated to me, I had real influence. Through my subordination to Speer, however, my influence was naturally somewhat diminished. On the other hand, however, the Navy was able to get more building material."

RAdm Eric Mueller, Chief of MarRuest/SWa, said:

"The importance of the Speer Ministry, in my opinion, only grew because there were so many bombed out factories. If there had been no air raids in Germany, this organization would have been unnecessary. Towards the end of the war, we had to fight for every ton of iron we got. At the end of the war, Speer gave the allotments to definite consumers."

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When asked if it was true that members of the Speer Ministry were not as intent on turning out required quantities of material which met Navy specifications as on being able to report to Hitler that they produced so many thousand units, RADM Mueller expanded on the subject and replied:

"That is right. It is also the opinion of VADM Machens. I don't think it was Speer himself but some people on his staff, such as Sauer and Schieber. Those two people were looking out for themselves. I talked to Speer one day. I said, 'If you try to do all of these things, you will have to take us over too.' His importance must have permitted him to deal only with persons on a very high level, and to report important facts without details. Another thing: If I went to Speer and had an order for a great amount of one item for production it was all right but with a thousand different things, as was often necessary in mining equipment, he could not handle them."

VADM Machens, the Admiral Quartermaster, said:

"I had a list of submarine equipment that Speer had promised to deliver to the Navy. He showed it to the Fuehrer. Four months later I entered on the list what his organization had actually delivered. He had promised the equipment on the assumption that all would be clear sailing. In the meantime we had some air raids. Naturally I never thought that I would get what he promised and it was a pleasure to me to see him show the corrected list to the Fuehrer."

It will readily be seen that the Navy was not unanimous in its opinion of the Speer Ministry's effectiveness as a procurement/production agency. The fact that the Speer Ministry attempted to take over the production of all naval material or was more interested in mass production than in the quality of the end items it furnished the Navy seems to have incurred the displeasure of some. Others saw the over-all picture more clearly. It is a natural desire on the part of any naval commander to want as much material and equipment as he can obtain during a war. VADM Stiegel had great responsibilities, as did Adm Bachenkoehler, his bureau chief. However, there was an underlying factor that was peculiar to Germany that was not mentioned by the officers and officials interviewed and that was that most of the research and development for the armed forces was not conducted by them but was performed by German industry, most of which had large research

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staffs. Most of the large German industrial companies devoted part of their research efforts towards developing equipment for the armed forces without much assistance or interest on the part of the armed forces themselves. German aircraft were designed by the civilian aircraft industry, and most of the implements of war were also designed primarily in private industry. The Army was content to take what was given it. In a large part, it has been reported, that that was true of the Navy and that it certainly was true of the Air Force.

There was not much interest on the part of the military leaders themselves in the improvement of the quality of war material. This meant, then, that whatever was done in German industry largely determined the quality of the war material. It was industrial know-how completely which was expected to provide the quantity of material that was wanted. The research and development people worried about quality; the industrialists further had to worry about quantity.

The technical officers of the German Army, such as they were, did not usually have sufficient training to stand on their own feet compared with the engineer in German industry. The engineers, by and large, looked down their noses at the military officer.

Mr. John D. Millot, Associate Professor of Public Administration at Columbia University, in a speech delivered 12 January 1948 before the Industrial College of the Armed Forces, said:

"Speer spoke over and over again of self-responsibility of industry as being the key to his ministry. I think he is not wrong when he puts the emphasis he does on that particular aspect of his job. He did organize industry on a much more effective basis than it had ever been organized before. He placed responsibility upon industry. He completely threw overboard the leadership principle so far as the German economy was concerned. He told Hitler he was going to do so; and, because Hitler had the greatest confidence in him, he made no protest, although some of the party men did not like it very well. Speer placed his entire emphasis upon organizing industry into what he called main committees and main rings. The Main committees were end-product industries, and the main rings were raw material processing industries.

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"Each of these committees had a chairman who was a leading industrial figure. Speer insisted that he must be under 45 years of age. If he could not find a man, for various reasons, under 45 years of age who would be acceptable, then he would take somebody over 45 but with a deputy under 45 years of age. More than this, Speer insisted on taking not the front men—he would have nothing to do with chairman of boards or with presidents—but the technical men. He wanted the engineers, he wanted the production experts primarily. He took these men and made them chairmen of committees.

"Then the various industrial units, the producing units, had a representative on the committee. This particular main committee then became the basic unit in parceling out war contracts, in parceling out raw material, in keeping very careful production records, in exchanging know-how—that is, exchanging all forms of industrial experience so that the best practices of one producing unit in an industry could be handed on to another producing unit—and in generally exercising oversight of all war production."

Speer placed the responsibility for performance 100 percent upon these main committees and these main rings. Then he told them it was up to them to perform and do the job. It was amazing what was accomplished after 1942 until the last quarter of 1944 when German industry began to collapse. By and large, war production was increased about three times during these three years. It was largely done, Mr. Millett said, without any additions to manpower and without any substantial additions to raw material supply, but through rationalization, the use of the best industrial practices of one producing unit throughout the entire industry, and through the much more careful control of the use of raw materials which was made possible through this pattern of industrial organization.

The confusion began immediately after Hitler came into power. The Army had done the planning just as the U.S. Army had done most of the industrial mobilization planning in this country between the two wars. The German Army had a number of ideas about what kind of an administrative organization should be set up in order to use the resources of the country effectively for the production of war material. But Hitler scrapped all of these Army suggestions. More than that, General von Bomberg, who

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became Minister of Defense and then Minister of War, a kind of superchief over the three component parts of the armed forces, never pushed very hard to get the Army suggestions accepted. He was more or less content to go along with whatever was provided through the machinery of the Nazi regime.

As early as 1935 a secret defense law was passed in Germany which called, in time of war, for a Commissioner General of the Economy; it was commonly understood that the Commissioner General would be the Minister of Economics, who was then Hjalmar Schacht. Immediately after the passage of this law in May 1935 Schacht began to act as if he were already Commissioner General of the Economy, as if all the machinery of war had already been activated. He began to control the use of war material and the use of industrial plants. Instead of directing the resources toward the armed forces, he directed them more and more toward the civilian economy.

Mr. Millett continued:

"Speer was an architect. More than that, he was a member of Hitler's intimate entourage. There were not very many members in the so-called family group around the Fuehrer. Goering, for example, was not a member of that close family group. Goebbels was, but he was the only minister who was. Most of them were peculiar characters of one kind or another. About the only halfway normal person I can think of who was in the group seems to have been Speer himself.

"Speer was Hitler's personal architect and had won Hitler's confidence in designing and supervising the construction of many of the great monuments of the Nazi regime which Hitler was so particularly interested in. When Todt was killed, Hitler summoned Speer to him a day later and told Speer that he was to succeed Todt in all his jobs: as head of the Organization Todt, which was a construction organization for carrying on jobs outside of Germany; as Minister of Munitions; and certain other jobs under the Four-Year Plan that Todt had been responsible for.

"Of all these jobs, Speer took most seriously the Ministry of Munitions, (Ministry of War Production and Armament) which existed only on paper until February. I don't think it was entirely a matter of choice. Hitler certainly realized by February 1942 that he was in a tough spot industrially and he told Speer, 'Now, get to work on the industrial problem.'

"Why Speer should have turned out to be kind of genius is just another peculiar accident of history. I know

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of no other way to explain it. I think, by and large, he was an organizational genius. It was Speer's genius more than almost anything else that brought about the industrial mobilization of Germany's resources on a full scale from 1942 to the end of 1944.

"Speer had his difficulties, especially on labor supply. He thought that labor utilization was primarily a production problem, but in the meantime Hitler had given all labor problems to a Gauleiter named Fritz Sauckel. Speer had better thank his lucky stars that Sauckel had the labor responsibility. Sauckel was hanged at Nuremberg and Speer got 20 years. Speer had all kinds of quarrels with Sauckel, who refused to take instructions of any kind from Speer during the war years.

"Speer set up machinery under the Four-Year Plan Office which he called the Central Planning Board. This was the nearest thing to a planning agency that Germany had yet had on the economic front during the war and prewar years. He used all of the influence of Goering for his own purposes. He brought most of the Ministry of Economics under his jurisdiction. He still had difficulties with the Ministry of Foreign Affairs on the exploitation of foreign resources. For the most part, von Ribbentrop was able to keep the exploitation of the occupied areas under his own control. Again Speer was probably lucky from the long-range point of view concerning his own life. But Speer did bring about a degree of unification that had never been achieved before.

"He took over virtually all responsibility for Army procurement. He got Air Force procurement after the famous air raids of February 1944, the famous air attacks from England upon the German aircraft industry. Then the Air Force people were happy to turn over air force production to Speer, for it was a down-hill concern at the moment. The Navy turned over all naval production to Speer in the summer of 1944, not until July or August.

"Now, I say 'turn over production'. Let me explain in a little more detail exactly what I mean by that. Speer never transferred procurement officers from the Army, the Air Force, or the Navy to his Ministry. Actual contracting relationships continued to be in the hands of the three armed forces. The acceptance of all war materiel, the instructions about its delivery, and storage remained in the hands of the three armed forces. But the fixing of production schedules, the control of raw materials, the expansion of industrial plants remained on Speer's hands, for Speer had placed all of this authority in the main committees and main rings of industry itself to carry out.

"General plans for procurement, that is general statements of munitions requirements, were given by the armed forces to Speer directly. Usually they consulted with Speer or one of his subordinates on the details. On major items, Hitler himself dreamed up the programs.

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He would not have the Air Force or the Navy or the Army--and especially the Army--fixing requirements because he thought they didn't know anything about the subject. He decided all these issues himself. More particularly, so far as research and development were concerned, Hitler inspected every single item, even the smallest items, before they were ever adopted as standard for use in the Army. That was less true in the Navy, but it was true also for all aircraft.

"I asked Speer about that, and I got the rather interesting answer that in fact Hitler was something of a genius himself on technical matters and his judgment was very, very good--in Speer's eyes, anyway. I think that was the judgment of a good many other people who were fairly well informed and knew the situation. More than that, this was one of the things which interested Hitler more than anything else. He always dreamed of himself apparently as a great strategist and as a great technician and as the only person in all Germany who combined the two qualities. He never delegated either one of these responsibilities. He remained to the end the strategist. He remained to the end the technician, so far as the quality of war material was concerned.

"But Speer did get a large part of the various administrative agencies of Germany under his domination. It is true, as I said, there were exceptions, very important exceptions. But, for the most part, he did get a degree of centralization that they had never had before.

"He still had his battles. In the closing days of the war there was a greater and greater effort to undermine Speer; and he became more and more distant from Hitler personally. The party leaders especially were very bitter about Speer and wanted to get rid of him. Apparently there was much talk in the high circles of the Nazi regime after the twentieth of July that the next big purge ought to be in German industry--by high circles I mean principally Bormann and Goebbels, who were the big plotters of the Nazi party machinery. If they had had their way, there might have been a repetition of the army purge throughout all of German industry. Speer fought it. Speer did his best to get around it. I think object number one of any purge must necessarily have been Albert Speer.

"But there was great confusion. On such things as price control, on such things as civilian supply generally, in such things as rationing, on such things as agriculture, on such things as transportation, on such things as war finance, Speer had little authority. There continued to be rather bitter conflict between many of the top figures to the end, with Hitler himself as the only person to carry out any degree of co-ordination at all. Most of the time Hitler was not interested."

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This, then, is the side of the production picture that the Navy failed to see, did not want to see or did not want to admit. Mr. Millett's statement that Speer was the target of the Nazi party leaders may be significant of a general feeling among those leaders that filtered through party circles to the Navy. It may have become fashionable to blame Speer for service as well as party shortcomings.

Nevertheless, without the services of Dr. Albert Speer, it is an established fact that the procurement/production program for the armed forces would have bogged down in 1942-1943. The success that the Navy enjoyed in supporting its ships, its U-boats and its shore establishment during the latter part of the war must be attributed in great measure to the organizing ability of Dr. Albert Speer and his assistants in the Ministry of War Production and Armament.

Summary

The Navy did not have an organized program designed to keep it abreast with modern development and improvements in weapons and other equipment. It relied instead on private industry to develop and improve these items for it.

The system of procurement employed in Germany was radically changed at the beginning of 1942. Before this time each of the services procured and distributed end items of equipment, except common-use items, independent of each other and on a competitive basis. The specifications of items used in common by all services, however, were so stated that it was impossible to interchange them among the services. Allocation of raw materials to each service by OKW/Rue Wi was done on a percentage basis with no regard for requirements.

This condition was partially overcome by the creation of the Speer Ministry which, by the end of 1944, had assumed responsibility for practically the whole of German production, transport, supply and distribution of power, and all civil and military constructional engineering and building including the roads.

The three branches of the armed forces retained the responsibility of



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formulating the requirements for development and production, and, through their inspectorates, inspected, tested and accepted the finished stores, while the Speer Ministry placed the responsibility for most of the development and all of the production in the hands of industry.

While the Navy, before 1944 had the responsibility for procurement of items of equipment peculiar to the Navy, Hitler frequently intervened and demanded that certain requirements of his own be met. The Fuehrer's requirements received the highest priority, and essential items required by the Navy and Air Force suffered delays and cancellations because of losses of raw materials or production facilities. Goering also exerted great influence on industry to the disadvantage of the Navy. He was able to obtain special priorities for the Air Force. Mr. Marker stated that trouble over priorities frequently arose because of interference by Hitler. He said that:

"He always changed the priorities according to the wishes of the last top-ranker who had visited him and 'cried on his shoulder'. He was very temperamental and one had (only) to catch him in the right mood."

During the period 1942-1943, the naval inspectorates and other production agencies of the Navy continued to supervise the actual production of their material requirements. From 1944-1945, the Speer Ministry supervised such construction and the naval inspectorates, etc., controlled only their storage and distribution systems.

It is difficult to make a comparison of the American system of procurement of war materials with that of Germany. Germany had a dictatorial control over raw materials, labor and industrial facilities. This enabled it to increase production steadily from 1942 to 1945 in spite of the inefficiency which resulted from Hitler's policy of creating overlapping and parallel organizations which would act as a check and balance against each other so as to prevent any group from becoming powerful enough to challenge his absolute power or the preponderant influence of the Army and Air Force.

The text book principle which shows clearly where responsibility was delegated did not always work out in actual practice. The services had certain responsibilities which were frequently rendered inoperative by

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action of Hitler. The Navy, as has been shown, had a distrust and dislike of the power of the Speer Ministry which was gradually usurping what the Navy considered its prerogatives in the production of items of equipment, and in the research and development of new equipment.

Despite all of these obstacles, however, it was reported by the various persons interrogated during this study that the Navy had no real shortages, except in fuel and some metals required in the production of motors, generators, etc. The officers and officials stated that the quality of clothing deteriorated during the latter part of the war, but that the clothing produced was usable; that food was in short supply but there were no instances of malnutrition or starvation; that hand tools had to be spread around a little more in a machine shop, but that there was always a sufficient number with which to do a job. There was, according to them, an abundance of general stores.

Mr. Otto Merker said:

"I joined the Speer Ministry in June 1943. The best understanding existed between me, from the production side, and all naval officers. There were no difficulties at all. The most serious and gravest problem was the period when the new submarines came into construction, not from the constructional side as a whole but because of the new way of construction. I was the expert who introduced the prefabrication system of submarine construction.

"Programs were set up, and according to these programs the necessary amount of material was allotted. As is well known, the material was not sufficient at all. The whole amount was too small. Then fighting between the various services started right at the top level and continued down through the various departments of the services. That finally led to the introduction of the priority system. This priority system naturally was affected by the actual war situation and therefore continuously changed. With the Navy, however, there really were never any serious allocation difficulties. Some difficulties arose when the steel factories were unable, because of bombing, to deliver and produce the necessary amount of steel for ship construction. Nevertheless we succeeded in very fairly fulfilling the program of the Navy."

Several admirals and senior officials were asked how Germany was able to extract so much usable equipment and supplies from so little material. They all stated that after war broke out they soon realized that in total war it is necessary to get along with whatever is at hand, and that they had to improvise, conserve, reclaim and reconstitute each time an opportunity

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to do so presented itself. Old metal and rags were regularly collected; all available iron and copper was seized. Iron fences and other metal decorations were replaced by wood. Scrap metal from outdated consumer goods, wrecked buildings, obsolete, broken or damaged machinery, ships, railway equipment, trucks and automobiles as well as sheared and cropped steel ends, mill scale and fabrication waste was gathered, not only in Germany but in the occupied countries as well, and sent to the mills to help stop the drain on the raw materials required in the manufacture of steel. Raw materials not subject to deterioration were hoarded more jealously than foodstuffs. Each service, it was said, had its own organization for the collection of metals and junk. Each conducted all kinds of drives to assemble stores of materials required in the production of war supplies.

Also important to the economic program was the research leading to increased production of those raw materials for which Germany depended largely on other countries. The government encouraged industries engaged in making artificial substitutes for essentials imported from abroad.

The American Navy's experience with pilferage, waste, carelessness and, in isolated instances downright profligacy and negligence in the use of stores and material in its supply system has made it evident that steps must be taken to eliminate such unnecessary attrition if the resources of this nation again has to support the armed forces and their allies in a global struggle. In search of a clue to how the Germans were able to achieve such success in husbanding their material and stores, Mr. Marker was questioned on this subject. His reply, which in general follows the pattern of the others, was:

"I think that the whole secret is based on the fact that a man only reaches highest efficiency when he works under enormous pressure. Example: If I plan the construction of a motor as an industrialist and one of my assistants sets up the plan and says, 'I need 20,000 square meters of space in which to do the job' and I tell him that I have only 10,000 square meters available, then he goes on trying and trying until the greatest efficiency is put into the available 10,000 square meters of space. By that example, I am just trying to show that highest efficiency is only reached under greatest strain. The same is true with individuals. The pressure exerted by a man in business life, the ambitious personality which drives

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him along, an occupation which inspires him, a desire for power such as Napoleon and Hitler had, these are the motivating factors that make success possible.

"The fact that the German, besides being efficient, is a good organizer also had some bearing on it. This is also true of Americans and I think that if America and its people ever found themselves in the same situation in which the Germans found themselves, they would show the same efficiency and energy. There is no doubt about Hitler being a master at inspiring the German people to highest efficiency and, although during the latter stages of the war large groups of people began to realize that Germany could not win the war, they could not do otherwise than carry on, since they all had some relative in the field who had to have supplies with which to fight for his country.

"President Roosevelt's demand for unconditional surrender also spurred the German nation on to a last ditch fight rather than accept those terms. The war would have probably ended sooner had that demand not been made."

STORAGE AND DISTRIBUTION

There was no opportunity to observe storage methods employed by the Navy. One former German naval storehouse is still intact at the U.S. Naval Advanced Base at Bremerhaven. It is a reinforced, three story building with large, easily accessible bays and a number of small storerooms. There is quite a lot of bin space, but the incumbent supply officer was unable to state whether they had been installed by the Germans or by Americans. The storehouses at Wilhelmshaven and Kiel, both seen from a distance, had been badly damaged by bombing or demolition.

It is a matter of record, however, that underground storage was used wherever possible, and that mineshafts, caves, bomb shelters and empty underground fuel tanks were frequently used both in Germany and in the occupied countries. Capt. Roessing said that the bombproof submarine pens built in France had storerooms for spare parts and consumables.

Storage space in these pens took up about 15 percent of the shelter afforded. Limited quantities of food, clothing, spare parts, tools and consumables were kept there. Ministerialdirektor Trittler stated that ammunition, torpedo warheads and other explosives were stored in underground shelters adjacent to the pens, and that the bulk of other stores was kept inland in a central storehouse and brought to the submarine pens as necessary. Fuel tanks for submarines were also underground. Special fuelling

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docks with lines running from the fuel tanks were built outside the pens.

Mineshafts were not used in Norway, according to Marineoberinspektor zur Muehlen. He said that only caves, huts and Norwegian naval storehouses, wherever available, were used, because of icy road conditions and inaccessibility of shafts in the mining areas.

At first, underground fuel tanks were built of iron, Trittler said. Later, because of the shortage of iron, they were built of concrete, into which was introduced a special emulsion so that the oil would not penetrate the concrete. He also said that all underground fuel tanks were connected with the various bases in the Kiel and Wilhelmshaven area by pipe lines that ran directly to the fuelling piers. (See chapter on Fuel for details regarding underground fuel storage.)

Near Paris, there are large caves normally used as mushroom nurseries. The Navy took over the biggest of them for the storage of torpedoes. Capt Mommsen said that there were big roads underground, wide enough to drive trucks through, and that these caves had been dug into the natural rock. Torpedoes were stored, repaired and tested in these caves. They were very dry and the Navy experienced no difficulty with humidity or condensation. Ministerialdirektor Trittler said that many mineshafts in the Paris area were also used for storage. In some of them, especially those used for storage of clothing and provisions, installation of air conditioning equipment was necessary.

Floating storage was utilized when possible. A Dr. Taffrentz, a ship designer, was reported to have developed a successful underwater storage barge. Four of these barges were built under his supervision and were last reported to have been seen in Danzig. Two hundred tons of miscellaneous stores, consisting mostly of machinery parts, electric motors, electric cable, manila line and wire rope, in two barges were found tied up in a canal at Steinkischen by British forces at the end of the war. Zur Muehlen stated that the Navy had about 22,000 tons of material stored afloat in Norway. Three highly mobile, non-propelled whaling vessels were also used. They were stationed at Narvik, Tromsø and Polyarny (a Russian port on the

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Barents Sea) and towed from port to port in their respective areas.

Dispersed storage, of course, was used widely. Dance halls, theaters, farmers' barns, basements of municipal and office buildings and cellars of private homes were used to get stores under cover wherever possible. Huts in forests and, where necessary, open storage along the rivers and main highways was also extensively used.

Zur Muehlen said:

"Most of our stores in Norway were dispersed in the woods in huts, caves and bunkers, which we disguised as peasants' homes. Safeguarding stores under such conditions was quite a problem. The assistants assigned to supply officers were non-specialists who knew nothing about storage, just enough to open the doors and windows so that we could make issues or put stores in the huts. Trained personnel were only available for detail to the central storerooms."

An interesting feature in connection with storage space aboard ship was uncovered in an Admiralty directive of 1936, which stated that all food storerooms in ships of the Navy, including those storerooms which it was anticipated would be used as provision storerooms in case of mobilization, would, in addition to air-conditioning, have hardwood linings installed to eliminate condensation. An inspection of the PRINZ EUGEN in 1945 disclosed that the storeroom in which flour was kept had such a lining. The log of the ATLANTIS, Raider Vessel #16 contains the following, written by Capt. (later VAdm) Rogge, its captain:

"Let me say in conclusion that the overhead in these spaces must be lined with boards, or prepared according to the latest cork spraying procedures, to avoid the danger of foodstuffs being spoilt by condensation."

The spaces referred to were the canteen, galley, bakeshop, provision issue room and flour storage.

Supply officers and officials professed complete ignorance of the use of fork lift trucks, conveyor belts, pallets, monorails and other warehousing handling equipment. Some of them said that they had never heard of such equipment. VAdm Stiegel stated that pallets and fork lift trucks were used only at Kiel and Wilhelmshaven.

Amtsrat Pfeiffer stated that floodlights for night loading were first used at Kiel and Wilhelmshaven dockyards in 1937, when pocket battleships were being despatched to Spain. In this emergency, he said, it was necessary for the first time to load and despatch naval vessels in twelve hours.

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Before that time, movements of vessels had been planned and their loading was performed in a leisurely and methodical manner. As a result, no night loading system had been evolved. Tracked vehicle trains were also used for the first time to expedite the movement of stores from warehouses to holds. The use of floodlights and tracked vehicle trains proved so successful that the method was established as routine procedure in night loadings.

In 1939, however, when war broke out, blackouts were enforced at all naval dockyards. Air raid warning systems were effective in inland cities but on the seacoast Allied aviators would fly low, close to the water under the radar beam, and alert systems could not be trusted. In these blackouts, stevedores could work inside loading sheds and warehouses and in the hold of the ship. The problem was how to expeditiously move the stores from the sheds into the holds and still maintain blackout security. Result: Assembly and segregation of stores for ships was conducted in an inner chamber of the shed or warehouse. Human or tracked vehicle trains were then formed. Hand lines, similar to those used on decks of destroyers and tankers to prevent loss of personnel overboard, were strung along the route to be followed, and the stevedores or tracked vehicle operators were thus guided to their position under the ships crane or to the gangway. The stores were hoisted or carried on deck and through the blackout curtain to the ships passageway, thence to the storerooms. Flashlight batteries were in short supply. A blue lensed, hand-squeezed generator that would produce enough current to give the bearer just a glimpse of the route to be followed, was developed to assist personnel on the docks. It was a very slow process but the only one used throughout the war for night loading.

Regular quarterly inventories of all types of material in store were conducted during peacetime. During the war, however, according to VADM Stiegal, only important classes were thoroughly inventoried. Sample inventories were taken in some. Others were not inventoried.

With respect to disposition of dead or obsolete stock, this officer also said:

"We established a special control over material to ensure that there was no dead stock. We made certain that it was issued before it became deteriorated. First we determined from our card system where old stock was located, if it was unuseable, where it could be used for other purposes, if it could be converted

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or if it should be scrapped. If an item of metal stock was unuseable at the point at which stored and could not be converted to some other use, we melted it down, and reduced it to a manufacturing state. Worn out textiles were used to make paper. When ships were damaged beyond repair, we dismantled the engines and either laid them aside for installation in other ships or salvaged the parts for spares. This recovered a lot of material. Had a salvage firm rather than the representatives of my division handled such matters, much of it would have been lost. I always sent specialists to see what should be done to save the greatest amount of material."

Shortly after World War I, a system was used whereby consumable stores were issued according to fixed allowances. Each ship received a commissioning allowance. While in active service, deteriorated and lost equipment was replaced through approved survey report procedure, the original of which was surrendered to an issuing activity in exchange for the replacement item. Issues of equipment could not exceed fixed allowances, except for use under different climatic conditions, e.g., ships on arctic or tropical assignment, or in other special circumstances where the Admiralty approved the issue in excess of the fixed allowance.

In 1920, this system was abandoned, and issues of equipment, spares and consumables were limited only to the amount of money granted annually by the Reichstag to cover the cost of such items for the whole Navy. In other words, no limitation was placed on the number of items the Navy could have on its allowance lists.

When Hitler became Chancellor of the Reich, the amount of money allowed for the operation of the Navy was limited to what CinC Navy and Hitler agreed was necessary. (See chapter on Finance for details.) This was the Navy's first opportunity since World War I to get all the material and supplies it needed, and the supply departments of the main naval bases filled their storehouses with stocks to meet every possible demand.

Aside from contract procurement, these supply departments obtained much of their stock through manufacture at the naval dockyards. Reserve war materials, such as generators and other items requiring long manufacturing periods were stockpiled in limited quantities - not in anticipation of war, but with a view to getting as much stock as possible while the supply was unlimited. This by no means filled all needs when Germany mobilized for war,



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but it did give the Navy a reserve stock with which to outfit its ships.

The mobilization plan of 1938 called for the stockpiling of sufficient initial equipment, spare parts and consumable stores at Kiel and Wilhelmshaven to equip each naval vessel fully for thirty days. This reserve was in addition to those supplies normally required to meet current operating requirements. Reserve stocks of food and fuel for thirty days' operations were stored at Raden, Wesermünde, Heligoland and Cuxhaven. Reserve stocks of all other kinds of supplies were assembled at the main naval bases. Usage factors prepared according to ship types and based on allowance lists and actual consumption experiences in war games and in the Spanish Civil War were used to assess the Navy's requirements. This reserve stock was called "Eratbedarf" (Initial Requirements) and was held in store separately from regular issue stock.

In addition, the naval inspectorates, Intendantur Offices and Adm Qu III were required to place orders with firms throughout Germany to provide replacement of these initial requirements at a rate which it was believed would be demanded by naval expansion and operations during the early days of a war. Contracts specified that first increments of these replacement stocks should arrive at the various supply depots on the eleventh day after mobilization was ordered.

In accordance with this plan, another set of contracts provided for delivery of the same items of equipment, spare parts, and consumables to the same naval activities in stepped up quantities as soon as possible after the eleventh day, so as to have in each supply depot on the first day of each month sufficient stores for one month to meet any demands from the forces supported. These stores were known as "Nachschubbedarf" (Supplemental Requirements).

Since Kiel, Wilhelmshaven and Gdynia were the principal supply points and had all facilities for supporting a ship, namely a supply center and repair and construction facilities, the mobilization plan provided that these main naval bases would be furnished with sufficient initial requirements to supply other naval units in addition to the forces regularly based on them.

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However, there were no provisions for outfitting all fleet units at one main naval base simultaneously.

Second class bases were stocked with limited supplies only, i.e., fuel, consumable supplies and general stock for 90 days operations of the vessels regularly assigned to them. Third class bases carried only 30 days operating stores for the particular type of ship assigned to them. In some cases, this only consisted of fuel and water.

When mobilization was ordered on 15 August 1939, personnel required to bring all ships up to their wartime complement was ordered aboard from the receiving stations. The fighting ships, U-boats, supply ships, tankers and other auxiliaries then moved to the naval dockyards, fuelling and provisioning stations and took aboard their first requirements. Naval coastal defense regiments were furnished with necessary equipment, ammunition and food. Replacement and supplemental stock began rolling toward the supply centers and depots according to the mobilization plan.

At first storage was adequate. The Navy, however, had not visualized the capacity of German industry to manufacture what it needed nor of the railroads and other transportation agencies to get the material to them. It also had not visualized the great number of additional auxiliary ships that would be commandeered and require support. Expansion of storage space did not keep abreast of the incoming stores. The warehouses bulged. They were highly concentrated. Then the British air force went to work on them.

The air raids of 1940-41, according to many persons interviewed, had not been expected by the Navy any more than by the civil populace. Herman Goering had assured them that his air force would turn back any enemy aircraft long before it reached the German homeland. "If we don't do this," he is reported to have said, "my name is Meier." "Well," a supply official remarked, "we called him Herman Meier from then on, but it didn't help us to protect our supplies. Large quantities were lost in the early days of the war."

Immediately after the first big air attack on Bremen, the stores at Wilhelmshaven were dispersed into the area of Ostfriesland (between Wilhelmshaven and the border of the Netherlands). The same procedure was followed

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at Kiel, where stores were dispersed to about 100 small sub-depots, cellars, dance halls, barns, etc., known as "dead stores", since no issuing was done from them. Material to be issued was brought from these dispersal areas to Kiel and Wilhelmshaven for distribution.

At the beginning of this report it was stated that Germany needed to import most of its raw material requirements for war production. Some shortages began to appear soon after war broke out and the policy of obtaining from the economy of occupied countries as many raw materials and finished products as possible was soon established. This may have been a part of Germany's general war plan. However, several persons interrogated attributed it to expediency of the moment rather than to a general plan. In any event, when bases were first set up in Belgium, Holland and France, supply facilities were established to support the forces operating from them. A supply depot, later expanded into a supply center was soon set up at Rennes (France) to support these local facilities. Initial requirements were furnished by Wilhelmshaven. It was directed that Rennes would thenceforth maintain its stocks through local procurement and a separate procurement department for that purpose was established in Paris. This greatly reduced demands on Kiel and Wilhelmshaven, but had one disadvantage; that tools and other technical equipment ordered in France did not in many instances meet German machine requirements.

The Navy soon occupied the whole French Atlantic Coast, and the system of inaugurating local supply facilities was continued at the many new naval bases in this sector, such as at La Pallice, Bordeaux, Brest, L'Orient, etc. According to officials interrogated, these efforts were only moderately successful and small supply depots were soon set up to support them. The depots were in their turn supported by Rennes. Later, another supply center was found to be necessary and was established at Le Havre.

The organization of supply in Norway and in the eastern and southern areas was entirely different. The Norwegian industry could not provide the Navy's requirements, therefore all supplies had to be shipped there from Germany. As in the western theater, supply depots were established at ports

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from which ships regularly operated. Kiel supported these depots. Kiel was also at first responsible for the support of naval activities in the Balkans. However, because of the long distances involved, a supply center was eventually established at Verschets, Yugoslavia. The supply center at Gdynia supported units based in the Baltic states, Lithuania, Esthonia and Latvia and the supply depots and facilities in that area.

As these developments were taking place in occupied countries, the decentralization of stores in the Kiel and Wilhelmshaven areas were followed by the establishment of more supply depots in middle and southern Germany. This was necessitated by accumulating stocks and the effectiveness of air raids. These depots were not, like the many dispersal areas near Kiel and Wilhelmshaven, "dead stores", but active issuing points, and were well staffed with trained personnel. A further reason for their establishment was that the capacity of the railroad system was being strained. Before they were established, material had to be shipped to Wilhelmshaven or Kiel from the "dead stores", checked and transshipped to Atlantic Coast bases. This was manifestly unpractical. Supply centers, with a great number of small depots with reserve stocks in the immediate area were therefore established at Kolmar and Ullersicht to back up Rennes, Le Havre and other depots in France, Belgium and Holland.

Among other changes brought about by the air raids, the great increase in inventories and the rapidly expanding war front, was the subdivision of equipment and consumables on 30 August 1941 into:

- (1) General equipment, spare parts and general consumables
- (2) Special equipment, spare parts and special consumables

This was the step that paved the way for the establishment of the Central Procurement Office (for general equipment, spare parts and consumables) and the Technical Procurement Office (for special equipment, spare parts and consumables).

Despite allied air supremacy, the continuous bombing of Kiel and Wilhelmshaven, the establishment of many new supply facilities in the interior of Germany and in the occupied countries, the postal and other delays incurred through crippled communication facilities and other inconveniences resulting from such a system, the Navy nevertheless continued

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to centralize all control over its supply system for general and special equipment, spare parts and consumables at Kiel and Wilhelmshaven. Such a decision may be attributed to lack of vision on its part, to Teutonic tenacity or to just plain German hard-headedness. However, because of the friction that existed between officers and officials and the fact that the Intendantur offices, which were mostly staffed by officials, controlled all supply facilities ashore, it is suggested that a reluctance on the part of senior officials to release control over the management of the general supply system may have affected this decision.

VAdm Stiegal said that it was apparent in 1939 that the Navy had to expand its storage and distribution system and that he detailed three members of his staff to establish a system that would:

1. Reduce personnel requirements
2. Reduce all unnecessary bookkeeping and reports - all red tape - including, if necessary, the abolishment of all bookkeeping.
3. Absolutely guarantee a good administration for simple checking procedures at any time by inspectors who had no special pre-training for this work.

This was a step in the right direction, he said, but these two main supply centers, through the senior administrative staff of CinC Group North continued to manage the general and technical stores supply systems until the end of 1943.

Many improvisations in storage and distribution were attempted by the Navy to keep abreast of the rapidly changing conditions brought on by the military's success during this period. Storage had been decentralized on a large scale, but because of this, control of material was slowly lost. It was reported that much duplication of stock resulted. In many instances, supply activities would order equipment or supplies from manufacturers without knowing that the items were in stock in their own system or that of another. Critical spares, for example, would be held in stock at Kiel for issue to Norwegian bases while Wilhelmshaven was desperately trying to get the Naval Engineering Inspectorate to produce the same item to meet a requisition from France.

This situation had not developed overnight. Germany had been at war for four years. About 3,000 ships and small craft of divers types with manifold complicated technical installations had to be supported. This

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had to be carried out in a great number of bases with shipyard and workshop establishments of varying efficiency. These bases and harbors moreover were dispersed over a wide area from the Baltic to Norway, to France, to Italy, Africa, Bulgaria, Roumania and the Soviet Black Sea coast. The supply routes across sea and land to them were long and difficult in parts. The result was that loss of control was becoming evident in the local supply systems of the occupied countries as well as in Germany.

Too many commands were forwarding requests to Kiel and Wilhelmshaven, instead of to their own area supply depots. Another error in administration was that when it happened that control of stock in the supply system was lost or when a requisition was received and the items requested could not be readily located, rather than waste precious time in searching for them, a procurement order was issued. Here too, practicality was abandoned. Instead of consolidating general or technical stock procurement orders and forwarding them to one firm capable of furnishing all the material at one time, individual orders were placed as received with any firm seeming able to furnish the items. This resulted not only in higher prices but it caused an additional load on the railroads and other transportation facilities, because the many firms doing business with the Navy were scattered throughout Germany. It was obvious that control of the supply system had to be wrested from Kiel and Wilhelmshaven and a realistic distribution program instituted. Moreover, this was the only way in which it was possible to utilize the stocks on hand in the many stores and depots.

General Stores

To end this confusion, the Central Procurement Office was established on 1 January 1944. Its headquarters were at Hildesheim. Ministerialrat Dr. Kobarg was placed in charge. It assumed the procurement and stock control functions of the supply centers and the management of all supply centers, depots and storehouses previously handling general equipment, spare parts and consumables.

Thus it was effected that the Central Procurement Office executed global control, and that only this institution could directly represent the Navy's requirements for the supplies carried in its system with the

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# SUPPLY ORGANIZATION

*CONTROLLED BY THE*

CENTRAL PROCUREMENT OFFICE



- ★ Central office with mechanized stock control equipment for entire system.
- Supply Centers
- Major area supply depots with codes showing material carried in other supply facilities in area.
- Supply depots (large groups of material)
- Storehouses (2 or 3 types of material)
- ▲ Sub storehouses or dispersal areas (1 type of material)

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Speer Ministry, which agreed with the establishment of the Central Procurement Office but tried to prevent the creation of the Technical Procurement Office. However, the Navy finally succeeded with its plan. Interference by the Speer Ministry, VAdm Stiegel stated,

"Remained within bearable limits, and cooperation between it and the Navy was finally effected regarding the placing of orders with the firms manufacturing the many items of stock required."

From then on, only comparatively small amounts of stock for immediate needs were carried at Kiel and Wilhelmshaven, and Hildesheim was the supply demand control point for all items carried in Central Procurement Office's system.

Naval supply centers, depots and storehouses carrying general equipment, spare parts and consumables were brought together in groups. In each group there was a headquarters with stock control facilities showing what was held in each depot or storehouse. A chart showing the location of the supply centers, depots, etc., comprising this system appears on page 230a.

The groups and their headquarters were:

- Group Baltic at Kiel
- Group North Sea at Oldenburg
- Elbe at Hamburg
- Group Middle at Sangerhausen
- Group Saxony at Werdau
- Group Voigtland at Hof
- Group Frankonia at Kulmbach
- Group Upper Palatinate at Ullersricht
- Group Alsace at Kolmar
- Group Lausitz at Loebau and
- Group East at Schneidemuehl

Stock control of material in this system was effected by means of electrical accounting machines. There had been a pronounced shortage of electric business machines in the Navy. Because of this, Kiel and Wilhelmshaven had been unable to tabulate mechanically and otherwise assess their stock on hand. Regular stock cards, in some instances roto-cards, had been used. The great number of depots, dispersal areas, etc., and the even greater number of items of stock involved rendered proper posting to any centralized card system or stock card system practically impossible. With the establishment of Hildesheim, however, electrical accounting machines were obtained and all depots, etc., required to report their balances on hand so that electrical accounting machine cards could be prepared. One official stated that the old timers at Kiel and Wilhelmshaven



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wanted nothing to do with such new fangled ideas, and that they wanted to retain the card system they knew, even though they realized that they were hopelessly emmeshed in a stock control snarl. Once the stock in the system was entered on electrical accounting machine cards, the system worked smoothly and stock status reports were easily prepared. The dangers of such total centralization should be pointed out, however. The headquarters of the Central Procurement Office at Hildesheim were totally destroyed in an air raid on 22 March 1945. From that time until the end of the war, stock control of material in this system was again lost. Fortunately the war was almost over; otherwise another supply reorganization would have been required.

Distribution of the general equipment, material and consumables carried in this supply system was made as follows:

Requisitions were sent by the requiring units within Germany to the nearest group headquarters, and to the central headquarters at Hildesheim by ships and stations outside Germany. The usual system of screening requisitions for stock availability, frivolous requests (rare, it was said) and designation of the group to furnish the material was employed. Where requisitions were forwarded by local commands to a group headquarters and that group did not have certain items requested, those items were lined off of the requisitions, and a new one prepared. The new (cut) requisition was sent to the central headquarters at Hildesheim, which designated the group responsible for the issue.

Material for commands in the immediate vicinity (ships at the dock or in the stream at Kiel, a radio or experimental station near Kiel, etc.) was sent to them by the field activity of the Central Procurement Office (the supply/administrative department of the Naval Dockyard, Kiel in this instance) by trucks furnished by its shipping division. Material for commands at sea and overseas bases was sent to the logistic support departments of the main naval bases for delivery by supply and other logistic support vessels attached to those departments. Material for commands in occupied countries in Europe was assembled and Central Headquarters notified of its readiness for shipment.

A transportation expert, a representative of Adm Qu III, was attached to the central headquarters at Hildesheim. When stores for naval activities in European occupied countries and North Africa were ready for shipment and reported to central headquarters, this representative assigned a rail,

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waterway barge, or air priority to the shipment and directed the placement of the necessary rail cars, etc., at the siding, dock or airport.

Electronic Equipment,  
Engines, Auxiliary Machinery  
And Spare Parts

A similar situation existed in the section of the supply centers which handled electronic equipment, engines, auxiliary machinery and their spare parts and consumables.

At the outbreak of war, the Naval Engineering Inspectorate was responsible for the design, production, procurement, and introduction of such equipment, material and consumables into the Navy's supply system. It was a field activity of MarRuest/K-4. Before the Technical Procurement Office was established, the engineering departments of the main naval bases, Kiel, Wilhelmshaven and Gdynia effected distribution of this material for the Naval Engineering Inspectorates through the Technical Equipment, Spare Parts and Consumable Stores Section (TLX) of the Supply Department of the naval dockyards.

Technical equipment and spare parts carried in this system consisted of boiler, machinery and electrical parts and assemblies such as are found in the mechanical and technical installations aboard a ship.

Technical consumables were boiler, superheater, condenser, oil cooler and exhaust tubes, coils and pipes, turbine buckets, special steel for emergency repairs, fire clay, fire bricks, etc.

As the war fronts were extended to Norway, Western Europe and the Balkans, distribution problems for this type of material multiplied and disadvantages in the system, like those discovered in that of the Central Procurement Office, soon began to appear. An unnecessary amount of spare parts were stored at all main naval bases. One official said:

"It is a matter of record that Kiel and Wilhelmshaven, of course with the best intention, each kept a certain number of crankshafts, although one set of spares would have been enough. This meant unnecessary waste during a growing scarcity of steel and other metals."

It is axiomatic that electronic equipment, spare parts, spare engines and auxiliary machinery require suitable storages of a type that will permit maintenance of these items and ready accessibility for issue.

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Therefore, a knowledge of the special characteristics of these items is required, as well as a knowledge of maintenance and preservation routine. The construction of the storages must be such as to meet operating needs and must be subject to proper management and inventory. Distribution requires a knowledge of the different items in the storage and the ability to determine correctly type and quantity of requirements.

It is apparent from conversations held with officers and officials that the supply centers at Wilhelmshaven and Kiel were unable to meet these basic requirements in storage and distribution techniques.

VAdm Stiegel stated that, as a result of these and other aggravating supply conditions, the Technical Procurement Office was established on 1 January 1944 with Marinebaudirektor Dr. Hains Friese in charge. The following considerations, Stiegel added, made this supply reorganization mandatory:

"In conducting a war, dispersed over various and distant theaters, only a centrally controlled management of procurement and supply in engineering equipment and spare parts will guarantee the success of operations.

"In such an organization, it is the task of the Navy to fix the rate of equipment, to check its use, to ensure a sensible and economical storage and to attune the demands to the possibilities of their fulfillment.

"The aim of the Navy must be to cut down the time for repairs as much as possible, by prepared spares manufactured in serial production. This can be materialized for combatant ships within a new construction program; but for auxiliary vessels it should be prearranged as far as possible by stockpiling special materials, semi-manufactured products, etc."

He further stated that the mission of the Technical Procurement Office was:

"To maintain continuous contact with ship commands, dockyards and the Admiralty.

"To consolidate the various orders before they were forwarded to manufacturers.

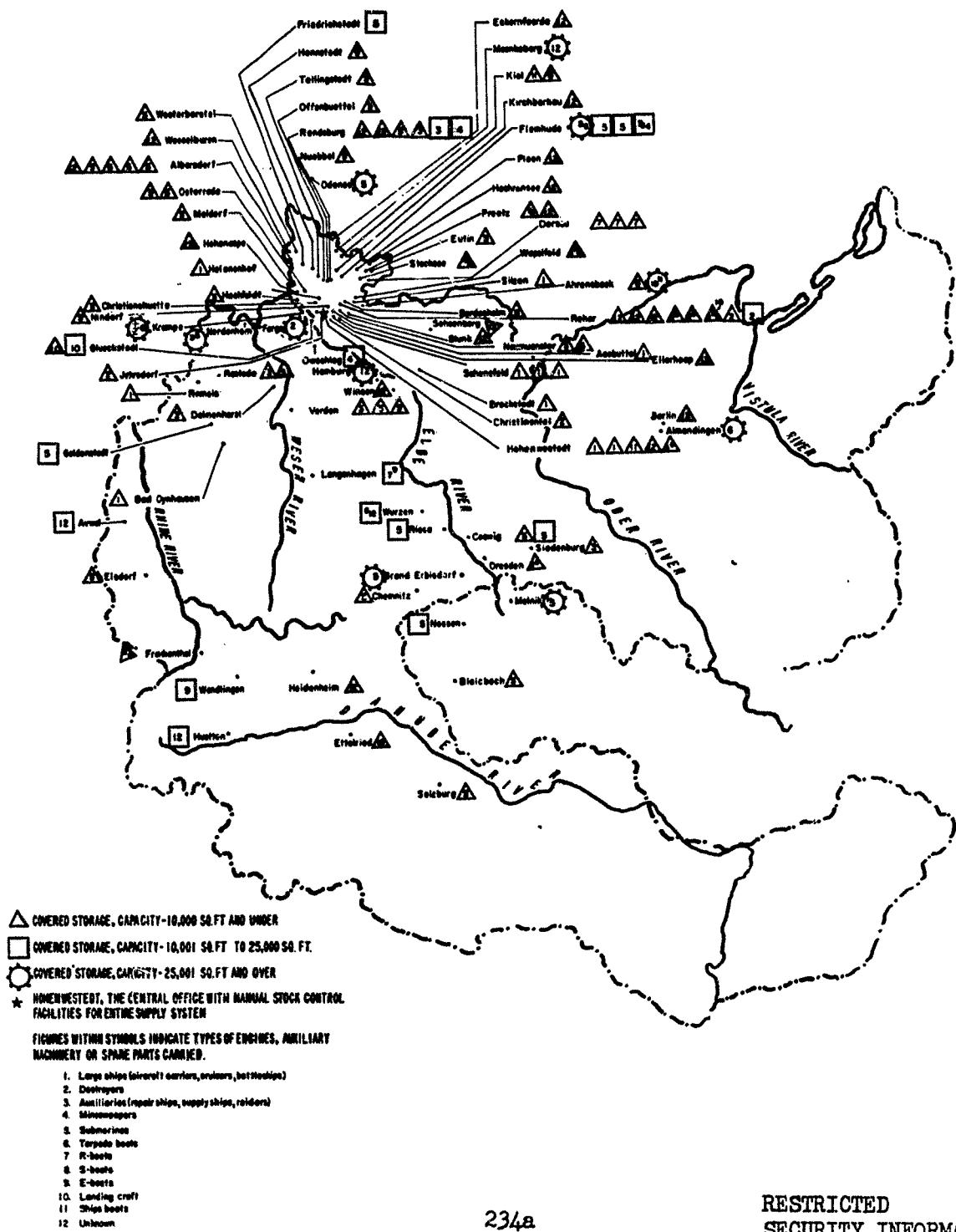
"To scrutinize carefully and list all spare parts which worked under special strain and therefore had frequently to be replaced.

"To perform statistical work within this sphere which was to be passed to MarRuest/K for evaluation.

"To prosecute vigorously the conservation of variable materials through the use of alloys, or high quality substitutes.

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SUPPLY ORGANIZATION  
CONTROLLED BY THE  
TECHNICAL PROCUREMENT OFFICE



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"To work out a well-functioning and elastic store-keeping system and administration, and to install branch depots and/or separate depots for equipment and spares for each type of ship.

"To consolidate the requirements for supply ships along unit load lines."

The establishment of the Technical Procurement office as a supply demand control point for special equipment, spare parts and consumables, and the co-ordination of the many supply activities storing and distributing such material, made possible:

- (a) The reintroduction of excess stocks of spare parts aboard ships into the system.
- (b) The utilization of spare parts formerly lost in spare parts depots.
- (c) The collection and utilization by repair forces of parts of equipment and engines of ships layed up or of those intended for scrapping.
- (d) A thorough examination of requests from commands and dockyards.
- (e) The issuance of spare parts on an exchange basis only.
- (f) The reconditioning of worn spare parts.
- (g) The Navy's ability to convince the Speer Ministry that current requirements in spare parts could not be calculated mechanically in percentage of new construction, but depended on the number of operating units, the kind of employment, the area of commitment and supply routes, and that it was necessary to establish branch depots.
- (h) To attune the demands of the forces afloat and ashore with industry's production capacity.
- (i) To stop procurement by independent activities.
- (j) To reduce the number and variety of spare parts and other special material required by units or activities having the same engineering installations.

As will be seen from the chart on page 234a, the supply organization of the Technical Procurement Office was quite extensive. It had depots and storehouses in all sections of Germany. They were most heavily concentrated, however, like most other naval activities, in the Kiel and Wilhelmshaven areas.

There were roughly 500 Technical Procurement Office depots and special storehouses in Germany and the occupied countries, according to VADM Stiegel.

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The larger depots were at:

Melnik	Farge	Stettin	Almendingen
Brand Erbsdorf	Bremen	Fleuhude	Ahrensboek
Moenkeberg	Hamburg	Swinemunde	Kreupe
Odense	Pillau	Koenigsberg	

Some of the smaller depots were at:

Colburg	Eckernfoerde	Berlin	Remels
Elbing	Ruegenwalde	Kiel	Mindorf
Goldenstedt	Verden	Ettelried	Winsen

In addition to its regular depot system, the Technical Procurement Office also found it expedient to utilize storage space of firms manufacturing electronic equipment, engines, auxiliary machinery and spare parts for the Navy. Such spaces were known as special storehouses and are included in the estimate of the number of depots, etc., given above.

The use of such space benefitted both the Navy and the contractor in that the Navy saved personnel otherwise required for preserving, storing and distributing the stock. This also eliminated the necessity of constructing or obtaining additional naval storage. The firms benefitted in that they were relieved of many packaging, clerical and transportation problems attendant to a great number of shipments.

In establishing these special storehouses, the Navy required the firms to set aside suitable storage space in their plants, furnish the initial equipment and assign competent personnel. Costs of conversion, and upkeep, e.g., personal, light, heating, telephone, anti-aircraft protection, transportation, etc., were reclaimable from the Navy.

Special storehouses were administered by employees of the firms, who acted as trustees for the Navy. They were authorized to sign expenditure and receipt vouchers and approve payrolls and other expenses incurred by the Navy in this program.

The Navy reserved the right to inspect the premises, their management, stocks on hand and records kept and to direct any change it deemed essential to good business management of its storehouses.

Quantities to be produced by the firms and retained on hand in the special storehouses were determined by the Technical Procurement Office. Much depended, of course, on the amount of raw materials made available for naval production.

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Stocks at special storehouses were considered reserve stocks and were shipped to depots as required to supplement issue stocks. Only items for which the firm was the main producer for the Navy, plus spare parts which frequently required replacement were kept in special storehouses.

Each of these activities maintained a storehouse receipt book in which was entered the usual information required, plus the type of ship or small craft for which articles stored had been manufactured. Stock cards were also prepared for each item received.

Issues were made only on orders from depots of the Technical Procurement Office supply system. They were charged off the stock cards and a debit entry made opposite the corresponding credit entry in the storehouse receipt book.

Obsolete equipment or spare parts were reported to MarRuest/E-4, which, after determining that they could not be used or interchanged with other equipment, etc., directed their disposition as scrap.

Reconditioned equipment and spare parts originally manufactured by the firm operating a special storehouse were, in some instances, forwarded to these storehouses by firms repairing or overhauling them, especially if storage at depots was crowded. These items were treated as new stock and held with other reserve material pending shipping instructions.

Stock in the depots was segregated and stored according to ship types of engines, auxiliary machinery, spare parts and electronic equipment. This was a precautionary measure to avoid wholesale loss of any particular type of spare part, etc., through concentrated bombing. Attention is invited to the great number of depots and storehouses shown on the chart in which only spare parts for submarines were carried, and to their wide dispersal. The dispersal of motor torpedo boat engines and spares is also worthy of study. Vida Stiegel stated that the stock carried for motor torpedo boats alone was valued at 25 million reichsmarks. The largest stocks of this type of equipment and spares were carried at Almdingen.

During the course of this study, a few documents were located which showed the storage space used by the Technical Procurement Office depots.

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Space utilized as special storehouses was not included. These documents have been analyzed, and the areas used are shown below. These figures should not be considered as accurate or all-inclusive. They are rough approximates only.

<u>Type of Ship</u>	<u>Item</u>	<u>Square Feet Used</u>	<u>Total</u>
Battleships and Pocket Battleships	Machinery, auxiliary	42,201	
	Cable and electric wire	6,316	
	Spare parts, electrical	28,428	
	Spare parts, miscellaneous	<u>10,222</u>	87,167
Aircraft Carriers	Spare parts, miscellaneous	6,456	6,456
Cruisers	Machinery, auxiliary	2,690	
	Spare parts, electrical	7,586	
	Spare parts, miscellaneous	<u>2,690</u>	12,966
Destroyers and Torpedo Boats	Machinery, auxiliary	68,004	
	Motors, electric	6,370	
	Spare parts, electrical	14,612	
	Spare parts, miscellaneous	<u>35,401</u>	124,387
Submarines	Engines, diesel	28,383	
	Machinery, auxiliary	16,032	
	Motors, electric	13,913	
	Batteries	646	
	Tubes, condenser	12,256	
	Boards, switch	10,383	
	Propellers	8,608	
	Instruments, speed measuring	7,801	
	Valves, cocks, manometers, etc.	12,643	
	Transporter gear, torpedoes	2,615	
	Transporter gear, battery	1,829	
	Spare parts, electrical	27,857	
	Spare parts, diesel	10,353	
	Spare parts, miscellaneous	<u>222,344</u>	375,663
Midget Submarines	Spare parts, miscellaneous	4,304	4,304
E, R and S Boats and Landing Craft	Engines	10,760	
	Machinery, auxiliary	12,471	
	Spare parts, electrical	2,206	
	Spare parts, miscellaneous	76,278	
	Tubing, rubber	<u>10,760</u>	112,475
Minesweepers	Motors, electric	1,227	
	Spare parts, electrical	2,575	
	Spare parts, miscellaneous	<u>31,032</u>	34,834
Armed Merchant Cruisers	Machinery, auxiliary	28,363	
	Spare parts, miscellaneous	<u>366</u>	28,729
Auxiliaries	Machinery, auxiliary	28,568	
	Spare parts, electrical	2,012	
	Spare parts, miscellaneous	<u>47,022</u>	77,602



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Common to most	Generators, diesel	2,690	
types of ships	Machinery, auxiliary	12,912	
	Tubing, boiler	18,830	
	Compressor	9,792	
	Spare parts, refrigerator	<u>1,506</u>	45,730

Space in ship-  
yards in which  
new construction  
material was  
stored.

168,792  
1,079,105

Due to a shortage of electrical accounting machines, mechanical stock control principles were never introduced into the Technical Procurement Office supply system. The card system was used. Electrical accounting machines were used, however, to determine the life expectancy of certain spare parts carried in this system. In his description of the methods employed in this operation, VAdm Stiegel stated:

"We used this system to show what spare parts for high pressure hot steam auxiliary engines easily wore out and where they were located. This was very effective. We knew, even before the firms that manufactured the engines, how long spares would last. This information was needed in Norway, France and other places. Because we had this system, we were able to give orders to the production plants for hundreds of spares and meet our schedules.

"These manufacturers of spare parts were not necessarily the ones that manufactured the engines. Because we had a separate check on the life expectancy of spare parts, and because in many instances replacement spares were being manufactured by firms other than those manufacturing the engines, the design of the engines was improved. I was responsible for repair and replacement of spares as well as for their procurement. Electrical accounting machines were normally used only for statistical work, but I used

sure engines would last. This was necessary, because these spares were difficult to obtain, and development of the type of engine they fit was not complete.

"We punched our experience factors into the electrical accounting machine. The machine then gave us the answers as to where the parts were, the frequency of repair for certain parts and how quickly they wore out. By comparison, we could determine where and when new parts were required. We worked up averages. These showed the parts concerned and the ones that wore out first. The manufacturers had their own opinion on this but the machine reports made final determination as to whether we or the manufacturers were correct. When we had a report on a failure of a part, we punched a new card. In this way, we built up our experience factors. The use of these machines for this purpose is excellent."

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With regard to the stock control system used in the regular depots, he said:

"We used a card system for stock control purposes. On these cards you were able to see the manufacturing date, the name of the manufacturer, the part number and every detail about the spare. Quite often we received a radio message from the Atlantic giving us only meager information about a damaged part. By using the card system we could determine what part was required and provide it. Separate card systems were maintained for types of engines. We set them up during the manufacturing period. When hot steam spare parts were returned for repair (these spares were issued only on a turn-in replaceable basis), the manufacturer repairing them attached a card to the spare showing what he had done to it. This card was then added to my card system. Repaired spares were laid aside for future issue.

"There were almost no failures in our stock control. Doenitz wanted to know one morning at 0300 what spares were available in the Black Sea, Mediterranean and Baltic areas. We told him at 0900 with all the details. The system was very successful. We always knew at was used, damaged and needed. Then through the use of telephones, parts were ordered sent from Brest, Holland or other places by truck. Our whole system of distribution was based on card information.

"There would be danger, of course, in letting such a system become too important. The real purpose of furnishing parts when needed would be defeated. The installation of any stock control system must answer satisfactorily all of the following before it is installed - How will I use it? How fast can I use it? How really useful will it be? However, under war conditions, I know of no better system. We had such enormous difficulties and had the system not worked as well as it did, we could not have succeeded. Even Speer did not dare change the system we used. He was responsible for production and delivery of spare parts but would not be responsible for changing the stock control system we had installed.

"Some of my greatest difficulties were with the Speer Organization. They had no really skilled men, men who knew the Navy and its needs. They were all party men. Yet they controlled all raw materials and production. The Navy resented Speer and would not let him interfere in their business wherever it was possible to keep him out. We had VADM Topp as our top Navy liaison man in that ministry but he played along with Speer. He was weak and easily influenced. Speer also influenced Hitler's thinking, but not too much. Hitler was self-sufficient. Speer's assistants were the greatest danger inasmuch as they didn't know Navy requirements. Example: Melker, the chief of the group under Speer, didn't know shipbuilding. He was a fire fighting equipment engineer, not a naval engineer. These people were given too much power by Hitler. Speer himself was a good man, very efficient, clever and much better than all the others in the party but he had too much power. Consolidation of power in this instance was not good. My biggest headache was with Doenitz himself. He trusted Speer and would do anything Speer wanted, even against the Navy's advice and interests."

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Material carried in the Technical Procurement Office supply system was priced while in store but was issued unpriced. Values of stock on hand were reported to Hohenwestedt monthly during the war. Much information about what had been issued or was on hand was transmitted by telephone. VAdm Stiegel said that there were a great number of issues and it was vitally necessary to keep informed daily on some critical items in the system. He gave as an example a telephone call to a supply officer in Greece to determine what stocks of a certain item were on hand in his warehouse.

Final accounting was performed by MarBucst/E-4. During peacetime, property returns were rendered quarterly by large ships and all shore stations. A simplified system of checking expenditures afloat was used, which, it was said, was very satisfactory. Allotments for engine and auxiliary machinery spares were granted. As stock was drawn from the storeroom, charges were made against them. During the war, however, these allotments were not adhered to and overexpenditures were disregarded. An example of the technical bureau's attitude in this respect is contained in VAdm Stiegel's reply to a question about accounting in wartime:

"A certain amount of accounting is justified during a war but it must be kept very simple. It must be so simple that it cannot impede the war effort. If you drop all accounting, there will be wholesale waste. Some agencies will start hoarding supplies and there will be much waste and blackmarketing. All doors are open to everyone. Control and review must be retained but the rules must be simple."

Distribution to ships and stations was effected by the same methods as those employed by the Central Procurement Office. Requisitions from commands overseas or in occupied countries were forwarded direct to headquarters at Hohenwestedt, a village near the Kiel Canal. Requisitions from commands within Germany were sent to the nearest supply depot or storeroom carrying the type of engine, auxiliary machinery or spare parts desired. If the item was out of stock at that point, Hohenwestedt was contacted for designation of an issuing activity.

At main naval bases, the Technical Equipment, Spare Parts and Consumable Stores Sections (TELV) of the supply departments were field activities of the Technical Procurement Office and made issues to ships and shore activities within the area.

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When asked whether, in retrospect, he had thought of any system he would employ were he required to establish a new method of controlling spare parts for a navy, Vida Stiegel said:

"No. The system we used during the last part of the war was the best we could produce. We were always able to supply requirements on time. We had a system of backup stores, similar to the one you have described as used in the American Navy (inland depot system supporting tidewater depots). Swinemunde, for example, had a three months supply of all peacetime needs of the German Navy before the war. Our organization was such that we had a special group for spare parts for special needs and were able to get the material to the point where it was needed on time.

"Our estimates of requirements were not arbitrarily made. They were based on practical experience factors. Investigations were continually made during wartime to see what material was used and to check these factors. If consumption was extraordinarily high, a new investigation was launched immediately to determine the reason for it. Supplies were furnished generously - not in a petty way - but if we had reason to believe that expenditures were high, our inspectors moved in. This saved a lot of money. These inspectors were representatives of my office. There were over 3,000 ships and small craft - not counting the really small ones. Inspection personnel were mostly engineering and supply officers, depending upon the type of material involved."

Ordnance Stores

The Naval Ordnance Inspectorate had its own system of supply depots and store houses from which issues of ordnance equipment, material and consumables were made. Except where ordnance stores were dispersed to avoid damage by bombing, they were kept in supply depots and storehouses located at main naval bases (major naval dockyards) and other points at which there was great naval concentration and activity. Issues to ships and naval stations were normally made direct on a receipted invoice basis. However, material to be shipped to forces at sea and in Norway and the Indian Ocean area were, like other shipments, turned over to the logistic support departments of the main naval bases for delivery to those units.

Trained ordnance technicians were attached to these depots and storehouses. These men received, stored and issued all ordnance stores. They also installed and repaired the equipment carried in their supply system on ships or at naval defense installations.

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Before the war, an approved survey report showing condition, cause, responsibility and reason for replacement had to accompany all requisitions. Ships had been issued a commissioning allowance of all ordnance equipment and were permitted to draw replacements on a turn-in basis only. During the war, this requirement was discontinued and there was no limit placed on the amount of ordnance equipment that could be drawn. A statement, signed by the commanding officer, showing the need for an item was all that was required.

Little information was obtained about accounting for ordnance stores. It is not believed that issues of ordnance equipment, material or consumables were priced. Instead, when such material was issued, a direct charge against the ship or station allotment was made by the issuing activity. It was carried aboard ships and at naval stations on a custodial basis only. This, however, is only a conjecture.

One Naval Ordnance Inspectorate official stated that annual stores returns were made to Harburg/Elbe. However, he had no further information on the subject.

Ammunition

The Naval Ammunition Inspectorate also had its own supply system consisting of ammunition depots and powder bag and shell filling facilities, from which issues of ammunition were made. Contiguous to each main naval base, but not a part of the dockyard organization, there was an ammunition depot. The bulk supply of live ammunition, powder, fuses, etc., however, were dispersed to the interior. Edm Klucher stated that these depots and dumps were usually situated about fifty miles inland from the coast in woods and were well camouflaged.

Component parts of ammunition were manufactured by many firms. Examples: Rheinmetall made fuses. Mitteldeutsche Stahlwerke made shell casings. Another firm manufactured powder. These components were then delivered to the inspectorate's depots.

Components were stored separately and were not assembled until required. All requests for ammunition from bases in Germany were forwarded to the Naval Ammunition Inspectorate. Ships could requisition ammunition from ammunition depots at the main naval bases and ammunition storerooms.

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established wherever there was a port director. Shipments to Norway, the Far East and occupied countries in Europe were turned over to the logistic support departments of the main naval bases for delivery.

Before the war, ammunition was issued to ships and stations in accordance with their allowance list. That expended in target practices or sent ashore for sampling was replaced by the ammunition depots without charge to ships allotments. The Naval Ammunition Inspectorate lodged all charges for such deliveries against its annual appropriation, and prepared an annual return to MarRuest/AWa.

During the war, the amount of ammunition a ship or coastal defense installation could have on hand was increased. The accounting system employed before the war, however, was continued.

There has been no indication in the records studied that the Navy had any ammunition ships. Supply ships and tankers operated by the logistic support departments of the main naval bases carried replacement ammunition for vessels supported by them. These vessels apparently had special magazines for this purpose.

Attention is invited to the fact, that although the Naval Ammunition and Ordnance Inspectorates had separate storage and distributive systems, both were subordinated to MarRuest/AWa. The reason for this arrangement was that most types of fixed ammunition were standardized for all three services. Standardized items were manufactured by the large armament factories of Krupp, Rheinmetall, Skoda, etc., under supervision of the Army Acceptance Organization. (See section on Procurement.)

Special naval guns and ammunition were manufactured under contracts made by the Naval Ordnance and Ammunition Inspectorates.

Torpedoes

The Naval Torpedo Inspectorate had its own system of torpedo supply depots. The Navy had no torpedo factories. Component parts of torpedoes were manufactured by civilian firms. Until 1944, when the Speer Ministry took over all production of torpedoes, component parts were assembled at the larger torpedo supply depots, tested and distributed to minor depots for issue. After 1944, torpedoes were delivered to the Navy completely assembled.

LOCATION OF DISTRIBUTING POINTS FOR STOCK CARRIED IN THE  
NAVAL AMMUNITION, ORDNANCE, TORPEDO & MINING INSPECTORATE SUPPLY SYSTEMS



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Distribution was handled in Germany at the main naval bases through the torpedo department of the naval dockyard. Otherwise the issues were made by the torpedo storehouses of the port organizations. Each submarine base had its own torpedo storehouse. Technical personnel of the Naval Torpedo Inspectorate were attached to all of these issuing activities and handled all of the details of testing and distribution.

Shipments of torpedoes to submarines on station were usually made by submarine supply vessels, operating jointly under the U-boat Command and AdmOp III. Shipments to destroyers and torpedo boats or storehouses outside Germany were handled by the logistic support departments of the main naval bases.

All accounting for torpedoes was performed by the Naval Torpedo Inspectorate. Before the war, torpedoes were furnished to vessels on an allowance basis; during the war on an as-needed basis. An annual return was made by the Naval Torpedo Inspectorate to MarRuest/TWa. All issues made by torpedo supply depots or storehouses were charged against the Naval Torpedo Inspectorate's annual appropriation.

In discussing distribution of torpedoes and torpedo spare parts, Capt. Mommson stated that at the end of the war the Navy had 50,000 torpedoes in store, 5,000 of which were in the Paris supply center, and that 75 percent of them were electrically driven torpedoes.

Mines, Nets, Booms  
and Minesweeping Equipment

This material was carried in the supply system of the Naval Mining Inspectorate. Mines were dispersed, distributed and accounted for in the same manner as ammunition. Mine components were assembled only as needed.

Minesweeping equipment, booms and nets were carried in stock at all mine depots at main naval bases and mine storehouses of the port organizations. Assembled mines were brought to these depots or storehouses only when required for issue. In the case of mine depots in the Black Sea and Mediterranean Theaters, only mines fully assembled in Germany were carried in stock.

Communication Equipment

The Naval Communication Inspectorate (dissolved in 1941) and the Communication Division of the Bureau of Warship Construction and Armament (MarRuest/NWa), after 1942, had their own supply system.

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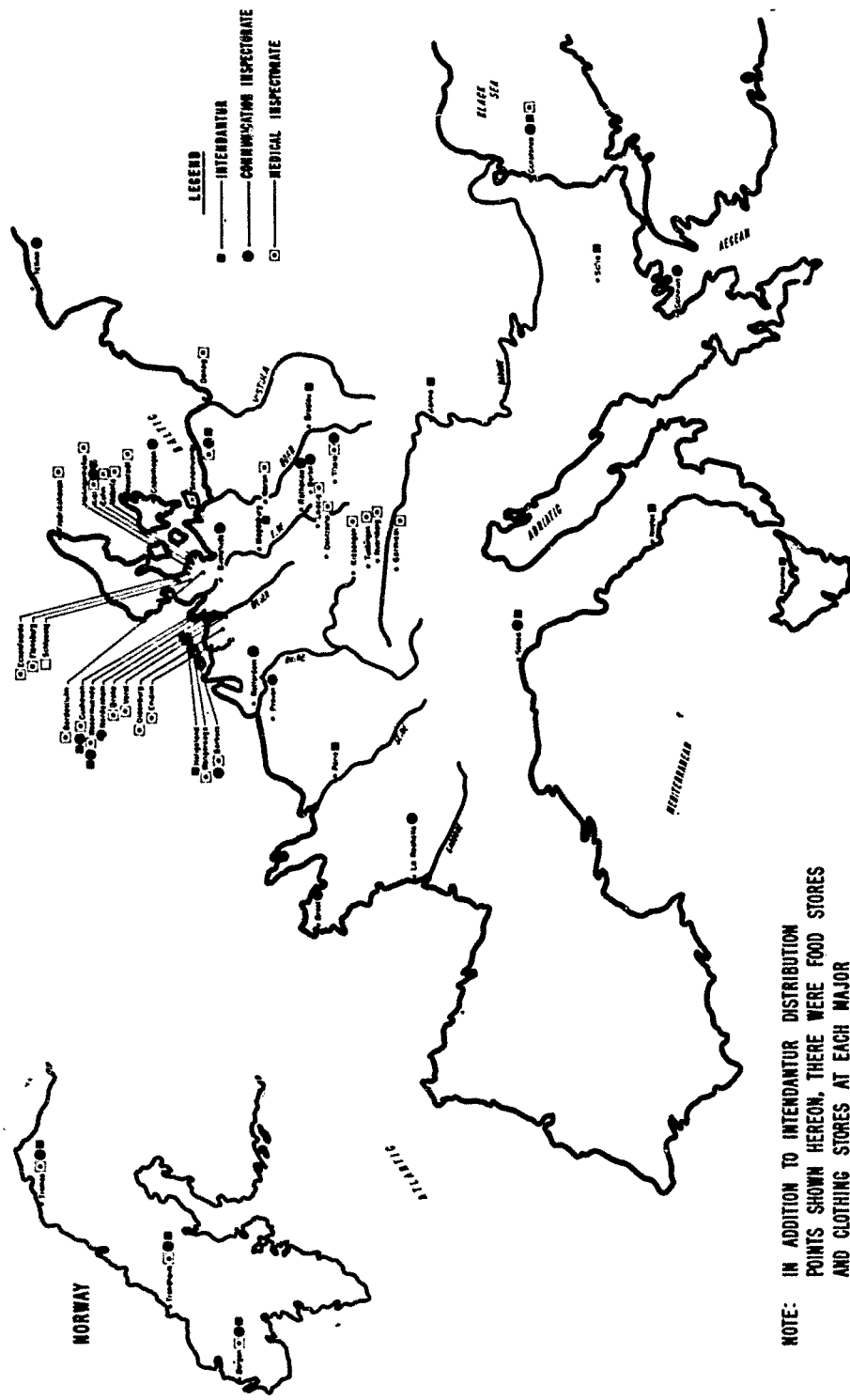
The Naval Communication Inspectorate was established on April 2, 1931. Before that time, communication equipment was procured, stored and distributed by the Engineering Inspectorate through the engineering departments of the naval bases, Kiel and Wilhelmshaven. Despite the formation of the new Naval Communication Inspectorate, however, the engineering departments of these bases continued to store and distribute communication equipment and spare parts as supply branches of the new inspectorate until 1938, when separate communication departments were established at the bases to care for such matters and to maintain and repair this type of equipment. From 1931 to 1941, the Naval Communication Inspectorate procured all communication equipment, spare parts and supplies and was directly responsible to MarRuest/NWa for their storage and distribution.

In 1932, a communication supply center was established at Rathenow, in which was stored all reserve communication equipment. In 1938, another supply center was established at Thale, in which was stored supplemental material, such as fuses and switches. Adm Kienast, chief of MarRuest/NWa, said that these centers were both well hidden in woods and not visible from the air.

When Germany occupied the Lowland Countries, a communications depot was established at Proven, Belgium. Later, another was established at Brest, France. This system was followed in each country occupied. Depots in the occupied countries were supported at first by Kiel and Wilhelmshaven. It soon became evident that transportation and personnel were being poorly used and that the system should be discontinued. Example: Special truck and rail shipments, with special guards, had to be made to keep supply equal with demand, especially in western France. As a result, arrangements were made with the Phillips Radio Corporation in Holland and those in other countries occupied by German troops to manufacture the equipment and spare parts required.

Adm Kienast, stated that, although he would have preferred to have the equipment and spare parts manufactured in Germany, there were not enough German firms making communication equipment to meet his requirements, and that the Dutch and Belgian sets proved satisfactory.

THE LOCATION OF DISTRIBUTING POINTS FOR STOCK CARRIED IN THE NAVAL COMMUNICATION  
AND MEDICAL INSPECTORATE AND THE INTENDANTUR SUPPLY SYSTEMS



NOTE: IN ADDITION TO INTENDANTUR DISTRIBUTION  
POINTS SHOWN HEREON, THERE WERE FOOD STORES  
AND CLOTHING STORES AT EACH MAJOR  
OPERATIONAL BASE.

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The Naval Communication Inspectorate was deactivated in 1941 and the supply centers and depots in its supply system placed directly under MarRuest/Wia. When this change was made, the chain of supply responsibility ran from MarRuest/Wia to the supply center, to the supply depot or storehouses. Accounting was handled in inverse order, with MarRuest/Wia making final annual accounting returns.

All submarine bases in western France had communication storehouses. They were supported by the supply depot at Brest. In addition, all large bases in France had a communication repair shop.

The Navy also provided motorized communication repair shops, in which were carried small stocks of spare parts. As new operating bases were activated, communication supply facilities were established. A supply depot was established in each country to support these facilities, e.g., Bergen, Norway; Copenhagen, Denmark; Tallinn, Esthonia; Constanza, Rumania; Salonika, Greece; and Genoa, Italy.

Distribution within Germany was supervised through the naval communication supply centers at Rathenow and Thale and the communication departments of the major naval dockyards or communication storehouses of the port organizations. Distribution in occupied countries were handled by the communication supply depots established at the naval bases in those countries. Shipments to submarines, raiders and blockade runners and other vessels remaining on station outside Europe were delivered to the logistic support departments of the main naval bases for delivery.

Medical Supplies

Before the war, the Naval Medical Inspectorate had a medical supply center at Wilhelmshaven to serve activities in the North Sea area, and one at Kiel to take care of those in the Baltic area. Necessary drugs and dressing materials were partly manufactured by these supply centers and packed in accordance with the special requirements of the Navy. The rest of the supplies and equipment were purchased from private firms. Hospitals and dispensaries in the area and ships based on Wilhelmshaven and Kiel were supported by these centers.

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These medical supply centers were administered by Navy pharmacists, who were officials, not warrant officers. At first, the procurement of medical equipment was done conjointly with the other services. Later on it was split up, and only the allocation of exceptionally scarce articles was agreed with the Army or Air Force.

Hospitals supported by these supply centers were located at Flensburg and Kiel in the Baltic area, and at Emden, Wilhelmshaven, Sanderbusch, Wesermünde, Cuxhaven and Kissingen in the North Sea area. Each of these hospitals acted as a medical supply depot for the naval shore establishments and forces afloat in the immediate vicinity. In addition, medical supply depots were located at Bremerhaven, to meet the needs of the minesweeping flotillas based on that port, and at Swinemünde, to take care of destroyers and torpedo boats based there.

Accounting for issues made by these supply depots was performed for the Naval Medical Inspectorate by the medical supply centers at Wilhelmshaven or Kiel. The inspectorate made an annual property return to MarWehr/G.

During the war, fifteen hospitals were established in the North Sea area and sixteen in the Baltic area. Additional medical supply centers were established at Leipzig and Delitzsch, near Halle. These hospitals and medical supply centers augmented the peacetime medical supply facilities described above.

Distribution of supplies to field hospitals in occupied countries and to overseas bases was effected through Adm Qu III for continental European bases, and through the logistic support departments of the main naval bases for Norwegian bases and vessels at sea.

Educational and Training  
Material

Such equipment and material as was required for the education and training of naval personnel was procured, stored and distributed by the Naval Education and Training Inspectorate. This material was stored at the main naval bases of Kiel and Wilhelmshaven. Shipments to schools, manning divisions (receiving stations) and training units were made for this inspectorate by the supply/administrative departments of the dockyards at those bases. There was no accountability for material carried in this supply system, final

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charges being made against the annual appropriation at the time procurement was made. An annual report in which was shown the value of issues and stock on hand was made by the Naval Education and Training Inspectorate to Mar-Wehr/Tr and MarPers.

Fuel, Lubricating Oils,  
Distilled Water and Boiler  
Feed Water

All fuel, lubricating oils, distilled water and boiler feed water were carried in the supply system of Adm Qu III. The logistic support departments of the main naval bases and, for a time during the war, the Logistic Support Unit at St. Nazaire, France were the field activities of Adm Qu III which supervised the distribution of these items.

Coal, as distinguished from other fuel was distributed by the logistic support department at Wilhelmshaven; lubricating oil by the one at Kiel.

Details of techniques employed in the management of fuel and its distribution, as well as the location of tank installations are contained in the chapter on Fuel.

The logistic support department of the main naval base at Kiel was responsible for deliveries to all harbors in the Baltic, Denmark and Norway, and that at Wilhelmshaven for deliveries in the Netherlands, Belgium and France. Deliveries to the Mediterranean and to harbors in the Black Sea were ordered by Adm Qu III either from Kiel or Wilhelmshaven as the situation called for at the time.

Shortly before the Russian campaign in 1941, when about 5,000 railroad cars were taken out of circulation, the logistic support department of the main naval base at Wilhelmshaven carried out the shipment of all fuel needed in France, Netherlands and Belgium via the inland waterways. This was effected by means of about 600 small oil lighters and barges. The Italian Navy was also supported in this way at different times, by sending fuel barges through the various interconnecting canals and the Rhone River to Marseilles, where Italian ships took the fuel from the barges. Oil lighters were also used on the Danube River for supporting naval units in the Black and Aegean Seas.

An example of the immensity of the operations of this section is contained in the statement of RAdm Adam, Chief of Adm Qu III, when he said, in discussing distribution of fuel outside Germany:

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"The logistic support departments of the naval dockyards had to carry out the transport of fuel from its source, the refineries, etc. to certain main installations. They got their instructions about how much was to be transported from where to where from my department. At the main installations, the various components were blended and then transported to the sub-installations in the various countries, e.g., Norway, Denmark, France, Netherlands, Belgium and Italy. I would like to mention that we had sometimes to transport as much as 40-50,000 tons of liquid fuel by rail tank cars over the Alps to Italy.

"This country had no sources of its own. If and when the bunkers were filled up with fuel, the Italian Navy went to Malta to engage the enemy; otherwise they stayed in Italy. The bigger tankers for overseas transport were managed directly by Adm Qu III in Berlin, because it was necessary to work in close cooperation with the operations staff (I SKL).

"It might also be of interest to you to know that at the time the battleships SCHARNHORST and GNEISENAU were operating in the Atlantic, 35,000 tons of marine fuel oil was made available to them by eight or nine tankers that operated under the logistic support departments in close connection with Adm Qu III and Admiral France in Paris. At that time I was in the staff of Admiral France and it was my task to determine the quantities required and to ensure that the supply of fuel oil needed for the operations of both of these battleships reached them."

The details of how fuel, lubricating oil, distilled and boiler feed water were accounted for are also contained in the chapter on Fuel.

Food, Clothing and  
Administrative Supplies

Until about 1941, the Naval Intendantur Offices at Kiel and Wilhelmshaven, as field activities of MarWehr/C, were responsible for supplying ashore and afloat food, clothing, money and administrative supplies (mess and galley gear, stationery and office supplies, bedding, bunks and other berthing space equipment, and such equipment and consumables as were required to operate clothing, food, commissary, accounting and pay offices). These offices had the same authority over food, clothing and administrative supplies as the naval inspectorates had over the technical weapons for which they were responsible. The Intendantur offices had their own supply systems, one for food, another for clothing, a third for administrative supplies. All, however, were administered by the same offices and all three kinds of supplies were stored in the same supply centers, depots or storehouses.

As the war progressed and the organization of the shore establishment and fleet was changed (see Chapter II), the functions of these offices were absorbed by newly organized Senior Administrative Staffs, one of which

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was established with each group command or other major subordinate command, such as Naval Chief Command North Sea, Naval Chief Command Norway, and Naval Chief Command, Baltic. The exact date of this change is uncertain. It was some time in 1941.

These new senior administrative staffs lost their independence in the new organization and became departments of the group or other command staffs. They retained their status as field representatives of *MarWehr/G*, however, and controlled that Admiralty division's supply system. Any Intendantur supply center, depot or storehouse in an area commanded by a group or command having a senior administrative staff came under that staff.

The chapter on Provisions and Clothing contains all the information on distribution and accounting for these items. Suffice it to say here that raw and processed food and raw materials necessary in the manufacture of clothing, and those items of clothing commonly used by all services, were allocated to *MarWehr/G* by *OWI/Two III* prior to 1942; afterwards by the *Speer Ministry*. Food and manufactured clothing were taken into the Intendantur supply system. Raw materials were turned over to the naval clothing factories or naval contractors to be used in the production of clothing. Food was distributed through Naval Food Stores. Clothing was distributed through Naval Clothing Stores.

The Intendantur at Kiel was responsible for furnishing these items to all vessels and shore establishments in the Baltic and in Norway, Italy and the Balkans. The Intendantur, Wilhelmshaven, had the same responsibility for all vessels in the North Sea or Atlantic Ocean and shore establishments on the North Sea, in Belgium, Holland or France. Later the senior administrative staffs *Group North/Fleet*, East and South and that of Naval Command, Italy and Naval Chief Command Norway assumed these obligations.

Administrative supplies (mess and galley gear, stationery and office supplies, bedding, bunks and other berthing space equipment, and equipment, furniture and supplies necessary for the operation of pay, accounting and accommodation offices and food and clothing stores) were carried and distributed by the supply/administrative departments of main naval bases for the

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Intendantur Offices. When the Central Procurement Office supply system was established, they were transferred to that system. However, the senior administrative staffs continued to estimate requirements for replacement stock in the Intendantur supply system for MarWehr/C, which subsequently submitted them to OEL/Rue W1 or the Speer Ministry.

Distribution of these supplies by the Central Procurement Office was handled in the same manner as the distribution of other supplies carried in its supply system.

Labor for naval production  
and operation of storage  
and distribution activities

One of the Navy's most important problems was to procure labor with which to carry on the many production responsibilities of the naval inspectorates and offices, to run the great number of supply activities and to keep that labor force contented in a Socialistic State. Theoretically, under a totalitarian system of government, every economic difficulty or shortage will be converted into a manpower difficulty or shortage. The Navy recognized this truth early in the war and designated MarWehr/Rue W1 as the agency to handle such matters with OEL/Rue W1, the Ministry of Labor and the Speer Ministry for all bureaus, naval inspectorates and offices. This problem was mentioned by naval officers and officials so often during interviews held that Capt. Hansen, Chief of MarWehr/Rue W1, was asked to comment on it. He said:

"Germany mobilized her manpower reserves more completely in World War II than in the 1914-18 struggle. Conscription of women was carried much further. Compulsory labor was introduced for adolescents (16-18). Despite this, however, the Navy had the omnipresent problem of obtaining experienced workers for its many factories, private shipyards, naval dockyards and supply activities, both in Germany and in the occupied countries.

"A shortage of between 20 and 30,000 expert workmen had developed at the naval and private dockyards even before the German army invaded Poland. This manpower shortage was caused by the fact that shipyard business was low, the aircraft factories and other air force construction projects paid higher wages and that many of the men who had been employed by air force contractors were called up for service in the Air Force.

"When war broke out those workmen who were just serving their normal compulsory service time were not immediately re-transferred to industry, although many of them were labelled as indispensable for armament



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production. Further drafts during the first months of war resulted in an increased reduction of workmen in industry. Manufacturers requested that their experts be discharged. According to orders issued in the beginning of 1940, industrial technicians were to be discharged from the services whereas untrained workmen stayed on.

"From the beginning of 1940 onward, the transfer of industrial technicians from the services back to industry was stopped, because the situation in raw materials clearly showed the limits of the armament potential. The attempt to recruit volunteer workers from Denmark was not very successful. Norway was not in a position to send workers, as it needed them for its own industry. Poles and Czechs were mainly used as untrained laborers in naval production.

"When the campaign in France had ended in the second half of 1940, a heavy increase in the demand for workmen took place. Navy requirements ranged at about 80,000 - 100,000 men. At that time a struggle of interests began, trying on one hand to produce badly needed equipment and supplies in the occupied territories and on the other hand to transfer laborers to industry in Germany. It was increasingly aggravated up to 1944. The Navy planned to satisfy its needs for workmen from the Netherlands for dockyard industry, from Belgium for heavy industry and from France for machine, equipment and precision mechanical industries. In the first half of 1940 the requirements in labor power were satisfied, whereas in the second half an increased shortage developed.

"In December 1940, a school for training French laborers was established at Paris-Puteaux by GEM/RueWi. The German firm BHM&G of Dessau, provided an engineer for its management. The first students were enrolled in 1941. Volunteer French technicians were also obtained through the French Labor Exchange Office with the understanding that they would undergo training at Puteaux for three months and then work in a factory in Germany. The mission of this establishment was to weed out unsatisfactory qualified technicians and laborers and at the same time determine for which factories in Germany they were best suited. Thus the Navy selected the proper French workers in France for the right job in Germany.

"This training school had facilities for training approximately 300 lathe operators, drillers, grinders, welders and other machine shop and construction workers. The staff consisted of only seven people, namely, three instructors, a barracks caretaker and three social workers. The social workers were concerned with the families of graduates of the school who had gone to Germany, and spent most of their time establishing and maintaining communication between the workers and their families, including telephone communication. They arranged for the transmittal of edited newspapers with news and photographs from Germany and to Germany, arranged family reunions in Paris, Christmas parties for workers' children, etc. Quarters were acquired for students not living in Paris. To reduce maintenance costs, the Navy manufactured airplane parts in the school workshop for the Air Force.

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"This plan for procurement of qualified French technicians and laborers on a voluntary basis was very successful, 2,000 technicians being obtained for Navy factories and ship and dockyards in Germany in this manner. Eight thousand trainees and apprentices were likewise obtained.

"During the latter half of 1941 there was a steady rise in the numbers employed in all activities connected with shipbuilding, ship repairs and refits, naval base and dockyard maintenance. The large scale U-boat building program absorbed all available labor in Germany and many thousands more from other countries. This concentration on naval work meant that most of the merchant shipbuilding and repairs had to be left to the occupied countries. The shipbuilding industry in Germany itself was estimated to employ some 200,000 persons, as against 120,000 in pre-war days.

"The plan to satisfy certain industrial branches by workers from occupied countries failed because recruitment was handled on a voluntary basis. The needs became increasingly urgent. My division started a special recruitment drive in France and later in Belgium with its own testing and training workshops and special program for the care of dependents. In the Netherlands, the German and Dutch dockyard industries were directly combined, trying to recruit labor by this arrangement, guaranteeing at the same time a continuous exchange and return of the workers. However, since the personnel requirements could not be met in spite of these drives in the west, we then instituted a labor procurement program among the Spaniards and Italians and later on, among the Yugoslavians. The employment of prisoners of war was also arranged with OKW and the Ministry of Labor in cooperation with the local prisoner of war camps. In spite of all these attempts, however, the requirements for labor could not be completely met in 1941.

"For some time in 1942 our need for manpower decreased. Difficulties arose in defining the actual requirements and claims for trained technicians forwarded to us by industry. Continuous drafts to the armed forces and substitution of new foreign workers strongly troubled Navy sponsored industry. Factories asked for protection. New requirements sprang up when the foreign workers' six month contracts were about to expire. Friction also began to develop between German workers who were conscripted and foreign workers who were in Germany on voluntary agreements. As a result, workers from the eastern provinces and Poland were bound to contracts for indefinite periods and those from the western areas, France, Belgium, etc., to contracts of at least one to two years. Despite this, in 1942 with exceptions of short periods, the required labor power could not be fully met.

"The consequences of the continuous draft of potential labor to the forces in 1943 resulted in an obvious thinning of steam engineers at industrial plants and in a growing majority of untrained and foreign laborers of various nations among the workers. As a result, efficiency of industry did not keep pace with the number of workers at its disposal, which had been increasing steadily since 1939. It became necessary to examine non-essential plants and factories, and to probe the industry for experts to teach and lead the foreign working parties.

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"German women were recruited on a voluntary basis. The possibility of employing them in dockyards was still regarded at that time as very limited. We again claimed more protection for technicians from drafting to the Forces, as measures in this respect valid up to then had become ineffective. We established a second school for training French workers in Paris. It was not a success. These measures were only stop gap measures though, and requirements for labor could not be satisfied in 1943.

"Most of the Germans still employed in 1943 were less than fully capable. The skilled men who had escaped military service were overworked and exhausted after years of heavy work. A relatively large number were old and sickly and had ceased to work before compulsory mobilization, because of their physical condition. The bulk of German labor consisted of women and girls, many of whom, unaccustomed to work, did it only under compulsion. The output of the German worker in 1941 averaged about 80 percent of what the normal worker called up for military service had accomplished. This meant that the 18.7 million workers employed throughout Germany in 1943 were in fact worth only 14.96 million regular workers. The nominal number of 30.7 million thus were really worth 22.66 million sound workers, some 2 million less than when the war began.

"Procedures for drafting personnel and for protecting it against these drafts, as a means of keeping up naval production, changed constantly in 1944. Until then, the procedure of drafting, based on actual names of the individuals listed in the Forces Recruitment Offices, caused heavy gaps within various factories. The procedure was changed to one whereby personnel was drafted in numbers, not by name, the choice being left to the head of the factory.

"Agreements with some of the occupied countries to transfer complete groups of men of the same age to Germany were bringing some relief. However, they resulted in a lowering of efficiency and were not enough to prevent a general over-all decrease of employees in factories. We established a training school for foreign laborers at the Atlas Works in Bremen, hoping to improve their technical skill. This venture likewise was not very successful. To secure the production of war-essentials, soldiers increasingly had to be sent on leave, discharged or ordered to work in various plants. From the end of 1944 until the end of war, the Navy ordered 18-22,000 men back into German industry working on Navy projects. Our requirements could only be satisfied through our own measures since no help could be afforded us by other agencies of the government. In 1945, the situation eased because of the lack of raw materials that had developed and the fact that allied bombing had destroyed many production and transportation facilities.

"About 600,000 laborers were employed in naval production in Germany proper during the war, 200,000 of whom were employed only in dock and shipyards. About 25 percent of these laborers were either foreigners or prisoners of war. At the end of the war, another 25 percent were either German or foreign women; 40 percent of the male laborers were trained

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technicians, whereas at the outbreak of war 75 percent of them were trained. About 20 million reichsmarks were spent in training programs for Navy laborers and technicians."

After the experienced workers were obtained for the shipyards and dockyards abroad, the problem arose of how best to provide an incentive for them to work willingly and faster. VADM Kinzel, Commander Dockyards in France, said:

"My assistants and I had to pay great attention to the recreation and food of the French workmen. We found out that the French directors did not care in the least for their workers. They got their salaries, that was all. I had to send some of my officials to the mess halls to share lunches with the workers and let them know that someone was interested in them. We rationed their food. Those who did the work decently got a bonus on their ration cards. The most important part of the scheme was that the worker should believe and see that someone cared for him. The French dockyard worker produced about 60 percent as much as the German dockyard worker but if you left him alone and treated him reasonably, he worked reliably."

Dr. Tennstedt, stated, in connection with his work in the Balkans:

"At one time I considered it necessary to speed up stevedoring work. In an attempt to find a solution and at the same time make the work a bit more attractive to the Roumanians, I offered them 30 leva per hour instead of 20 which they had been earning up until that time. The result was that the work neither progressed any faster nor did the Roumanians venture to raise their standard of living. Instead, they quit by ten o'clock in the morning, since they had earned as much money as they had previously earned during a whole day."

The difficulty of housing the great number of Germans and foreigners who were shifted into the industrial areas to engage in naval war production was also a problem for the Navy. In 1943, it was estimated that two million rooms had been destroyed by Allied bombing. Extensive regulations restricting the space that a person could occupy and the acceptance of house guests in such space were issued by OKW. Barrack type accommodations were erected for the homeless, space exceeding that allowed in private residences was requisitioned and other similar steps were taken to alleviate the critical housing shortage, but to little avail, especially in the industrial zones.

SUMMARY

The Navy had eleven separate supply/distribution systems. The naval inspectorate or office in charge of each of these systems estimated its

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own requirements and submitted them to the division of the Admiralty which had technical cognizance over the material carried in its system.

Allocations of raw material or finished consumer goods were made by OKW/Rie W1 or the Speer Ministry. During the period 1934-1944, the Navy obtained its material requirements through these allocations, either by actual production of the item or by delivery of items produced under the supervision of one of the other armed services. After July 1944, the Speer Ministry procured all material requirements of the Navy, and the various naval inspectorates and offices only stored and distributed equipment, spare parts and material furnished to them by that ministry.

In spite of Allied bombing, the productive capacity of Germany increased steadily from 1943 to the close of 1944. Due to the uncertainty of the trends of war and to excessive losses in the eastern front, C-in-Cs Navy and Air Force had to state their requirements for major military items personally to Hitler. The allocations of raw materials were not made according to armed force requirements but according to the available capacity of industry and according to the program which was calculated on the basis of that capacity. Since requirements could not be definitely stated, because of unpredictable losses incurred in retreat, Dr. Albert Speer adopted the principle of maximum possible production and maximum possible expansion of industry. This was beyond the comprehension of the average naval officer and official and there was resentment within the Navy.

There is a natural tendency among military men to believe that their service and its mission is much more important to the defense of their country than any other. Sometimes this is called "Service Pride". In any case, German naval officers knew the importance of merchant tonnage destruction by submarines, and other naval measures that should be taken to break the blockade that was slowly strangling Germany. The Air Force had failed to furnish them with adequate reconnaissance. It had taken their naval air arm away from them, at first gradually, in 1944 completely. The Army had received the lion's share of raw materials and plant production facilities, strictly on the basis of its numerical strength rather than

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on actual needs, or at least so the naval officers thought. The Navy had been the stepchild throughout the whole war, insofar as procurement and production was concerned. It was a natural consequence that when the Speer Ministry embarked on a production schedule designed to extract the most rather than the best out of the economy of Germany and the occupied countries, the Navy should believe that this was just one more move on the part of the Army and Air Force to leave the Navy in the orphanage while they went off to war. This attitude of naval officers and officials is stressed to highlight the situation that can develop within a department of defense where procurement is highly centralized and allocations of resources are made on the basis of strength and political influence rather than consideration of the needs peculiar to a service.

While this was the situation in general, the Navy, through diverse methods employed by its naval inspectors and officers managed to procure enough material and stores, with the exception of some critical metals and fuel, to carry on its part of the war.

Through assembly line production methods in 1943-1944, the Speer Ministry was able to almost triple the industrial production of the earlier war years. It was said that German armament production in 1944 was equivalent to the complete equipment of 250 infantry divisions and 40 panzer divisions, while Germany had only the equivalent of 150 full divisions of 12,000 men each in the field. Nevertheless, a deterioration in weapon strength ensued. Dr. Speer attributed this largely to losses of equipment and ammunition during the continuous Army retreats, but also to the faulty distribution policies of the OKW. Towards the end of the war he insisted on various measures to speed up delivery of material to units. Example: To avoid delays involved in taking guns to testing ranges, the test-firing was sometimes done from the factory. Thus, field guns made by HANOMAG, the firm of which Mr. Otto Markor is now managing director, were test-fired straight from the plant across the city of Hannover. Similarly, flak guns were often test-fired in cities. Speer's ideal was to introduce what he described as the Russian system of direct delivery

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from factory to front. He also favored an organization of logistics which could supply forces from the nearest industrial area.

Conventional, underground, open and floating storage of all kinds was used. There was little mechanical handling equipment available at supply depots and storerooms. Accounting was maintained throughout the war by the naval inspectorates and offices ashore but not in ships at sea. Material was expended and charged against appropriations and allotments when issued. Invoices were unpriced. Annual returns for all types of supplies, except food, clothing and money, were rendered by the inspectorates or offices to the parent Admiralty divisions, thence to the Supreme Court of Accounts. See chapters on Finance and Clothing and Provisions for details on such accountable material.

Distribution of equipment, material and supplies was effected:

- |   |   |
|---|---|
| (a) To ships in German dockyards and shipyards and to naval stations in the neighborhood.   | By distributive agencies of naval inspectorates and offices in or contiguous to the dockyard by transportation furnished by the yard. |
| (b) To other naval stations in Germany and East Baltic countries, in the Mediterranean, Aegean or Black Seas, Italy, North Africa and Balkan countries. | By rail or inland waterways as directed by Adm. III on priorities obtained by that organization from OKM/WStd/Heimstab.               |
| (c) To Norwegian and Far Eastern bases and ships at sea in the Atlantic and Indian Oceans.  | By ships attached to the logistic support departments of the main naval bases.  |

All stock control, with the exception of that of the Central Procurement Office, was maintained on cards. Electrical accounting equipment was used by the Central Procurement Office for stock control purposes and by Markunst/K-4 to determine the life expectancy of certain critical spare parts. It was said that there were no failures in the stock control systems of any of the inspectorates or the Intendantur Offices. Such deficiencies as had developed in the stock control systems of the Central and Technical Procurement Offices were eliminated when control over the stock in these systems was taken away from the dockyards at Kiel and Wilhelmshaven.

The distribution systems of all eleven logistic agencies of the Navy worked smoothly. Persons interviewed would admit of no failures in them and were unable to suggest any improvement that might be made in the systems employed by them during the war.

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There were no shortages of equipment, material or stores in these supply systems, except fuel and some critical metals.



## CHAPTER VI - FUEL

### Introduction

The natural resources of Germany provided an abundance of coal, but fuel oil was one of the nation's most critical natural deficiencies. The military planners, as early as 1926, realized that if the Army, Navy and Air Force they envisaged were to be successful, a synthetic fuel had to be developed and a huge reserve of petroleum products assembled. Germany's experience in World War I had indelibly imprinted on the minds of these men the logistic dangers of blockade, destroyed lines of communication and other disrupting enemy measures employed in a war.

In 1927, Dr. Friedrich Bergius successfully demonstrated that large-scale hydrogenation of coal was feasible, if somewhat expensive. In 1924, Drs. Fischer and Tropsch evolved another process for liquifying coal, also expensive but having the advantage that it could be processed in small, easily camouflaged plants. Covered by a steep protective tariff, first the Bergius process then the Fischer-Tropsch one were commercialized, and by 1937, oil-from-coal was providing 35 percent of the nation's consumption. Under a second plan, this industry was vastly expanded, with most the big coal mine operators being forced to build hydrogenation plants. In 1939, oil-from-coal gasoline met 50 percent of Germany's needs.

The Bergius method involved high pressure and hydrogenation. The Fischer-Tropsch process involved low and normal pressures following hydrogenation. Paul Adam stated that synthetic lubricating oil made from oil produced by the Fischer-Tropsch method was much better than lubricating oil refined from regular fuel oil, and that the Navy, in some cases, subsidized the establishment of the new hydrogenation plants. It was financially interested in the fuel plants established by Krupp and a few other firms, he said, and spent millions of reichsmarks in subsidizing production of

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tar oil, lignite and oil from oil chalk. He added that they were successful in getting oil of good quality from oil chalk, but the quantities were very small.

In the early 1930s, the Navy located deposits of oil chalk in Heide, on the western coast of Schleswig-Holstein, and built a hydrogenation plant there. A pipe line was later laid to the Kiel Canal. There may have been other oil chalk deposits in Germany, but this was the only site in which the Navy was financially interested.

The development of synthetic cylinder oil for use in superheated steam apparatus was another project in which the Navy was greatly interested during this period, as was the development of a high grade distilled water required as boiler feed water for the high pressure steam engines of the Navy's new minesweepers. Great progress was made in the water distillation project and special plants were erected at Hamburg and other major ports in Germany to provide this feed water.

The files of the Intelligence Division of the High Command of the Armed Forces (OKW/Abwehr) show that, in February 1936, its offices were instructed to commence making a systematic collection of all newspaper cuttings, essays, technical reports, etc., dealing with crude oil strikes, new wells, refineries and their capacities, and also with the entire land and sea transportation system of the countries in which such oil operations were being conducted. These reports were kept in the mobilization files of the individual Etappe (Secret Supply activities). The main purpose of gathering this information was to give the Admiralty an over-all view of the state of world oil affairs and at the same time to provide Adm Qu III with current information in that particular field. The reports indicate that, where the establishment of new Etappe stations was being considered, this work was to be given priority, so that the possibility of gradually infiltrating secret supply agents into the world fuel market, with a view to their future military value, could be exploited. The Intelligence Division acted only as a collecting agency. Evaluation of information was conducted by the Naval War Staff (SKL).

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These files also contain records of discussions with representatives from the Harland & Wolff Company and the Shell Oil Company on the subject of oil supply centers, directors of refineries, possible contacts on the boards of directors of refineries, establishment of contacts with influential pro-German foreigners in the Shell Oil Company, survey of available tanker space and questions of oil supply in wartime. The necessity for securing contacts with oil companies which did not belong to the Dutch Shell or Standard Oil distribution chains was stressed. The easiest places to make such contacts, the documents state, were in Mexico and South America. The Shell and Standard Companies together covered nearly 50 percent of the entire oil production of the world (1937). Up until that time, Dutch influence in the Shell Oil Company had been considerably stronger than British. In 1937, the documents continue, it was beginning to appear as though Britain had acquired control of Shell; nevertheless, Far Eastern sources of supply could be created, if financial arrangements could be effected with Dutch personnel employed by Shell in the Dutch East Indies. In that case, money would be the important factor.

These documents state that discussions were held with the Director of the North German Lloyd Steamship Line Engineering Division in August 1937 to find ways and means of securing a foolproof method by which merchant vessels could furnish oil to naval vessels in time of emergency. The technical side of the matter was to be further investigated. A questionnaire on the subject was sent to all German shipping companies in September 1937.

In November 1937 Admiral Raeder was informed by OKW/Abwehr that every opportunity for the Navy to establish fuelling stations abroad was to be seized, because difficulty in fuel procurement by Etappe in time of war was anticipated. The following were suggested as current possibilities:

Establishment of fuelling facilities for naval vessels:

- (a) through the Gecons Company (a Spanish oil concern) in Santa Cruz de Tenerife;
- (b) in Tampico (Mexico);

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- (c) In Strib (Denmark); and
- (d) In Malvis Bay (Southwest Africa).

The file also refers to a conference concerning projects for opening up sources owned by the Navy for the procurement of crude oil. Examples:

- (a) The Isthmus Agreement, which concerned the exploitation of 200 borings in the oil fields reserved for the Mexican government on the Isthmus;
- (b) A similar contract with the Mexican government for exploitation of the Poza Rica oil field south of Tampico; and
- (c) Negotiations of the firm of Siemens-Schuckert with the Mexican government for the delivery of electrical machines for exploiting the country's water power. Diesel or crude oil was to be exchanged for the delivery of these machines.

The documents state that the Navy also required tankers and an independent refinery for these projects. Investigations were to be made to see whether Cepsa in Teneriffe was able to refine crude oil. Oil transfer trade at a port in southern Sweden with a firm, preferably foreign but controlled by Germans, was declared advisable.

It is not clear from documents studied, or conversations held, just when the Navy's huge underground fuel storage system was completed. It is known, however, that before the war broke out fuel oil stocks were being purchased in Austria, Hungary, Roumania, Curacao, Persia and the United States - anywhere that oil was procurable with reichsmarks - and that, at the time of the nationalization of the Mexican oil fields in 1938, 2½ million barrels of diesel oil was purchased from that country at a very cheap rate. All this fuel was transported to Germany and stored in the newly constructed underground storage tanks on the Weser and Elbe rivers. A chart showing the storage system developed by the Navy prior to 1 July 1944 appears opposite this page.

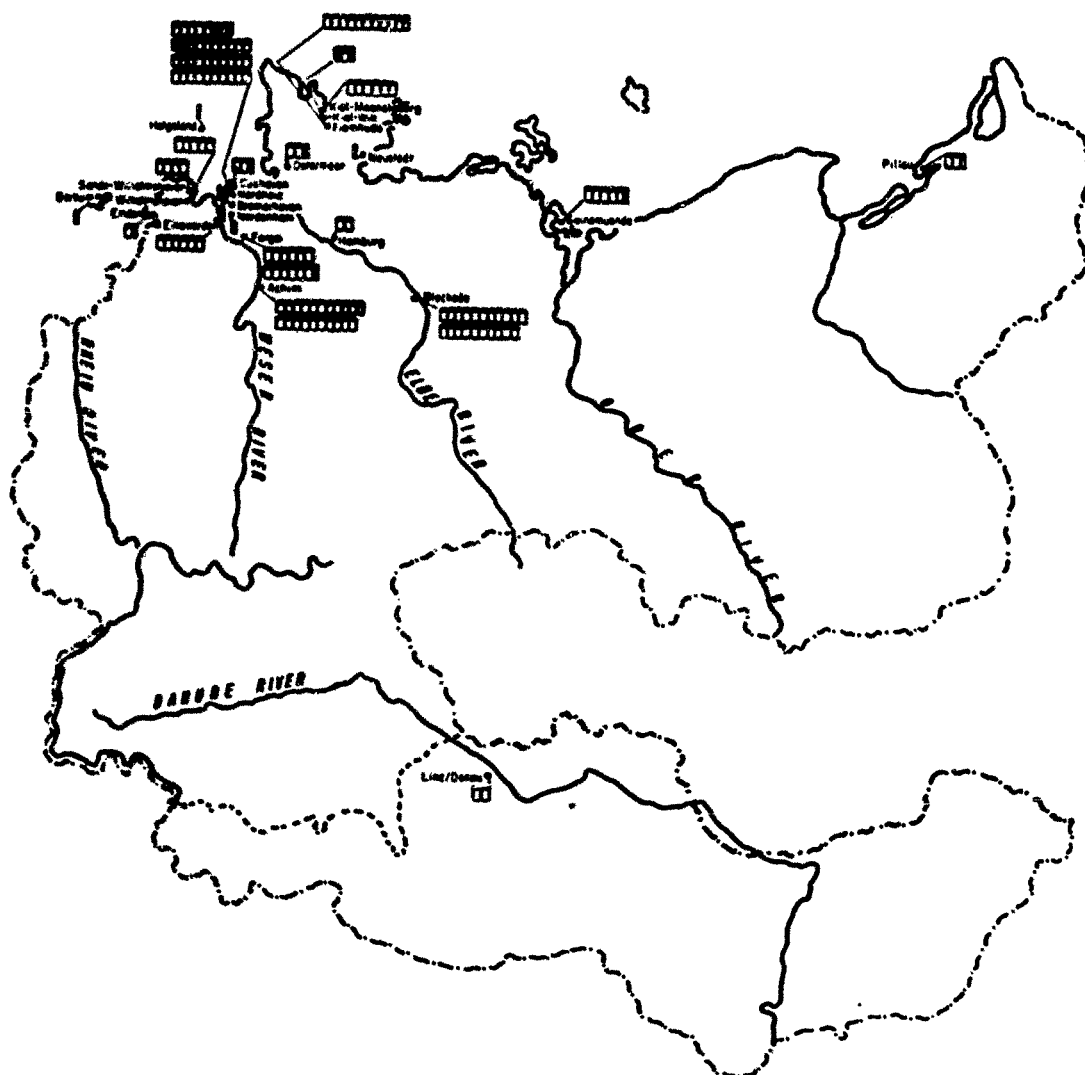
The capacity of the Navy's fuel storage system at the outbreak of war, according to Flottenintendant Wulff, was about 1½ million tons (about 11 million U. S. barrels). Procurement abroad in 1939 had exceeded storage capacities, he said, and he had to hire obsolete Norwegian tankers during that year as floating storage to take care of the excess.

Grain Raeder, Cinc Navy, estimated, in a speech made by him in 1938, that three-fifths of the Navy's fuel had to be imported and that two-fifths was obtained from Germany's synthetic plants.

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# NAVAL FUEL STORAGES

(1 JULY 1944)



Q = 100,000 DOLS.

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Types required

Marine Fuel (Black) Oil

This type of fuel was used in the main engineering plants of all battleships, except pocket battleships, and in cruisers, destroyers, torpedo boats and modern minesweepers.

The Navy, in producing marine fuel oil, used:

- (a) Shale oil from Esthonia;
- (b) Oil chalk from Heide (Schleswig-Holstein);
- (c) Residue of lignite (brown coal);
- (d) Residue of hydrogenation of pit coal and lignite;
- (e) Pit coal crude tar;
- (f) Tar pitch of coal; and
- (g) Pacura from Roumania (a residue from fractional distillation of crude oil).

None of these raw products were usable as a marine fuel oil without processing, because:

- (a) They were too solid and stiff and were made liquid only at a temperature of 100° Fahrenheit
- (b) They contained too much asphalt
- (c) They contained too much free carbon
- (d) They were difficult to spray by fuel burner on account of their high surface tension.

To compensate for these bad qualities, they had to be blended or mixed with synthetic oils produced in Germany, such as tar oil of lignite and tar oil of pitch coal. Even then, the quality reached did not compare with the normal quality of world market marine fuel oil. What was obtained would normally be referred to as a distillate of fuel oil. Therefore, high efficiency burners had to be developed.

German synthetic crude oil was used almost exclusively for the production of benzine, gasoline and lubricating oils; therefore, usable marine fuel oil produced from German crude oil was not available. That which was unfit for refinement into lubricating oil was cracked for gasoline. Only the residue of the latter process and the residue of lubricating oil production were available for marine fuel oil purposes.

To precipitate the free carbon and to prevent precipitation of asphalt and paraffine, the mixture of the original raw materials, namely, shale oil, oil chalk, residue of lignite, etc., had to be carried out in a certain sequence and under different temperatures. A part of the available tar oil

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of pit coal was mixed with crude tar or tar pitch of coal from the Ruhr district. The result was a pitch fuel with 40 percent pitch in it, a product which well suited the general economy of Germany during the last two years of the war. The blending of the Navy's marine fuel oil was carried out in Navy installations.

These installations were divided into three groups, one belonging to the North Sea area, another to the Baltic area and the third to the Western zone (France). The raw materials were transported by railroad cars or inland waterway lighters to these installations, stored in separate tanks and then blended. It will be seen from these details that these plants would be incomplete if they did not have blending facilities for all synthetic fuel products.

A blending system, according to RADM Adam, was a simple plant consisting of a number of storage tanks and large circulating pumps. Blending stocks were metered into the blending tanks and totally mixed by the circulating pumps. The tanks were fitted with heating coils, therefore a boiler house was necessary to produce the required steam. Blending operations, however, had to be carefully controlled and strict laboratory supervision was required, he said. As a result, analytical chemists and a small staff of assistants were required in each Navy installation. The chief of all naval analytical chemists was Dr. Jannsen, one of the officials interviewed during this study. In connection with the production of marine fuel oil, he said:

"The most difficult type of marine fuel oil to synthesize was the pit coal smoldering oil, because it contained a large amount of free carbon and asphalt. In spite of this disadvantage, however, it was necessary to build more of these smoldering plants, because coke had to be used in the Fischer-Tropsch process. To avoid the chemical falling out of free carbon and asphalt, we had to use a large amount of pit coal tar supplied by cokerries."

Diesel Oil

Three kinds of diesel oil were required by the Navy. The main engines of the pocket battleships DEUTSCHLAND, LUETZOW and GRAF SPEE, and the auxiliary motors of the cruisers NUERNBERG and MOELIN used normal quality diesel

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oil. Submarines used a high quality diesel oil. Diesel driven merchant vessels, transports and other auxiliary vessels used a minor grade of diesel oil.

The raw material for diesel oil was mostly crude oil. This was available in Germany, Austria, Hungary and Roumania. The fundamental operation used in separating crude oil into its various components was by fractional distillation. It is part of almost every refinery process. All distillation plants contained a topping and cracking plant.

Normal quality diesel oil was also produced by fractional distillation out of tar oil of lignite, shale oil, and tar oil of pit coal, and by hydrogenation of pit coal and lignite. This hydrogenation was by the system of Bergius.

High quality diesel oil was produced by the synthetic method of Fischer-Tropsch. This diesel oil was of higher quality than the type mentioned above. The cetane number and diesel index was higher (the cetane number of normal diesel oil is about 37 to 45, diesel oil of Fischer-Tropsch is about 90; furthermore there is no sulphur content). Therefore, diesel oil produced by the Fischer-Tropsch method was used for submarines, which were equipped with high speed engines.

Capt. Roessing, when asked about the quality of submarine diesel oil which the Navy was able to produce by this method, said:

"We had no trouble with the purity of our diesel oil. I remember at the beginning of the war, difficulties in lubricating oil arose and that some engines broke down. It was thought at first that sabotage was involved, but the trouble turned out to be an inferior quality of oil. Such instances may have occurred later on but not generally.

I do know that some of our submarines got into difficulties with Japanese lubricating oil. One of our submarines only got back after being long overdue - I think the crew had been reported as missing twice - by adding fat-grease to the oil. The submarine completed the run and suddenly turned up at Bordeaux. It was mainly due to the poor quality of the Jap lubricating oil. I know that other submarines had similar difficulties too, but not as bad as this special case. During the last weeks of war we ran so short of diesel oil that our big submarines had to remain in port and use their oil to fuel the smaller operating submarines."

Because there was always a shortage of diesel oil in the Navy, minor grade diesel oil for auxiliaries and merchant vessels was blended



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with kerosene. Various grades of dieselkerosene oil were prepared to meet the needs of the vessels having different types of diesel engines.

RAdm Voss stated that, during the first year of the war, many new synthetic fuel plants were established.

"Of course", he continued, "fuel made this way was very different in quality and did not always meet the operating demands of the ships, inasmuch as it did not have the necessary qualities. So, during the war, a certain synthetic fuel, I think it was made in the western part of Germany in the Ruhr area, was discovered. If I remember correctly, its name was Kogasin. The quality of this synthetic was so remarkable that you could use it as a base for mixing the different products of the different plants and have the right quality for our engines."

Hydrogen Peroxide

Near the end of the war, the Navy developed hydrogen peroxide ( $H_2O_2$ ) as a fuel for submarines. The Germans called it "wasserstoff superoxyd". It looked like water. RAdm Adam stated that if one put one's finger into it, the finger would disintegrate. It was intended that this fuel should be mixed with diesel oil to give the diesel oil higher explosive capacities. One of the disadvantages of the use of this fuel was that it required the installation of special aluminum tanks, an expensive and time-consuming process requiring redesign of submarines. As a result, only the Walther type XXI, XXII and XXIV submarines used this fuel and then only for a short time before the end of the war. Through the mixture of hydrogen peroxide with diesel oil, these U-boats were able to develop speeds of 21-25 knots underwater.

Dr. Jannsen said:

"This fuel was 80 percent hydro-oxygen. In addition to its use in Walther turbines, it was used in launching V-2s, to assist in the launching of aircraft and to furnish a diesel engine of a submarine with the necessary oxygen when it was submerged and not using the schnorchel. There is nothing special behind it. It is just  $H_2O_2$ . The normal product is used at three percent; perhydrol has 30 percent and this  $H_2O_2$  has 80 percent for military purposes. It was manufactured by the Elektro-Chemische Werke, Hoellersriegelskrouth near Munich."

Coal

Many of the merchant marine vessels taken over by the Navy during the war burned coal, as did most of the minesweepers, trawlers and larger

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harbor defense boats. As has been stated, there was an abundance of coal. The Navy had no procurement problems with respect to coal, until during the last few months of the war. VAdm Machens and RAdm Adam stated that the Navy then used wood, wood mixed with coal and wood mixed with peat as fuel for these ships.

Gasoline and Kerosene

Little information was obtained about the development of gasoline or kerosene or the quantities required by the Navy, except that it was produced from coal in Germany and that, until the end of August 1944, gasoline was procured from Roumania. It is also known that gasoline was used by a small number of the small battle units (the majority used diesel oil) and by some harbor and patrol craft. As has been related in the chapter on the Organization of the Navy, the Navy had no air arm to support. Gasoline required for automotive purposes was furnished to the Navy by the Army. Dr. Jannsen said that the alkalization system was used to produce high performance aviation gasoline for the Air Force. Metapropane gas, he stated, was chemically attached to the gasoline. It was a chemical reaction, a chemical process, he emphasized - not only a process of mixing two components - and was designed to obtain a high octane value to avoid pinging or knocking in high performance air motors. That was done especially in the Roumanian plants at Floesti, where there is a lot of propane and methane available.

Lubricating Oil

The types of lubricating and other non-fuel oil required by the Navy were:

Motor oil, grades I, II and III	Emulsion cylinder oil
Motor oil, high octane 16.5	Steam engine oil
Gear drive oil 8.5	Compressor and ice machine oil
Motor cylinder oil 12.5	Low temperature and insulating oil
Turbine gear oil	Anti-corrosion oil
Saturated steam turbine oil	Watch oil
Saturated steam cylinder oil	Frost-proof cleaning and lubricating oil for weapons
Superheated steam cylinder oil	

Oberregierungsrat Boeker stated that of these oils, the saturated and superheated steam cylinder oils and the high octane 16.5 refined oil were in greatest demand in the Navy.

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Grease

The documents made available for study indicate that the following types of grease were used:

Anti-friction bearing grease	Gun grease and protective grease
Cable and adhesion grease	for weapons
Stuffing box grease	Vaseline
	Machine cup grease

RAdm Adam stated the Navy had no difficulty in producing grease.

Sources of supply during the war

(a) Aboard

Roumania provided about  $4\frac{1}{2}$  million tons of crude oil per year; Hungary and Austria about 1 million tons each. Esthonia provided an unknown amount of shale oil. German tankers, dispersed to neutral ports at the outbreak of war, loaded diesel and marine fuel oil under the supervision of agents of the Secret Supply Service at foreign ports for the purpose of supporting raiding pocket battleships, cruisers, armed merchant cruisers, blockade runners and submarines operating in their areas. RAdm Voss and Dr. Jannsen stated that Russia furnished Germany with marine fuel oil from 1939 until Germany declared war on that nation in 1941.

(b) In Germany

The coal fields that produced the raw materials for blending oils were mainly in the Hannover, Heide and Emden areas. There were a great number of plants producing these synthetics. Their total capacity was between 5 and 6 millions tons per year. Only one German plant produced synthetic marine fuel oil. This was the Ruhr Oil Co., Ltd. at Welheim, owned by Hugo Stinnes. According to Dr. Jannsen, it developed 270,000 tons per year for the Navy.

Requirements Planning

Before the war, the Navy's requirements for fuel were planned by Adm Qu III. Based on CinC Fleet's recommendations and its operational schedules, requirements for the surface fleet were estimated by 1 SKL. CinC U-boats furnished estimates for submarine requirements. CinCs Groups North and Baltic furnished estimates for the shore establishment in Germany.

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During the war, CinC Group North Fleet and CinC U-boats furnished these estimates for the fleet, U-boats and the shore establishments in Germany. CinCs Group West and Group South furnished estimates of their requirements ashore in the various countries comprising their commands, as well as the requirements for surface units based in their respective areas.

Dr. Jannsen stated that before the war, these estimates always exceeded actual requirements. They were based on intended new constructions, as well as on those vessels and stations actually in commission. Quite often, he said, 1 SKL forwarded its estimates without mentioning the period of time involved in the planning. Before the war, estimates covering at least one year's requirements were always submitted, and when war did break out, 1 SKL furnished a three year estimate. He added:

"These were based on the naval construction program; however, the various changes in plans in the course of the war made a change in these requirements. Moreover, they were always so high that they never could be fulfilled. The aircraft carrier GRAF ZEPPELIN (and FETER STRASSER) was twice planned and twice cancelled. These requirements were always added in the estimates. Because of the task involved in furnishing the required amount of fuel and also the task of testing its quality, the situation was very difficult.

"The plans of 1 SKL could not be carried out, if one carried out the instructions laid down regarding the amounts of fuel which had to be retained in store. For instance, we could have put many more raiders to sea if we had been permitted to use more fuel. The same applied to submarine warfare. Even tests in the dockyards sometimes could not be carried out because the fuel, although it was there, was not allowed to be used but had to be kept in storage. The Russian supplies were stopped in 1941. Before then, supply trains carrying fuel arrived almost daily from Russia."

RAdm Voss, one of the planning officers of 1 SKL, stated that until 1940, there was no real need for detailed planning in the procurement of fuel. However, from the end of 1940 to the middle of 1941, he said, it was apparent that there would eventually be a shortage. He continued:

"This shortage of fuel developed importantly after the start of the war with Russia, because the Italian Navy asked us to provide 140,000 tons fuel oil a month. That was beyond our capabilities. Before this demand of the Italian Navy was made, I submitted plans and suggestions on how to restrict the consumption of fuel in our Navy,

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so that we would be able to meet the more stringent demands of both navies. In the last quarter of 1941, this question became most urgent and the Chief of the Naval Staff - I think it was Admiral Schniewind at the time - accepted these plans, and we began to allocate fuel oil to the different consumers.

"We had no experience in the beginning, of course, as to who would want how many tons of oil, so we made these allocations according to the amounts our research men found we had used during the preceding months and years, plus the current ground needs of the different theaters of war. I always kept oil in reserve for operational needs. You see, I was attached to 1 SKL.

"The operational planning officers in 1 SKL let me know what they were going to do and I determined the probable amount of oil fuel needed for the operation. When the operational plans were ready, I had information whether or not there would be fuel enough in the theater. If insufficient fuel was available, I got in touch with Admiral Luettke in Adm Qu III and asked him, very secretly of course, to send such and such an amount of fuel to the theater concerned."

Because petroleum products were rationed after 1 July 1941, requirements planning for these items was discontinued in the Navy after that date. There was always a shortage from then until the end of the war and the Navy got as much as it could, not what it needed or planned that it should get

**Procurement**

Until mid-1941, the Navy procured its own crude oil and raw blending stocks, as well as subsidizing its own synthetic and blending plants and coal and chalk fields from which those blending stocks were obtained.

There were no special procedures employed in procuring oil from Roumania, Austria, Hungary and Esthonia other than by purchase. Until 1939, oil purchased from these countries was paid for by the Navy in the country's currency, i.e., Roumanian leis, etc. After then, the Navy settled for such purchases through bank transfers. Shortly before the Roumanian government fell to the Communists, in August 1944, a type of a mutual assistance settlement account was established, wherein oil received was credited to the Roumanian account and items purchased by Roumania from Germany were debited against it. This, of course, was controlled by the Speer Ministry and Reichsbank. The Navy had no control over actual record keeping. Speer Ministry reported the receipts of all fuel for the

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armed forces to the Reichsbank, in the same manner as other items of equipment or supplies received from an ally were reported.

After mid-July 1941, all fuel, whether procured abroad or developed within Germany, was allocated by OKW/Rue W1 (1941-42) or the Speer Ministry (1942-45).

Allocations and Rationing

Fuel, like all raw materials and common-use consumables and items of equipment, was allocated to the three armed services by OKW/Rue W1 from mid-July 1941 to 1942, and by Speer Ministry from 1942 to the end of the war. Adm Qu III reallocated the Navy's share to the ships and shore stations monthly. RAdm Adam stated that once fuel stocks became in short supply (December 1941), the Navy instituted a strict system of rationing. The admiral commanding a force of cruisers, light cruisers, etc., received his monthly allocation of fuel. He then reallocated the amount allowed him to his ships. Each commanding officer was responsible to his own unit or task force commander that no more fuel than that allocated to him was used. If 1 SKL required an operation by those forces, not already planned, the admiral commanding the force received a special allocation. It then became his duty to distribute the new allocation among the ships concerned. If his forces did not use the quantities allocated to them, he reported the residue to Adm Qu III.

The files of OKW/Abwehr show that until December 1941, the only fuel on ration was gasoline. The diminishing stocks and drop in production, however, compelled the Admiralty to introduce fuel oil rationing on 1 January 1942. The need for the strictest fuel economy was impressed upon all commanding officers by means of lectures and orders. Further economy in the use of fuel oil was achieved by various shore consumers (bakeries, feed stores, industrial plants, etc.) by converting their fuel oil heating plants to coal. The consumption of liquid fuel in naval auxiliaries and merchant vessels not at sea and in accommodation ships, was either reduced or cut out altogether, by furnishing heating and power from shore plants, fuel barges, etc. Kerosene was used for lighting. Coal-fired dredgers,

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in preference to oil-fired ones, were used on marine construction jobs. Consumption of fuel oil and oil fuel was reduced to the bare minimum necessary for conduct of the war throughout the Navy.

As a result of the fuel oil shortage, the minimum requirement of stocks in bases could no longer be adhered to. Fuel could only be reserved for the demands of Group West and the Fleet Command. It thus happened that when ships arrived at bases without previous warning, supply difficulties arose, and on occasion (at Le Havre and Ostend) stocks were completely exhausted, although Admiral France brought up fuel support immediately the bases submitted their requirements.

In order to reduce loss of fuel to a minimum, in the event of enemy landings or commando raids, dumps of gasoline lubricants, greases, etc., were moved into the interior, away from the seaports and beaches.

No unit, flotilla or squadron received the amount of fuel it wanted or needed. The U-boat service was an exception to this general rule, RAdm Adam stated, until the last year of the war, when the fuel it used was also rationed. The Engineering Inspection determined the quantities to be received by each type of vessel. From tables of consumption prepared by that organization, force or fleet CinCs could determine the amount of fuel required by their units at all speeds. Allowances for operations were based on the average speed of the vessels involved, the duration of the voyage and the anticipated tactics involved. According to the location of the units and the deployment and operational schedules planned for them, Adm Qu III directed delivery of the fuel allocated for the period involved, either by rail or inland waterway transportation provided by the Army or by naval controlled tankers operated by the Logistic Support Departments at Kiel or Wilhelmshaven.

Oberregierungsrat Boeker complained about the fuel allocation to the Navy by the Speer Ministry. He said:

"I do not believe that the Navy got a fair share of the fuel available. In the last stages of the war, the growing scarcity made a control system and subdivision of procurement by the various services necessary. However, it was carried out by the Speer Ministry without satisfactory consideration of the

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operational costs and needs of the Navy. In 1944, and from that time on, when the Navy hardly received any fuel, the evacuation of the whole population of the eastern provinces could not be carried out satisfactorily, although there were ships and tonnage available. The biggest share, as far as high octane gasoline was concerned, was received exclusively by the Air Force. The Army received most of the diesel oil for their motorized units and armored divisions.

"The Party system which was superimposed over the military, through a lack of understanding of naval needs, affected allocations. Doenitz cooperated very well with Speer, but in the field of fuel procurement such cooperation had little effect. I personally am not informed about the relationship between the Fuehrer and Doenitz and between Speer and Doenitz. One thing, however, is very significant: Raeder had frequently demanded personal reports from me regarding fuel availability. He called it the 'Red Blood of the Navy'. After the change of command, Doenitz did not ask once for the Navy's oil needs in procurement and supply. Moreover, it was an incontrovertible fact that the technical development of the various craft for the Navy, from 1943 on, required so many different types of fuel that the list that Doenitz had to present to Speer was quite a large one. The same thing happened with the Air Force, when it changed to turbine craft and high speed planes. The Fuehrer gave preference to the Air Force and their needs to such an extent that the allocations of fuel to the Navy, from about the end of 1943, were hardly recognizable and a lot of the naval vessels were immobilized."

RAdm Voss stated that the rationing was so severe and the allocations so small that all non-essential fuel oil burning vessels were placed in reserve, and in some instances, the crews transferred or paid off. The system employed in conserving fuel allocated to the Navy, he explained:

"The admiral in command of the training units had a lot of ships, motor ships, steamers and submarines and a lot of small craft. He was in a key position and we knew from what he had used over the last year and during the last months that he needed about 10,000 tons a month. He got them. Then commands at Kiel and Wilhelmshaven needed a lot of fuel for training installations, etc. They had to support certain groups, such as the artillery school and other installations, tugs, transports, and training ships. It was absolutely necessary to give the Logistic Support Departments at Kiel and Wilhelmshaven enough oil to conduct convoy service in Norway, from Bremen or Hamburg to the coast of Holland and from there to the coast of northern and southern France. They needed the oil first, because they had charge of the coastal shipping and its convoy. The rest was either put into reserve, kept there for the operational demands of SKL, or put into the shore establishments waiting further distribution. Then, of course, there were always the omnipresent needs of the Italians."



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The files of CinC Chief Command Norway show that in March 1943 Group Command North and the Fleet Command submitted a request for oil stocks in Northern Europe to be increased to 25,000 cubic meters (6,603,250 U. S. barrels) as the quantity commensurate with the tasks confronting the Navy in northern waters.

Group Command North calculated that about 8000 cubic meters was needed for a three-day operation. This meant that, for a cruiser force operation until 10 April (Group North was writing on 25 March), the entire quantity of support then on its way would be used up. Any harbor routine or further operation would have to be fed from battleship stocks. This state of affairs, the correspondence stated, could not be remedied by further support arriving in the existing quantities and at the existing tempo. The outcome would only be a gradual exhaustion of all stocks.

In reply to a request from the cruiser force on 28 May 1943 for the allocation of 4500 cubic meters (1,188,765 U. S. barrels) of fuel oil for exercises in addition to the monthly harbor requirements, Admiral Northern Waters stated:

"It is my opinion that every effort should be made in our management of oil gradually to build a reserve of at least two fillings for ships and destroyers, in addition to ships with full oil stocks aboard. This reserve will be for both offensive and defensive purposes. Otherwise there is a danger that the Fleet, as happened to our destroyers in the Battle of Narvik (April 1940), will be forced to remain in port for lack of oil. To fulfill the requirements of this reserve, some 40,000 cubic meters of fuel oil must be set aside in the northern theater. At present there is only 1100 cubic meters (290,587 U. S. gallons) in the North, namely 500 cubic meters in Alta and 600 cubic meters in Narvik, that is, only one quarter of the target figure.

"A monthly consumption of 4500 cubic meters solely on exercises seems to me indefensible in our present oil situation. Such quantities must be reserved for positive operations. I desire to draw attention to the statement issued at a high level to the effect that the quantity of oil expended on operation Hope was unduly high, despite the sinking of the vessel 'DOMBASA' and an enemy escort vessel.

"It is my judgment that the oil situation is as grave as ever, particularly as Italy, in the present operational situation, will require large quantities of oil for the defensive tasks confronting her fleet."

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In a report on the marine fuel oil situation made by GrAdm Raeder to Hitler in early 1942, CinC Navy stated that the Italian Navy was in continual need of fuel and that the Navy's stocks were running low. The passage of the Brest group through the Channel and onto Norway, he said, consumed 27,000 tons of fuel oil alone. By April 1st, he continued, the Navy's reserve stocks had dwindled to 150,000 tons, Roumanian deliveries fell from 46,000 tons to 8,000 tons per month and, since that had been promised to the Italians, who urgently needed fuel for the Mediterranean campaign, further withdrawals had to be made from Navy stocks. He complained:

"The total allocation of black fuel oil for both the German and Italian navies for April (1942) has been cut from 97,000 to 61,000 tons."

This cut, however, did not affect pocket battleships or submarines, because both of these types of vessels used diesel oil.

Study of CinC Fleet's files discloses that in February 1942 the fuel oil situation in Norway was critical. A minimum monthly quota of some 5000 tons was required for vessels, torpedo boats and destroyers stationed in or transferred to that theater, and this only for normal harbor routine, anti-aircraft readiness and two training voyages a week in the fjords. This figure therefore excluded the transfer of ships or operational requirements. A further transfer of ships, commencing mid-March, made it necessary for the Fleet Command to request replenishment of fuel oil stocks in Norway.

Naval Group Command North reported that the fuel oil situation was critical in the whole of its area of command (i.e. Germany, Denmark, Finland and the Baltic States). Only small stocks were available. SKL had arranged for the transfer of stocks from France and the Lowlands. At the end of January 1942, about 140,000 cubic meters of fuel oil were stored in France and the Lowlands. Adm Qu III had arranged for 50,000 cubic meters (314,386 U. S. barrels) to be carried via the inland waterways and by rail, so as to avoid the dangers of the sea route. Group North had requested four large and two medium fully-laden tankers from French waters, because of the shortage of tankers in waters around Germany.

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At the end of March 1942 SKL informed the Naval Group Commands and the Fleet Command that, because of the fuel oil crisis and the necessity for holding fuel oil reserves for the Italian Navy's urgent convoys to North Africa, it had become necessary to further reduce oil consumption. Operations by heavy naval units which consumed fuel oil were to be suspended. Commands were to get along on existing quotas, so as not to restrict operational freedom still further by premature consumption of already small stocks. It was, however, emphasized that necessary operations, occasioned by offensive operations of the enemy, were to be carried out without regard to quotas. In such events, the amount consumed above the quota was to come from stocks and could not be replaced.

At the beginning of April 1942, SKL ordered that even operations by light naval forces requiring fuel oil were to be suspended. The reason was an unexpected reduction in supplies of oil from Roumania.

In May 1942, the fuel oil crisis had reached the stage where the Fleet Command reported that the cruiser "LUETZOW", the destroyers and the torpedo boats would be put out of commission unless an additional 6,000 tons of fuel oil were sent for May.

In 1942, all hope for success in naval operations hinged upon the oil situation. In November 1942, CinC Group North cabled to the Fleet Command that SKL had given its approval for the cruiser HIPPER and four destroyers, together with the cruiser KOELN, if necessary, to make a sortie against the convoy QP-15. Fuel oil was to be taken from the reserve saved from the training allocation, estimated at 1,500 tons, or was to be drawn from the December quota.

As there was no reserve available from the training allocation, the operation against the convoy QP-15 had to be taken partly from the December quota.

In November 1942, CinC Fleet complained that for the past year the units of the fleet had been admonished, and by extremely small allocations compelled to save fuel oil. The training efficiency of the ships had been jeopardized, he said, and there was hardly any reserve of fuel oil left.

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NAVAL FUEL STORAGE AND CAPACITIES

(1 JULY 1944)

(A) NORTH SEA AREA	Underground Storage Space Bbls.	Above Ground Storage Space Bbls.	Total Storage Space Bbls.	Number of tanks and their capa- cities Bbls.	Heating	Remarks
(1) Wilhelmshaven	157,245	333,985	491,230	22 Tanks 630 to 45,915	11 Tanks with heating	
(2) Sande-Wilhelmshaven	-	411,350	411,350	8 Tanks to 69,910	7 Tanks with heating	
(3) Emden	-	134,280	134,280	1 Tank 8,020 1 Tank 470 2 Tanks 62,095	with heating	
(4) Borkum	25,160	-	25,160	2 Tanks 12,580	without heating	
(5) Helgoland	31,450	-	31,450	1 Tank 31,450	without heating	
(6) Nordensham	-	62,900	62,900	2 Tanks 31,450	with heating	
(7) Emswarden	-	629,000	629,000	10 Tanks 62,900	without heating	
(8) Bremerhaven	62,900	-	62,900	2 Tanks 31,450	without heating	
(9) Cuxhaven	251,600	-	251,600	4 Tanks 62,900	without heating	
(10) Warburg	-	180,700	180,700	10 Tanks 12,580 to 25,160	without heating	
(11) Ostermoor	-	269,830	269,830	4 Tanks 63 to 69,190	without heating	
(12) Achim	2,138,600	-	2,138,600	34 Tanks 62,900	10 Tanks with heating	
(13) Bleckede	2,121,540	-	2,121,540	34 Tanks 58,495 to 75,489	some with heating	
(14) Nordholz	3,774,000	-	3,774,000	12 Tanks 62,900 24 Tanks 125,000	some with heating	
(15) Farge	1,258,000	-	1,258,000	4 Tanks 62,900 8 Tanks 125,000	some with heating	
Totals	9,820,495	2,030,045	11,850,540	185 Tanks		

(B) BALTIC-SEA AREA

(1) Kiel-wik	-	245,930	245,930	15 Tanks 945 to 62,900	some with heating	
(2) Kiel-Wuckeburg	581,825	-	581,825	6 Tanks 31,450 3 Tanks 47,175 2 Tanks 125,000	some with heating	
(3) Neustadt	18,870	-	18,870	1 Tank 6,290 1 Tank 12,580	without heating	
(4) Swinemünde	519,470	12,580	522,050	14 Tanks 13 to 62,900	some with heating	
(5) Pillau	218,260	-	218,260	2 Tanks 1,570 1 Tank 12,580 1 Tank 13,840 4 Tanks 47,175		
(6) Flomünde	1,127,795	-	1,127,795	1 Tank 58,495 17 Tanks 62,900	some with heating	
(7) Tannenburg	-	-	-	-	-	
Totals	2,456,220 Bbls.	258,510 Bbls.	2,714,730 Bbls.	68 Tanks		

(C) INLAND

(1) Linz a/Danube	188,700	-	188,700	6 Tanks 15,725 3 Tanks 31,450	some with heating	
ENCAPITULATION						
(A) NORTH SEA AREA	9,820,495 Bbls.	2,030,045 Bbls.	11,850,540 Bbls.	185 Tanks		
(B) BALTIC SEA AREA	2,456,220 Bbls.	258,510 Bbls.	2,714,730 Bbls.	68 Tanks		
(C) INLAND	188,700 Bbls.	-	188,700 Bbls.	9 Tanks		
	12,465,415 Bbls.	2,288,555 Bbls.	14,753,970 Bbls.	262 Tanks		

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RAdm Adam stated that the main difficulties arose when in the months of April and May 1944, Allied planes suddenly began to bomb out the plants where the Navy produced its synthetic oil, its other refineries and its transport system.

He added:

"It was very astonishing for us and we asked every day, 'Why didn't you bomb out these plants in 1943?' Furthermore, they mined the River Danube, so that the waterways from Roumania were disturbed and transport was partly interrupted. At the end of 1944, the capacities of our refineries, hydrogenation plants, etc., were very small. I think the output was only 10-15 percent of normal capacity. To overcome these difficulties, the Speer Ministry, and especially a man named Geilenberg (the program was named after him), tried to build up small distillation plants in valleys where they could not be seen by the Allied air force. We also tried to establish distillation plants in breweries, etc., but success was very small, because the railroads and the general transport system was disturbed and interrupted."

Despite all these shortages, rationing programs, etc., the Navy had about 180,000 tons of raw materials for fuels and lubricants, not dressed for use, in its supply system when Germany capitulated in 1945.

Storage

A list showing the Navy's fuel storage system in Germany and its capacities appears on page 278a. Attention is drawn to the fact that on 1 July 1944 this system embraced twenty-three large fuel farms with 262 tanks and a capacity of about 1 3/4 million U. S. barrels, 81.6 percent of which was underground. Distribution tanks (2,288,555 barrels) were all above ground. Most of them were tanks belonging to Esso, Shell and other large oil companies. Reserve stocks (12,465,415 barrels) were stored in underground tanks.

The underground tanks were built by the Navy. The largest underground installation was at Nordholz, with an approximate capacity of 3 3/4 million barrels. It had not been completed when war broke out. Normally, underground installations consisted of 35 tanks of 10,000 cubic meters (62,897.6 U. S. barrels) each. Capt. Fischer stated that many of the installations, not considered underground storage, were partially submerged with earthworks protecting them from bomb blast and that none of

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the main installations were ever affected by enemy bombing and that was all tank farms, except the one at Farge in the American zone of occupation, were blown up after the war by British forces.

In addition to the Navy-owned tank farms shown on the list and chart appearing in this chapter, many commercial fuel storage plants were leased. An example of the Navy's use of commercial storage was at the port of Bremerhaven, where the Navy owned only two tanks of approximately 31,450 barrels each. Commercial storage consisted of 15 tanks with a total capacity of approximately 638,000 U. S. barrels. These tanks were fitted with heating facilities. Bunkering places were fitted with 12 inch pipelines for marine fuel oil and 8 inch ones for diesel oil. Fuel pumps ranged in capacity from 220 tons to 500 tons per hour. They were steam-driven by coal-fired boilers.

To facilitate fuelling in stream, these commercial installations had three self-propelled pumping barges, one of 40 ton and one of 250 ton capacity for gasoline and diesel oil, and one of 500 ton capacity for marine fuel oil. Non-self-propelled barges consisted of one of 300 tons and one of 600 tons.

Large naval fuel depots were managed by Intendantur Officials. Those officials were attached to the Logistic Support Departments, Kiel and Wilhelmshaven, and were directly responsible to them. As has been reported, the logistic support departments were subordinated to Adm Qu III. Verwaltung (supply) officers were not employed as custodians of fuel plants - only officials, so-called Amtmaenner, the highest rank in the lower bracket of officials. These men really knew their job, Oberregierungsrat Becker said. It was the highest position they could achieve in the Navy. Most of them had grown up in the fuel business. "These jobs were very highly thought of by officials and assignment to them was considered a reward for faithful service - a 'cushy' job," he added.

In addition to the fuel storage installations reported here, the great need for crude oil made it necessary to establish a great number of smaller fuel depots, where the seven different kinds of crude oil were mixed into the final fuel products used by the Navy.

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Kiel, Flensburg and Swinemünde (in Germany), Gdynia (Poland) and Pillau (East Prussia) were the more important distribution points in the Baltic area. Wilhelmshaven, Achim, Cuxhaven, Bleckede, Nordholz and Farge were the important ones in the North Sea Area. Trondheim, Narvik-Alta and Kirkenes (Arctic Ocean) were the major distributing points in Norway. Hulks, barges and lighters were used to store diesel oil for submarines at the many ports in Norway where the storage facilities were not available on shore. No information is available on fuel storage in the Mediterranean, Aegean, Adriatic or Black Sea areas. Testimony by persons interrogated has indicated that:

- (a) Fuel was shipped over the Alps from Germany and purchased in Roumania to support German vessels operating in the Mediterranean and Adriatic. It was apparently placed in the Italian naval storage system, from which German units made withdrawals.
- (b) Fuel purchased in Roumania was also used to support naval vessels in the Black and Aegean Seas. The Aegean forces were supported from the Black Sea bases, through the Dardanelles, by logistic support ships operating under orders of Adm Qu III. Leased storage facilities at Varna and Burgas were apparently used.
- (c) There were two captured tank farms in the Far East; one at Penang, one at Batavia. Most of the U-boats operating in the area, however, were fuelled by blockade runners, raiders and, in isolated instances, by captured or Japanese tankers. U-168 fueled only at Penang and Batavia. No oil ports, such as Palembang, Hiri, Sandakan, Balikpapan or Tarakan were used. Prior to the sinking of the two tankers CHARLOTTE SCHLIEMAN and BRAKE, all German submarines on patrol in the Indian Ocean were fueled by them. After they were lost, no other tankers were available for servicing vessels in that area.

Distribution

The Navy had its own railroad tank cars, inland water barges, lighters, motor tank wagons, etc. They were partly chartered or requisitioned for

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transporting fuel from the refineries to the main installations (blending/storage plants). RAdm Adam said that there were about 600 rail tank cars and a lot of small inland water tankers under the direct management of the Navy.

The tankers, etc., were allocated to the several logistic support departments (see Organization of the Navy). Commanding officers of those departments, normally engineering officers, worked closely with the main installations and the sources from which they received their fuel. For taking fuel into the main installations, Adm Qu III had under its direct management:

- (a) The logistic support department, Kiel;
- (b) The logistic support department, Wilhelmshaven;
- (c) The logistic support department, Gdynia;
- (d) The logistic support department of Naval CinC France
- (e) The Trossschiffverband (a commercial shipping organization).

In this connection RAdm Adam stated:

"This Trossschiffverband was a shipping company with a lot of large and small tankers. Its task was to supply ships at sea with fuel, ammunition, water and provisions. Furthermore, it had to carry out any required transport of liquid fuels, where the regular naval tankers belonging to the various logistic support departments could not fulfill this task. The logistic support departments had to transport fuel from refineries, etc., to the main installations. They got their instructions from Adm Qu III about how much was to be transported from where to where.

"The various components were blended at the main installations. The fuels were then transported to the sub-installations in the various countries, for instance Norway, Denmark, France, Netherlands, Belgium and Italy. The larger tankers for overseas transport were managed directly by Adm Qu III, in Berlin, because it was necessary to work in close connection with the Operations Staff (1 SKL). It might be of interest that at the time the battleships SCHARNHORST and GNEISENAU were operating in the Atlantic, 35,000 tons of marine fuel oil per month was made available to them by eight or nine tankers operated by the Trossschiffverband in close connection with Adm Qu III and Naval CinC France in Paris.

"On shore we had the Army organization, the Transport Command, which was responsible for rail and inland waterway transportation. It worked closely with the railroad authorities. The Air Force, Navy and Army submitted their demands to it and it had to furnish the transport. Responsibility for the transport of all fuel overseas rested with the Navy. The Navy had to transport the liquid fuels for the Army as well as for the civilian economy in the tankers owned by the Navy. One of the Air Force squadrons, the HERMAN GOERING, had its own tanker fleet."



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The number of tankers employed, their tonnage and other information regarding actual distribution of fuel at sea by the logistics support departments are contained in Chapter V. Information regarding the capacities of the regular Navy logistic support vessels are lacking, except in the case of the supply ship NORDMARK. She carried:

Diesel	8,885,150 Kg (approximately 66,300 U. S. bbls.)
Marine fuel	2,754,200 Kg (approximately 18,360 U. S. bbls.)

Fuelling at sea

All logistic support vessels and tankers were designed to refuel by two hoses running from the stern of the fuelling ship to the vessel being fuelled. This practice of refuelling over the tanker's stern, according to RAdm Schubert, had the tactical advantage that, in case of emergency, all connections with the tanker could be cast off immediately and the fighting ship would be ready for action.

The Navy's concept of mobile support was that each large fighting unit should have its own tanker/supply ship. In this connection Flottenintendant Wulff stated:

"The bunker capacity of a pocket battleship was about 3,000 tons and I should say the consumption, at 19 knots, must have been 60 tons of diesel fuel per day. This means that they could cruise about 50 days on their own bunker capacity. The tanker/supply ships carried about 11,000 or 12,000 tons of diesel oil. When you add the two together, the cruising radius of a pocket battleship was practically unlimited."

Accounting

In 1939, procurement, storage, distribution of and accounting for fuel was a responsibility of MarRuest/K. The dockyards at Wilhelmshaven and Kiel were the field agencies which carried on this work for MarRuest/K. In 1940, however, a reorganization of the Admiralty was effected and this responsibility was transferred to AdmQu III. The Logistic Support Departments at Kiel and Wilhelmshaven were established at that time and assumed responsibility for storage, distribution of and accounting for all fuel, except coal and lubricating oil. These items were managed by the supply centers at Wilhelmshaven and Kiel respectively. Procurement contracts

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or reallocations of fuel allowed to the Navy by OKM/Rue W1 and pricing of fuel in the supply system was performed in the Admiralty by Adm Qu III.

During the war, statistics on fuel issues and accounting for rationed fuel, mined or produced in Germany, were assembled and performed by three commercial firms, the Montan Mining Union, at Berlin, the Schiweg Company at Essen and the Von Appen Company at Hamburg. A fourth company, Ruminol, maintained statistics and accounted for Roumanian oil purchased direct by Adm Qu III or made available to the Navy by OKM/Rue W1 or Speer Ministry. DKG (German War Shipment Corporation) maintained statistics on fuel issues to Italy and submitted them, under the mutual aid system of accounting to OKM/E, thence to the Reichsbank.

Before the war, when fuels and lubricants were first received in the Navy's supply system (at the reserve or distributing tank farms), they were handled like any other item of stock, i. e., the tonnage or gallonage was taken up at its priced value on the books of the dockyards. Total quantities in store and their value was reported monthly to MarRuest/K. When war broke out, however, and the reorganization referred to above took place, prices were dropped.

Each fuel depot reported its issues daily, and anticipated issues for the succeeding day, to the logistic support department having cognizance over its activities. Quantities on hand, issued or expected to be issued were recapitulated by these departments. Those recapitulations were submitted weekly to Adm Qu III, the Engineer Inspectorate and the proper accounting/statistical firms. Reports and the usage factors developed by the Engineering Inspectorate were the basis upon which all Navy reallocations were made.

Prices of fuel were controlled and established by the Reichspreispruefstelle (National Office of Price Control) at Hamburg during the war. It was said that there was little variation in fuel prices.

The Navy Budget Office (OKM/E) allocated the funds with which the Navy financed fuel procurement and production. Adm Qu III obtained bids from and made contracts with the various coal owners and navy-sponsored

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and other refineries and mixing plants to produce its synthetic fuels. It also purchased, through the firm Ruminol, crude oil from Roumania and other countries and consigned it to the refineries and blending/storage plants. OKW/Rue W1 determined the amounts it could purchase or produce (see chapter on Procurement). Bills for coal or shale oil acquired by the Navy were paid by Adm Qu III at the controlled price.

In special cases where certain coal products, such as residuals of tar, oil or coal, were needed by the Navy only for blending certain fuels, separate contracts were let. The prices negotiated in such instances, were, of course, not subject to price control. Ruminol paid bills for crude oil obtained abroad and submitted its own consolidated bill to Adm Qu III for payment. Costs of crude oil purchased abroad varied with production costs in the countries in which it was produced. It was said, however, that after German troops occupied the countries involved, such price variations were controlled, insofar as it was politic to do so, by the German authorities.

Issues to forces afloat were made by the distributing fuel depots on the basis of a combined requisition/invoice. When issue was completed, the signed invoice showing quantities issued was sent to the appropriate logistic support department, which in turn sent it to the Main Accounting Department of the naval dockyard, where issues were recorded and assembled for the annual fuel return made to Adm Qu III.

Aboard ship, quantities were verified by the engineering officer by sounding and temperature conversion, and entered in the engineering log. Daily consumption figures, speeds and their duration were also entered in this log. Logs were forwarded to the Engineering Inspectorate, where receipts and expenditures of all ships of one class were recapitulated, and usage factors developed.

Summary

The Navy used nine kinds of fuel, viz.:

- (a) Crude and shale oil purchased abroad, used as a base in blending all liquid fuels,

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- (b) Refined marine (black) fuel oil, used by all warships and oil-burning merchant vessels, except pocket battleships and submarines,
- (c) First grade refined diesel oil, used by submarines,
- (d) Second grade refined diesel oil, used by pocket battleships and in some cruisers' auxiliary motors,
- (e) Third grade refined diesel oil, used by diesel driven auxiliaries and merchant vessels. (While the records studied make no mention of other vessels using diesel oil, since Germany led the world in the diesel engineering production field, it appears logical to assume that many small craft and naval trucks also used this fuel.)
- (f) Gasoline, used by small battle units and passenger vehicles,
- (g) Coal, used by most of its minesweepers, trawlers, harbor defense boats and shore establishments,
- (h) Peat and wood, mixed with coal, used by small craft during the last months of the war only,
- (i) Peroxide of Hydrogen ( $H_2O_2$ ), used to increase explosiveness of first grade diesel oils and to attain high speeds in submarines.

In addition, it had 22 kinds of lubricating oil and seven kinds of grease in its supply system.

Fuel and fuel mixing ingredients were rationed during the war. OKW/Ruo W1 allocated to the Navy its share of all crude and shale oil purchased abroad and all oil chalk and the various types of coal and coal products mined and developed in Germany. These allocations were made available to Adm Qu III.

The Navy Budget Office (OKM/E) allotted the money necessary to subsidize German commercial firms in the production of coal and coal products and to pay for these products and the Navy's share of crude and shale oil purchased abroad.

Adm Qu III made all contracts for the production of fuel and fuel products, for the blending of crude oil with these fuel products and for other work in connection therewith, and settled all bills resulting from such contracts.

Rumol, a civilian firm, imported all crude oil obtained for the Navy abroad, paid the bills for it and submitted its consolidated bills to Adm Qu III for settlement.

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After they had been properly blended, liquid fuels and lubricants were taken into the supply system, where they were carried on the books at no price. Solid fuels and greases were also taken into the supply system on the same basis.

All allocations of stocks of liquid and solid fuels, lubricants and greases were made within the Navy by Adm Qu III. The fuel program of the Navy was also administered by that organization. Its field agencies performed the work.

The logistic support department at the naval dockyards at Kiel, Wilhelmshaven and Gdynia and the logistic support unit under Naval CinC France were charged with the receipt, storage and distribution of fuel and boiler water locally, and the dispatch of such items, via tanker, to seagoing units and foreign bases.

Prices for fuel mined or synthetized in Germany were controlled by the National Office of Price Control. Prices for fuel procured abroad were negotiated by German forces occupying the country from which it was obtained.

Three commercial firms maintained statistical data regarding receipts and issues and accounted moneywise to Adm Qu III for all fuel in the naval supply system.

Fuel distribution depots reported issues and anticipated issues daily to the logistic support departments, which in turn made a consolidated issue report weekly to Adm Qu III.

Adm Qu III made a priced fuel issue report annually to the Supreme Court of Accounts, via the Admiralty pre-audit office.

Major Problems and Experiences Related and Suggestions Made by Persons Interrogated

Several officers and officials were asked about their experiences in handling fuel afloat and ashore, and what changes, if any, they would make if they were again confronted with the same problem. They were also asked if they had any further information that they believed would be of interest to the American Navy. Their replies, where they have not already been included in the text, are recorded below.

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Oberregierungsrat Boeker said:

"Fuel delivered to the Navy had to have a special specific gravity, designed to make it heavier than water so it would sink when a ship was hit. The mixing process was controlled by a top chemist at the Chemical and Physical Department at Kiel, a Dr. Herman Meyer, now employed by the American Navy (Navy Boiler Technical Laboratory, Philadelphia). This same man has information regarding the viscosity and other properties of the 22 kinds of lubricating oils used by us, especially the "Heizdampf Zylinderoll" (superheated steam cylinder oil).

"Our largest rail tank cars were approximately 15,400 gallons (22 tons), with the exception of some experimental cars of 21,000 gallons (30 tons). They were about twice the size of our regular tank cars (15 tons).

"The main difficulty with these experimental tank cars was not so much the volume of the cars as the weight on the tracks and particularly the necessity for keeping the oil at temperatures high enough to maintain fluidity. These tank cars had only one unloading hatch, where the fuel was to be pumped out, and when the fuel was cold, pumping was difficult. This problem was solved by installing special metal hoses, running in spirals inside the tank, into which was introduced hot steam. This made the oil thin enough to unload it.

"The difficulties of getting clearances through tunnels, on bends, through towns, etc., were solved by subdividing the experimental cars into three partitions, each being supported by a special axle, so that sharp bends or other obstructions along the rail tracks were avoided. These experimental cars were developed by WiFo (Wirtschaft Forschung) an organization working for the Air Force.

"If I were directed to establish a fuel handling system again, with no restrictions imposed upon me, I would make no changes in the system we used during the war. In procurement, however, I think that it would be better if the procuring officers, or procuring establishments of the armed forces, had more freedom in obtaining their allocations of fuel. During the last part of the war, heavy friction and unpleasantness developed within the armed forces because of competition between the three services in their dealings with the various governmental departments in their attempts to get the oil they needed. In practice the service with the greatest political influence got the major share of the fuel, regardless of the operational needs of the others.

"The whole fuel procurement and supply of a country cannot be looked at from the aspect of the country itself, but has to be regarded from an over-all view, in this case from the standpoint of the Western World. Obviously the American oil industry has recognized the need for controlling the distribution and supply of the Western World. About 19 big American oil companies have now merged and probably will control oil

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procurement and supply in their own sphere of influence. Your forces here in Germany (1951) should not be provided with the end product of high octane fuel, for your military needs, from America. The crude oil products should be shipped to Germany, where, after being refined in German plants, they could be finished to support your forces. I would like to say that I have conducted negotiations with the British, the Benelux Countries and Norway on this subject. The British are considering my proposal. I might also add that discussions have also been entered into with American authorities. There are seven cracking plants left in Germany. The refineries are: Esso at Hamburg, Shell at Harburg, Vacuum at Bremen, Deurag-Norag at Miesburg, Gelsonberg at Gerssenkirchen, Schalvin at Gelsenkirchen and Wesselling near Bonn."

Dr. Jannsen stated:

"If U. S. naval units were stationed here in Germany and difficulties in fuel supply from overseas should arise, it would be necessary to procure oil to supply the ships from European bases. Then the type of fuel oil which could be obtained here in sizeable quantities would be the type of oil we had to use towards the last stages of the war, after the scarcity of other types of oil had increased, the so-called pitch fuel oil. With the qualities shown in exhibit #11, and the special handling procedures required for this type of oil (these documents are in the files of this project), it is very probable that not enough normal diesel oil would be available and it would be necessary to add gasoline to diesel oil to produce what in our Navy was called 'sonder diesel Kraftstoff #2' (special diesel fuel #2).

"We had an interesting experience during the war, when our submarines were stationed in France. The boats lying, entering and leaving the ports in the Gironde and Loire estuaries often experienced breakdowns of their fuel pumps on diesel engines. The reason for this was that the water in these rivers contained a very finely dispersed mud, which entered the diesel oil and thus destroyed the pumps. In the outside tanks of the submarines, the diesel oil floats, so to speak, on the water. The amount of water entering the tank increases as the oil is used up. The water which was carrying oil in these tanks was infiltrated into the oil and the tiny particles of the mud destroyed the pumps. It also happened when the boats stayed in the submarine pens. We avoided this by closing the bottom flaps of the tanks when crossing over these mud areas. When entering French ports, this condition should be observed.

"Lots of things are obvious today. Tank farms are now all underground. One thing that surely would interest Americans is that if there is going to be a war, one can never begin too early to enforce rigorous methods to keep down waste, particularly in oils and oil products. During the war, the German railroads were a striking example of how a nation can cut down waste. Our railroad system

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used vast quantities of cylinder oil, which, of course, was very scarce. They tried to avoid a breakdown of transport by mixing a very heavy cylinder oil. These regulations had such a striking effect that the railroads suddenly required less than half the amount of cylinder oil they had used before.

"Another procedure was to purify all types of used oil. As a result of these purification methods, there was always sufficient oil of the various types available. I think the secret of our success, despite the scarcity of fuel and oil, lies in the systematic and thorough training of our technical personnel in naval colleges and schools. There were special navy regulations for fuel oil, lubrication and boiler feed water. Special chemical courses were held in these schools. These supplied officers and non-commissioned officers with the fundamental knowledge necessary to carry out our program.

"We should have expanded our hydrogenic and Fischer-Tropsch plants long before the war and we should start to build these industrial plants again now.

"One of our big disadvantages was that, in the whole production sector, the organization, and especially the leading top experts, was changed so frequently and the experts discharged. This produced nothing but friction and difficulty. Even if a person blunders once in a while, he should not immediately be replaced with another person. The state of any personality, particularly in the production sector, is decisive. (The last sentence apparently means that the removal of any top executive within any field of production is of such great importance that frequent changes cause damaging disruptions and should be avoided wherever possible.)

"Another great headache of ours was that the fuel depots always asked for more fuel than was necessary for their requirements. I think it should be possible, from the establishment of these depots, to limit the fuel they can stock, so that they cannot exceed the amount of fuel or petroleum products actually required.

"I would also like to state that because of having to furnish the required amount of fuel, and also the task of testing the quality of the fuel delivered, the situation was very difficult. The Navy, as a carry-over from peacetime, was very spoiled regarding the quality of its fuel oil, especially in the matter of viscosity, which was below 10 degrees Engler at a temperature of 20 degrees centigrade. Our burners were not able to burn oil with a higher viscosity. As a consequence, when an order for fuel for a cruiser was placed in foreign countries, it was immediately known that German units were on their way there.

"The many fuel sources which Germany had at its disposal varied greatly in their products' quality and these, in turn, necessitated a firm supervision over the mixed final product. However, the problem was solved 100 percent when war broke out. I was informed by an American naval officer, Lieutenant Richard C. Aldrich, US Navy, a member of the Naval Technical



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Mission in Europe, who interrogated me at Gluecksburg in June 1945, that the same difficulties with mixing different types of fuel forced the American Pacific Fleet to be laid up 14 days because they carried out a mixture between Californian and Gulf oil, and that it could not be used on account of asphalt residues. During the war we had this accident once. Shortly before the intended sailing of the battleship BIS-MARCK, it was discovered that the oil burners were full of 'oil deposit' and all the bunker walls had to be cleaned up. Thereafter, any new type of fuel oil was thoroughly analyzed, according to a special procedure as shown in exhibit #8." (On file with project documents.)

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## CHAPTER VII - TRANSPORTATION

Naval logistic operations are dependent upon the adequacy of supplies and facilities inherent to each element of logistics and the use which is made of them. If extra importance can be given to any one of these elements it would without doubt be placed upon transportation. With this in mind it is essential that the study of the transportation systems of Germany and other countries of Europe, as related to the specific problem of furnishing logistic support for naval forces should be developed to a point commensurate with the importance of this element of logistics.

To achieve this, the following report draws upon the vast amount of information contained in intelligence data and in transportation studies conducted during and after the war, and uses them to outline a broad background of transportation experience and administration in Germany and occupied Europe. Superimposed upon this background, and pertinent to the transportation needs and functions of the Navy itself, are the statements of officials and officers who were closely connected with naval transportation problems. Related research data extracted from OKW and German and British Admiralty files has also been included. With these materials, it is desired to show the Navy's utilization of railroads, inland waterway systems and highways which were controlled by agencies outside the naval organization, and also to show the job performed by sea transportation, which for a period during World War II was the Navy's sole logistic responsibility to the other armed services.

Despite traditional thoroughness of the Germans, the material state of their transportation system at the outbreak of war left much to be desired.

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The shift from peace to war enormously multiplied the burden on available facilities. The change-over of the German economy, the effects of the blockade on ocean shipping, the urgent demands of OKW, the supplying of newly conquered territories and the effects of air raids and sabotage all added to the strain upon a system, which from the beginning provided a very narrow margin of safety. The shifting of captured transportation elements from one country to another and their integration into the German transportation system provided temporary relief in some instances, and extended the system to the far corners of the European continent. The advantages of these conquests, however, were offset by several disadvantages. Thus while the booty in transportation equipment taken from France and Belgium was large, it was small in such countries as Holland, Denmark and Norway and necessitated German contributions of essential freight and transport equipment which had been inadequate from the start.

During the depression of the 1930s, Germany and the rest of Europe allowed railroad equipment to deteriorate seriously. Therefore, when German armed forces began to roll over their own transportation routes and those of occupied countries, they found that the transportation facilities available to them were considerably below the standards of perfection which had been set by the German military theory of war. Furthermore, Hitler, in the heat of his manipulation of the nation's economy to achieve a "Greater Reich" had sacrificed the railroads so that he could realize the fulfillment of his own ambitious plans.

With gigantic miscalculation and complete disregard of the warnings of Von Schlieffen and Ludendorff that Germany should reorganize its railroads, he deliberately neglected them in order to perfect his scheme for a "Volkswagen" (peoples car) and extensive "autobahnen" (superhighways). Firmly counting on a brief motorized blitzkrieg, he built across Germany the most extensive strategic motor roads in the world, while neglecting the development of the railroad system. It was his fixed idea that communication with and between the fronts could best be handled by motorized units. This had one great drawback. The gigantic highways became worthless

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when Germany later ran out of motor fuel.

The inland waterway system of Europe had been kept in good condition. Unlike the state-owned railroads and highways, it had been operated under private ownership. When car shortages developed during the Russian campaign and fuel shortages threw additional loads, otherwise carried by trucks, on the already heavily burdened railroads, the inland waterway companies stepped in and saved Germany's transportation organization from collapsing.

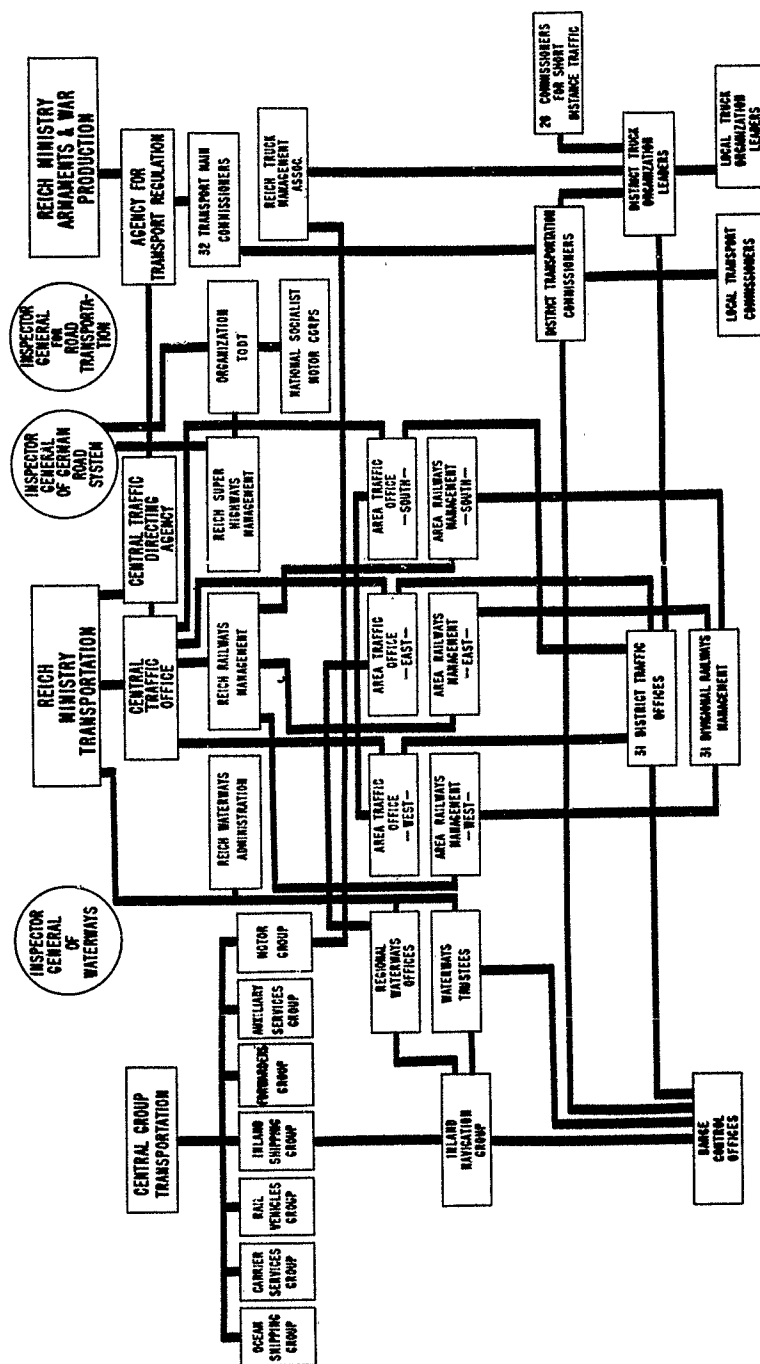
The merchant marine of Germany and the countries overrun by its forces carried the coastal tonnage of the Baltic, the Black and Aegean Seas and the Mediterranean. The British fleet kept it fairly well immobilized in the Atlantic, but protected by naval escort, it was able to carry many thousands of tons of war materials to Norway, the Lowland countries and France. As the blockade tightened, many of these ships were shifted from the Atlantic to the Baltic, the Mediterranean, Aegean and Black Seas to carry on their jobs.

Organization

Germany, even before Hitler's rise to power always favored an organization in which there were only a few ministries, which represented the whole of the federal administrative business. Thus, in the Weimar Government, the German Chancellor when conferring with his ministers was within technical reach of every activity and agency of the government. When the National Socialists came into power they were careful to maintain this efficient organization. As a result, it was a comparatively simple evolution for them to integrate further and to centralize those elements of government and private business which they desired in the Nazi plan of government.

Under this plan all existing private economic associations were brought under the influence of a central organization. They were legally constituted as private associations, but membership was made compulsory and the government dictated the form and functions of the new set-up. This was accomplished under the law of February 27, 1934, which promulgated the "organic reconstruction" of Germany's economic system. The transportation

**GERMAN TRANSPORTATION SYSTEM**



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group was made one of seven under the Ministry of Economics. Under a law of September 25, 1935, however, it was separated from the other groups, called the Ministry of Transportation and subdivided into seven functional groups:

1. Ocean shipping
2. Inland shipping
3. Motor transport
4. Carrier service
5. Railway vehicles
6. Forwarding agencies
7. Auxiliary transport services.

Each of these groups was further divided into regional and sub-regional divisions.

The basic feature of this organization was that transportation was placed under the Ministry of Transportation, while under the old scheme, the original transportation group was included with others, under the cognizance of the Ministry of Economics. This change was the natural result of the dominating position held by the national railroads in the transportation system.

An organization chart of the German Transportation System appears on page 294a, and on it the flow of authority for all agencies, except the Navy and/or Reich Maritime Shipping Commission is shown. As explained under the section Sea Transportation in this chapter, the Navy, from Mobilization Day until 1942 had complete control over all sea transportation. From 1942-1944, this responsibility was exercised by the Reich Maritime Shipping Commission. From 1944 to the end of the war, responsibility for sea transportation matters was split between the Maritime Shipping Commission and the Navy.

Study of this chart will reveal that the Nazi Government did not rely on private groups to organize transport facilities. Decisions in policy matters regarding transportation were made by the government. Therefore, on September 14, 1940, an organization was established to effect close co-operation between railroads, waterways, and road traffic in peace and war. To attain this, the agencies created were given complete power to specify the type of transport to be used and the routes to be followed. Under their direction, highway transportation was confined to local traffic,

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collection and delivery work, and efforts were made towards diverting as much traffic as possible from the over-burdened railways to the inland waterways.

Controlling this new organization was the Central Traffic Office, the head of which was a railroad official who also presided over the heads of other departments of the ministry.

The Central Traffic Office issued its orders to three Area Traffic Offices. These were located in Essen for the western area, in Berlin for the eastern area, and in Munich for the southern area. The staff of the area traffic offices consisted of representatives of the leading trucking and canal barge companies and of the state-owned railroads in the area. The chief was a railroad official. This not only demonstrates the dominance of the state-owned railroad system over the other transportation facilities, but also suggest that it dictated the policies of the new agencies.

The area traffic offices were further subdivided into district traffic offices, 31 of which were established within Greater Germany. Here again, their staff was composed of representatives of the trucking and canal barge companies within the district, and these offices were headed by railway officials. Their task was the regulation of traffic within their districts, the quick loading and unloading of goods, and the implementation of the directives issued by the area traffic offices.

In June 1942 a Central Traffic Directing Agency was established. Its headquarters were in Berlin. The members of this new agency included one representative each of the coal, lumber, building material, food supply and armament industries, as well as one for industry in general and another for inland waterways navigation. The tasks of this new organization were chiefly the loading and unloading of cars and barges. Here again, the head of the organization was a senior railroad official.

Dr. Albert Speer, the Reich Minister of Armament and War Production, assumed a steadily increasing influence over the transportation organization. On July 17, 1942 he established an Agency for Transport Regulation and appointed 32 Main Transport Commissioners, whose offices were attached to "Committees" and "Rings", composed of engineers. These organizations had originally been created by Speer to expedite armament production. "Committees" and "Rings" existed for each of 32 raw materials and products which had a

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special bearing on the conduct of the war. These transport commissioners had the power to intervene in the transportation of goods within their sphere of responsibility whenever a more efficient organization could effect savings in cost or time. Under these main transport commissioners, District and Local Transport Commissioners' offices were organized. The extensive power of this new Speer organization over the German transportation system practically eliminated the power previously exercised by the Minister of Transportation. The main transport commissioners could determine the maximum distances over which certain articles could be shipped. They could request industries to cancel the contracts of their old customers if they required long distance hauls. They could even force the closing of factories which were unfavorably located, or cause the reopening of closed plants which were located more suitably. They could shift rail transport to water transport or vice versa, and influence the placing of government orders so as to eliminate long distance hauls. The commissioners could also initiate measures by which seasonal shipments were evenly spread out over the year. They organized the co-operative distribution of raw materials, fuel, etc., as well as the co-operative shipping of semi-finished and finished goods. Like the Central Traffic Directing Agency, they were also responsible for expediting the loading and unloading of railway cars and barges.

In order to effect additional co-ordination in the field of transportation, the transport main commissioners were directed to make suggestions for the even distribution of transportation and the elimination of unnecessary shipments and wasteful methods. The Agency for Transport Regulation delegated the task of rationalizing shipments to the various self-administrative bodies, such as Economic Groups and Specialty Groups, as well as to various industrial associations. Each of these groups also appointed transportation experts.

In addition to the advice of all these traffic experts who were attached to the various governmental agencies and self-administrative bodies of industry, the District Transport Commissioners made suggestions on methods designed to reduce transportation requirements and to increase transport efficiency, as well as supervising the execution of all such measures within their respective districts. Local Transport Commissioners were appointed by



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the Armament Commands, agencies which had been created by OKW in 1934 and taken over by the Speer Ministry in 1942. These commands are referred to in Chapter VI in connection with armament production

The Four Years' Plan Office, Goering's special domain also participated in the German transportation organization by appointing a Traffic Commissioner to each area traffic office. They were assigned the task of co-ordinating the work of all agencies dealing with traffic problems.

Thus it will be seen that the transportation system was highly over-organized, with overlapping agencies and overlapping responsibilities. The fact that the Minister of Transportation, the Minister of Armament and War Production and the Director of the Four Years' Plan all had representatives in the same organization would normally lead Americans to believe that only confusion and frustration could result. However, according to officers and officials interrogated on this subject, this was not true. Apart from the interruptions incurred by rail car shortages and bombing, the organization functioned efficiently and smoothly as far as the shipment of military personnel, equipment, material and supplies were concerned.

The reason for this, they said, was that the Mobilization Plan of 1938 provided that the High Command of the Armed Forces (OKW) should co-ordinate the use of the transportation facilities of Germany and the countries occupied by its forces with the needs of the civil economy of those countries through regular and frequent conferences with the national ministries controlling them.

To facilitate this, a co-ordinating body known as the Home Staff (OKW/-WFStd/Heimstab) was established within the OKW. This body, working in conjunction with the national agencies which controlled railroad, inland waterway and air transportation facilities in Germany and the occupied countries, was the final authority on transportation matters within the armed forces.

AdmQu III was the organization which compiled the Navy's needs for rail, air and inland water transportation. All naval activities submitted their requirements for such transportation to this organization. It submitted them to OKW/WFStd/Heimstab. That body, after conference with the Ministry of Transportation concerning civil and industrial needs, and consideration of the requirements of the Army and Air Force allotted so much rail, air and inland

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water transportation monthly to the Navy. Requirements in excess of this allotment were stated separately by AdmQu III to OKM/WESTd/Heimstab and, according to conditions obtaining at the time, were approved or disapproved.

AdmQu III apportioned the Navy allotment of rail, inland water and air transportation among its chief users and, through its transportation field representatives and logistic support departments administered the transportation(except sea transportation) program for the Navy.

Thus, railroad transportation was managed:

- (a) At the national level by the Ministry of Transportation, assisted by the Ministry of Armament and War Production and the Office of the Four Years' Plan.
- (b) At the Department of Defense level by OKM/WESTd/Heimstab.
- (c) At the Navy Department (Admiralty) level by Adm Qu III.
- (d) At the operating level within the Navy by field representatives of Adm Qu III at shipping points and the logistic support departments of the main naval bases.

The Navy had some railroad locomotives, tank cars and other rolling stock of its own for use in the Wilhelmshaven-Kiel area. This equipment was controlled exclusively by Adm Qu III and its field representatives.

The Railroads

Shortly after hostilities broke out, it became apparent that the long neglected state-controlled railroads were not equal to the demands upon them. In the prewar years, the Nazi Party with all its schemes for total mobilization had built considerably fewer locomotives than had been built in the years before the First World War. Before 1914 more than 1,000 locomotives had been built annually in Germany; but in 1938 only 60 locomotives were produced. In 1913 Germany had a total of 28,000 locomotives and 704,000 freight cars while in 1939 it had only 22,000 locomotives and 670,000 passenger and freight cars. During the initial phases of the war, the number of locomotives and freight cars was increased by an intensified production program and by the seizure of rolling stock in occupied countries. This was by no means sufficient to fill the bill, however, and Germany continued to suffer from Hitler's disregard of the importance of the railroad system.

Germany worked desperately to correct and compensate for the errors that had been made. Greedily she snatched the railroads of conquered and

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collaborating nations and integrated them with her own. Huge programs of integration and coordination were effected. The transportation systems of Austria, Luxemburg, Czechoslovakia, Lithuania, Poland, Belgium, France, Yugoslavia, Russia, Holland, Denmark and Norway were all taken over or controlled. Even the railroads of the German allies did not escape Nazi control. As early as 1941 all large terminals in Italy had come under the control of German railway officials. By the beginning of 1943 the Germans assumed complete control of the Hungarian railways.

Requisitioning of locomotives and railway cars from occupied and allied countries was one of the principal means whereby Germany was able to increase her transportation capacity after war broke out. It is conservatively estimated that up to the end of 1943 she took from these countries over 12,000 locomotives and about 400,000 railway cars. This amounted to about 60 and 65 percent respectively of the total number in Germany before the war. But this was still not enough to meet the tremendous demands of war, and further attempts had to be made to rectify the prewar errors.

Extensive regulations were issued to improve the utilization of locomotive power and car space, and to accelerate the circulation of rolling stock. The same arrangements were made all over Axis Europe, either by the German authorities or by the governments and railway administrations of the conquered and satellite nations. In all countries freight cars had to be fully loaded, and were even overloaded by one or two tons. Agreements concluded between the railway administrations of Germany and other countries, Roumania and Bulgaria allowed overloaded cars to circulate on foreign lines. Demurrage charges were raised, time limits for loading and discharging shortened, and penalties for tardiness introduced throughout German controlled territory. Also to prevent terminal congestion, special agents were appointed to organize the clearing of railway yards.

Passenger traffic was discouraged by higher fares and by propaganda and other means. In many regions, except for the regular commuter traffic, trips were permitted only in case of urgency. As a matter of course, travel restrictions had the additional purpose of controlling the population of a subjugated country. In Norway, in the spring of 1942, trips of more than 100 kilometers (62 miles) depended on a special permit, application for which

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had to be made a week in advance, and in April 1943 a complete ban was imposed on travel outside a 30 kilometer (19 miles) radius of the principal cities. In Poland, Germans enjoyed priority on the railroads, but Poles could use lines only for professional trips. In occupied Russia, a permit had to be procured for every trip, and in some regions those desiring to travel on what were officially known as lice-free trains were required to produce a certificate that they were not louse-infected.

Transportation facilities saved by the reduction of passenger traffic were used to move freight, but this should not be overated. Every country controlled by Germany was working for the armed forces. Consequently there was much essential travel of workers, businessmen and officials to say nothing of troop movements, furlough trips and the conveyance of battle casualties. As the railroads were unable to satisfy all needs in the field of freight traffic, cargo space everywhere was allocated. Shipments essential for the conduct of the war were granted preferential treatment, according to the degree of their urgency. The civilian population had only a deferred share in transportation.

The weaknesses in the transportation system caused by the neglect of the railroads became particularly apparent during the first months of the eastern campaign. The captured territories there had yielded no railroad stock, as had been the case in the west. Lines of communication had lengthened considerably. The railroad equipment could not be stretched. In order to supply the armies and to maintain production in the east, the Germans started an eastward migration of equipment. German locomotives and cars were sent to Poland and Russia, and French, Belgian and Dutch rolling stock was sent to central and eastern Europe. The Germans obtained possession of the railway equipment simply by requisitioning it.

Transportation facilities were particularly strained because of this necessary supply of a 2,000 mile front. In occupied Russia, car orders for non-military use were classified by railroad authorities according to their urgency and passed on to the regional offices of Speer's Agency for Transport Regulation, where the number of cars available was ascertained and allocated. A similar procedure was employed for shipments from Germany to occupied Russia.

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At home, the Germans attempted to combat this transportation crisis by shortening their transport lines. They fixed maximum distances for the shipment of goods, and sought to induce every firm to buy only from the nearest supplier. This policy, which was quite successful, was extended to Europe as a whole. It increased efficiency in operation, and a thorough overhauling of the existing practices of shipping goods effected further savings of transport means. Extensive research was conducted into traffic relations. The traffic of shipments from producer to consumer was thoroughly explored. The statistical data thus obtained made it possible to prepare special maps showing the status of traffic relations of each important group of goods. When these maps were completed, they were used to demonstrate the existence of uneconomical traffic routes such as so-called long runs (transport over unnecessarily long distances), counterruns (goods of the same kind being shipped in the opposite direction), and cross-runs (transport routes cutting across each other). At the same time, other maps were worked out showing the ideal transport routes for each kind of essential commodity.

After 1942, however, authorization was granted only to the most important and most urgent shipments. Less-than-carload shipments were excluded from the railroads, and had to be forwarded to the eastern front by way of the Baltic Sea. As a result, there were, according to German reports, many instances of damage and loss from lack of waterproof packing materials.

The crisis in transportation was further intensified by the fact that the war and the inevitable blockade of Germany threw all transport upon the land, and brought radical changes in the pattern of transportation. Traffic had to flow in different directions and had to serve different purposes. In peacetime the great bulk of traffic between Germany and central and southern Europe had gone by sea. Goods consigned to Constanza, Salonika and Piraeus had been shipped via the Atlantic and Mediterranean through Antwerp, Rotterdam, Bremen and Hamburg. When war broke out all these materials had to be piled on railways which were unsuited for them, not only in equipment but in design, since most continental railroad systems were built to run merely to and from harbors and not to span the continent.

Later as the war progressed, the transportation system was further

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affected by air raids. Rapid and frequently drastic improvisations had to be made because of raids and threats of invasion. Between April 1942 and March 1943 a total of 1,500 Axis locomotives were put out of commission by attack from the air. During the first half of 1944 the loss of locomotives due to destruction or capture by the Allies amounted to an estimated average of 400 a month, while those damaged were estimated to average close to 300 a month.

The heavy air attacks on all industrial centers resulted in great and increasing dislocation of industrial production, particularly where industry had been decentralized, and where the irregular arrival of component parts caused frequent interruptions in the work of industrial plants and even of whole factories. The most sensitive element in the rail system proved to be the automatic switch control installations, the repair of which required precision work carried out by special teams. Because of the frequency of air attacks, hand controlled switches had to be applied. This required a great number of specially trained personnel and seriously decreased the average speed of the trains and the capacity of the tracks.

In the Spring of 1943, the over-all transportation picture was brighter than during the last months of 1942. The mild winter and the shortening of the lines in Russia were factors in this improvement. A large scale campaign for the production of standardized locomotive and rail car building program, which Germany was forced to undertake at the expense of armament production were hampered by constant air attacks on locomotives and other rolling stock and yards. This gave cause for alarm, and the use of inland waterways was greatly expanded to reduce the strain on the railroads.

When important material or supplies were being shipped by rail, the service responsible for the shipment assigned special escort personnel. As air attacks on rail lines increased, the escort personnel was correspondingly increased. Finally, it became necessary for the Navy to create a special rail escort organization for this purpose.

Despite the fact that after the spring of 1944, the general railway transportation situation in Germany had become increasingly worse, transportation for purposes of war had on the whole been maintained. This was accomplished by:

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- (1) Requisitioning locomotives and railway cars from occupied and allied countries.
- (2) Reduction of railway traffic for purposes not vital by limiting the transportation of civilian passengers and goods for civilian consumption and use.
- (3) Transferring to waterways the shipment of certain bulk goods and in some districts the transportation of all goods.

Other important factors which account for Germany's ability to maintain her railroads for war purposes were:

- (1) Speeding up of the turnaround of freight cars by placing time limits on loading and unloading and requiring cars to be loaded at night and on Sundays and holidays.
- (2) Loading freight cars up to one or two tons above their prescribed carrying capacity.
- (3) Requiring freight cars to be loaded out over their buffers.
- (4) Using block trains for coal, potatoes and other bulk shipments which travel directly to a single destination.

The railway transportation situation eased in the first half of 1944, and there was a relative improvement. Four and a half million more railway cars than in 1943 were made available. This was made possible by a temporary decline in transportation requirements for war purposes because of the shortening of the eastern front. Accordingly to a report from the American Embassy in Bern, Switzerland, the total decline in railway transportation capacity from the peak in 1943 until the end of 1944 did not exceed 25 percent, in spite of Allied bombing, sabotage and guerilla warfare. A part of this decline was due to losses of rolling stock which could not be removed in time from former occupied and allied countries. These losses, however, were probably offset by the number of locomotives and railway cars requisitioned from other countries.

Other restrictions imposed upon the population, in order to conserve rail transportation for the war effort were the limiting of passenger transportation to a radius of 75 miles, general restrictions on mail and the reduction in rail facilities for evacuation of civilians. Ruthless though the many measures employed to conserve railway cars and locomotives may appear, they were some of the methods by which the logistic system of the armed forces was kept in operation.

As Germany occupied the many countries of Europe, the Ministry of Transport took over the railroads. They were administered by representatives of

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that ministry or by military transportation officers trained by it.

In the neutral countries, namely, Sweden, Switzerland and the Iberian peninsula, influence was exerted to make the neutral railway systems work to ease the strain on the German railway system. This was made possible by the fact that Germany was their most important customer. Switzerland, for example, placed its railroad system at Germany's disposal for through transportation of non-military freight. Neutral countries were also compelled to send their own railway cars into Germany for the shipment of German coal and other exports. The Spanish and Portuguese railway lines were limited in their usefulness because they had a different gauge.

The shortage of locomotives and railway cars became increasingly serious during the latter part of the war. Despite the suspension of a large number of passenger trains, serious difficulties became noticeable in the transportation of war materials and fuel. Example: At Hagen, 150 cars loaded with shells and grenades could not be transported because of a shortage of rolling stock. The factories in large industrial centers were obliged to transport material from one factory to another with trucks of their own. In February 1945, air raids had disorganized the greater part of the railway network of western Germany. After the massive attacks on Essen, Bochum and Gelsenkirchen, it was impossible to make expeditious shipments over the railroads. It was reported during this period that it sometimes took an entire day to travel 18-24 miles over the twisted mass of trackage in that area.

In 1937, German railroads had a network of approximately 34,000 miles. At the end of 1942, the lines directly operated and owned by the German State Railroads or under the supervision of either the Ministry of Transportation or military authorities had increased to about 99,000, excluding the 12-18,000 miles of Russian broad-gauge lines. Axis partners contributed another 29-30,000 miles.

Allied bombing was scientifically developed and extended to selected marshaling yards, repair shops and junctions. While the fighter planes concentrated on moving engines, bombers concentrated on railway centers, engine sheds and repair shops in France, Belgium and the Netherlands.



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Allied air attacks were concentrated on Germany's main transportation arteries, and carefully prepared plans were employed to batter the weak spots. The systematic destruction of communications was effected with so much success that Col. Gaul, when interviewed, stated:

"With the rearmament of Germany in 1933 the possible effect of air warfare was carefully taken into account. New factories and plants sprang up by the hundreds, and were as widely dispersed as possible. It goes without saying that camouflage and shelter were extensively employed. In addition, the traffic communication systems were expanded and completed. The autobahnen also had their place in this planning.

"The resulting decentralization of industry and depots served its purpose very well up to the end of 1943. Until then, although your air warfare increasingly showed its destructive effect, production still functioned very well. The output even increased up to the end of 1944. However, with the intensification of your air attacks launched from England, France, Africa, Italy and Russia, our traffic communications, not production, became the real factor of weakness in Germany's fighting strength and power of resistance.

"With your ever growing air superiority over the Reich, the bombings showed a clear system. The incoming intelligence reports proved that you very systematically cut at one time our north-south communications and then in a sequence of other attacks the west-east routes. By sticking to this system, you not only paralyzed the supply routes for the shipment of ready war materials and weapons, but you prevented the possibility of assembling various technical parts to the final product, for instance, an anti-aircraft gun, a plane or a submarine. As you know submarines were built in sections and parts all over Germany, to be assembled in the large dockyards. These sections, being too large for railway cars were shipped via canal to Hamburg. The frequent cutting through of the Midland Canal had a decisive effect on the assembly of submarines. Under your final total air superiority, the carefully planned decentralization of industry proved disastrous to armament production, because of its dependence upon supply routes."

The unprecedented attacks by air heaped tremendous burdens upon the German transportation organization, which was already suffering from a prewar system of railroad maintenance and improvement conspicuously out of step with German technical growth and preparation for war.

Despite frantic efforts to improve the situation through various methods, the operating margin of the transportation system became progressively smaller. Shortages of locomotives and rolling stock became increasingly severe. Bottlenecks became harder to break. All this had a direct bearing on civilian supply, evacuation measures, production of equipment,

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material and supplies and the offensive and defensive capacities of the armed forces.

The Navy, according to persons interviewed, suffered few ill effects through a crippled rail transportation system, except in getting supplies from inland supply depots to tidewater shipping points.

In 1951, the railroad stations and marshalling yards still showed the effects of allied bombing. Twisted masses of wreckage still littered some of the yards. Destroyed platform overheads had not yet been replaced. Trains, however, were running on regular schedules. First, second and third class accommodations in passenger trains were excellent.

An attempt was made to determine whether or not the gauge of eastern German rail lines had been changed to correspond with that of Russian railroads. Those persons interviewed, however, professed a complete lack of knowledge on this subject.

**Inland Waterways**

The extension of Germany's inland waterway system was promoted by the Nazi government not only for the sake of prestige, as has been claimed by some writers on the subject, but also for reasons of economic warfare. With Germany or even Europe blockaded, inland shipping, which is slow but cheap and suitable for mass transportation, could be a substitute for ocean shipping. When Allied bombing of the transportation system became effective, inland waterway shipping proved to be the only medium of transportation that could lighten the burden on the railroads, as well as alleviate the problem of an over-decreasing capacity of highway transportation due to lack of automotive fuel and tires.

The inland waterway system of Europe is extensive, and the German armed forces used most of it at one time or another during the war. Of all its efforts to overcome transportation difficulties, the most successful was the maximum utilization of this system of interconnected waterways.

A chart showing the main rivers of Europe and the canal systems interconnecting them appears on page 306a. The Rhine River, with its connecting waterways, is the most important inland water route in Western Germany. Flowing from Lake Constance in Switzerland to its delta in the

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Netherlands, it passes through Germany's most highly industrialized area. Near Frankfort, the Main River joins the Rhine. This river, the Main, has its source in southeastern Germany. Connecting it with the Danube River, via Wuertzburg-Nuernburg-Regensburg, is the Rhine-Main-Danube canal. At Strasbourg, another canal juts out through France connecting the Rhine with the Rhone river. The Mittelland (Midland) Canal completed in 1938 joins the whole network of canals from east to west and connects the Oder, Weser and Elbe rivers with the Ruhr industrial district, as well as with central and eastern Germany.

This network makes it possible for shipments originating in the industrial heart of Germany to be delivered by water to the Black Sea, the Mediterranean, the North Sea or to the Baltic.

During the war the Danube became the main artery between Central Europe and the Southeast. It surpassed in importance all other inland waterways, even the Rhine, as the shipbuilding yards and dock and shipping facilities of Budapest, Vienna, Bratislava and Regensburg were enlarged and all shipping on the Danube was placed under German control.

During the Middle Ages, the German rivers and canals provided the most efficient transport medium for the trade of that period. Long ago, the comparative ease with which this form of transportation could be improved and extended by the building of canals was recognized, and minor schemes for the development of the system were carried out in the 17th and 18th centuries. The Nazi Party was quite aware of the potentialities of the inland waterway systems of Europe, and by 1939 Germany managed 4,845 miles of inland navigable waters, of which 1,085 miles were canals.

Administratively, the German inland waterways went through an evolutionary process which may most clearly be traced back as far as 1913 when the first important steps towards centralization were taken.

After the First World War, the German government made a determined attempt to bring the waterways completely under its control. Under its new constitution, certain important rivers and canals were listed as national waterways. Negotiations with the various states delayed their transfer, because the states wished to relinquish only their responsibility for main-

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tenance. Although the states finally gave the government the right to administer the canals, they continually contested its position. Finally, the Ministry of Transportation had to administer the waterways through the states.

Later, when Hitler rose to power, the Nazi Party established control over the waterways and all forms of inland shipping activity.

In 1935 the Ministry of Transport assumed responsibility for the administration of all inland shipping, dividing it on a geographical basis into seven regional waterways offices as follows:

<u>Region</u>	<u>Head Office</u>
1. RHINE	DUISBURG
2. WEST German Canals and WESER	DORTMUND
3. ELBE	HAMBURG
4. CENTRAL German Waterways between the ELBE and the ODER	BERLIN
5. ODER	BRESLAU
6. EAST German Waterways	KOENIGSBERG
7. DANUBE	VIENNA

As shown on the organization chart, these offices had, in the lower echelons of the organization, barge control offices which controlled traffic on a district basis. This was the organization in effect when war broke out in 1939. On 29 April 1942 responsibility for the construction of any new waterways and maintenance of the others was transferred to the Speer Ministry. These powers were at first intended to be exercised in technical matters only and were delegated to the Inspector-General of Waterways. The Ministry of Transportation was supposed to retain full control of traffic.

Under this new arrangement, the Ministry of Transportation concerned itself with traffic, and the Speer Ministry with construction, maintenance and other technical matters. However, by virtue of his responsibility for the production of war material as distinct from the maintenance of waterway facilities, Speer, through his Agency for Transport Regulation, adjusted industrial traffic to the barges, steamers, etc., available. Trade unions in the inland shipping business were absorbed by the Organization Todt, the Reich Labor Organization, later by the Speer Ministry.

The Navy used the transportation afforded by these waterways to a great extent in distributing its supplies and shipping equipment to the

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various theaters in which it was engaged. The transportation of prefabricated and complete submarines through these waterways is one example of their utilization.

The center sections of prefabricated submarines for duty in the Black Sea were completely assembled, with the exception of the conning tower, in Germany. They were transported by heavy truck (Kulemeier low bed trucks specially designed for the Air Force) over the autobahnen to Ulm or Iglestadt, launched into the Danube and sent down the river to Galatz (Roumania), where the conning towers were mounted and the forward and stern sections welded on. Small craft, such as motor torpedo boats, and barges were sent through the Rhine-Main-Danube Canal to supply naval forces in the Balkans.

The type 23 submarines used in the Mediterranean were not assembled in Germany. Instead some prefabricated parts were shipped by rail to Toulon, where they were assembled. Others were sent by truck to the Rhone River and then floated downstream to Toulon.

Outer hulls of the larger types of submarines were shipped through the Midland Canal and the Elbe River to Hamburg, where the outer hulls and interiors were assembled at the Blohm and Voss Shipyards. Other sections were shipped via the Midland Canal and Weser River to Bremen, where they were assembled by the Deschimag Shipbuilding Company. Still another group of outer hulls were shipped via the Midland Canal and Oder River into the Baltic for assembly by shipyards in that area.

The transfer of seven motor minesweepers from the Atlantic (Bordeaux) to the Mediterranean (Marseilles) through the inland waterways of France was described in one of the documents studied. These boats were 52.5 feet long, 11.3 feet wide and drew 6.2 feet water. The route lay up the Garonne river to Toulouse, down through the Canal du Midi to Anglouse, thence through a 12 mile long lake to Sete, and from there through the Canal des Etangs to Beaucaire. From Beaucaire to Arles the route followed the Rhone as far as Port St. Louis and reached the open sea from there by way of Marseilles.

In the course of this voyage of 435 miles, the boats had to pass through 155 locks. The whole voyage lasted 13 days. The boats touched

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bottom on several occasions. Because of the shallowness of the water they could only proceed at about 5-6 knots. At higher speeds they sucked up mud and ran aground. They also ran off course very easily. The Canal des Etangs crosses a river, Aiguas Mortes, which is often impassable for days on end when the river has high water, because there is no lock and the canal is separated from the river only by a gate.

The Highways

Road traffic had never been very important in the long distance transportation of goods and passengers in Germany. Hitler, however, planned a great future for automobile traffic. Before Germany went to war, 1,850 miles of his new "autobahnen" (superhighways) were opened to traffic, approximately 9,000 miles were either under construction or planned. On these highways Hitler expected to see the fulfillment of his theory that a motorized Germany rolling over new roads on synthetic rubber and burning synthetic gasoline would be a more self-sufficient nation. Instead, when war came most of the synthetic fuel and all of the Buna rubber went to the Army. Because of this, truck transportation declined so greatly that it could no longer be considered of vital importance to German Transportation. Except for local hauls, especially those to and from stations and river ports, trucking organizations had few responsibilities. In short, the autobahnen and other big highways of Germany, which totalled 132,000 miles of hard-surfaced highways were hardly used, except for the movement of troops. When the military moved into the occupied countries, there was comparatively little use made of them even for that purpose.

From the beginning the Nazi Party was infatuated with the idea of developing a series of interconnecting superhighways. It meant to replace the railways with automotive transportation, despite military experts' warnings that railroad transport in war was of the greatest importance. Hitler's war was going to be a short war. It was going to be a brief motorized blitzkrieg. Of course, it didn't happen that way. The short war developed into a long war and fuel scarcity kept truck transportation within negligible proportions. In 1943, a general stoppage was called on all construction and maintenance work on the autobahnen.

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Motorized transport requirements of the Navy were supplied by the Army through Ad-Qu III. This included not only trucks and motorcycles, but also their spare parts, tires, fuel and lubricating oil. Normal requirements of these items were furnished to the Navy on a monthly allocation basis. Any unit desiring requirements outside its normal allocation applied to the local naval motor transport group. That activity forwarded the request to Ad-Qu III, which consolidated all motor transportation requirements and submitted them to the Army.

Naval motor transport groups were attached to all naval centers. They were formed in detachments, companies and units and were assigned as such in proportion to the amount of trucking required. The commander of a detachment, usually an engineering officer was in charge of all companies or units operating in the same area. In the larger ports, all three types of groups were often assigned simultaneously. The Navy produced and trained its own drivers. They were mostly male personnel. Occasionally female employees of the Navy were pressed into service in these motor transport groups.

**Air Transportation**

The Mobilization Plan of 1923 placed all commercial air lines under the Air Force. All naval requirements for air transportation were furnished by the Air Force, through OEH/WFStd/Comstab and Ad-Qu III. Before the outbreak of the war, on 3 February 1939 to be precise, naval aviation, through a series of reorganizations of the Air Force became a sea branch of the Air Force, instead of an air branch of the Navy. During the period 1935-1939, naval aviators were sent to Air Force schools, recommissioned as Air Force Officers and sent back to the fleet with Air Force planes. The same procedure was employed in the transfer of naval flight crews and maintenance men to the Air Force. All supplies, including fuel and spare parts were furnished to squadrons operating with the Navy by the Air Force Quartermaster. All accounting for such supplies was likewise performed by that officer. To all intents and purposes, the Navy was only permitted to have the Air Force planes and crews aboard its cruisers or at sea defense stations otherwise under its control. The Navy had



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no carriers. One was launched during the war but never commissioned. Construction on another was started, but it was not completed.

Although the Navy resented this conscription of its air arm, the plan worked fairly well, but shortly before war broke out difficulties arose because:

- (a) the pilots assigned to the Navy were mostly ex-naval aviators, and the crews were ex-naval personnel;
- (b) Goering and most of the high ranking air force officers were not familiar with the requirements of the Navy in tactical and operational air support of naval forces; and
- (c) Goering was too engaged in building up the over-all organization of the German Air Force in its military structure, its ground organization, supply system and own special aircraft production industry.

However, in early 1942, even the small number of planes detailed for for naval reconnaissance were taken away from the Navy. The quarrel that resulted between the Navy and Air Force over naval aviation was a very bitter one, filled with misunderstanding and recrimination.

The Navy's requirements for air transportation within Germany were consolidated by Adm. III and submitted direct to the High Command of the Air Force (OEL). Requirements outside Germany were submitted to the local OEL/WFStab/Reinstab representatives, who coordinated the requirements of all three services in the area.

It can be reported that air freight was used for naval supplies to a certain degree. VADM Kitchens stated that he recalled several air shipments being received in Norway. Col. Gaul stated that naval spare parts and other material urgently needed for repairs were picked up by Air Force planes at factories and delivered direct to the points of requirements. Others interrogated during this study professed no knowledge of the extent to which air freight was used in transporting naval supplies and equipment. It is believed, however, that because of the intra-service quarrel described above, stutthorness on the part of both the Navy and Air Force may have suppressed the potentialities of air transportation which were so fully exploited by the U.S. Navy during World War II.

Sea Transportation

The mobilization plan of 1933 provided that the Navy would have charge of all sea transportation. OEL/WFStab/Reinstab was responsible for

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co-ordinating the requirements of all branches of the armed services for sea transportation and notifying the Navy of those needs.

In Chapter II, under the duties of the Fuel and Transportation Section of the Admiral Quartermaster Division (AdmQu III), it was stated that AdmQu III was charged with determining the needs of all naval activities for rail, air, inland water and sea transportation and notifying OKW/WFStd/Heimstab of those requirements.

Within the Navy, AdmQu VI (the Sea Transport Section of the Admiral Quartermaster Division) was charged with the actual operation of all merchant vessels owned by or chartered from German steamship lines, seized as prizes or otherwise controlled by the armed forces. The Naval Sea Transport Offices (KMD) at the various bases in Germany and in the occupied countries described under the section on Port Organization in Chapter II handled the details of operation on the working level. These offices were subordinated to the various group and area commands in which they were located. An area sea transport official was attached to each group and area command to supervise the work of the individual sea transport offices, which carried out the actual local operations of requisitioning, preparing and dispatching merchant marine vessels entering and leaving their ports. An example of the effectiveness of these offices was demonstrated in April 1940, when, in preparation for the invasion of Norway, the sea transportation offices at Koenigsberg, Gdynia, Stettin, Travemuende, Kiel, Hamburg and Brunsbuettel were ordered to requisition all ships suitable as transports or supply carriers and to refit them for use in the campaign. By mid-March these offices had the vessels lying in the embarkation ports ready for loading.

It should be borne in mind that AdmQu VI had no control over those vessels employed by the logistic support departments of the main naval bases. They were a part of the Navy's regular logistic support system, consisted almost exclusively of supply ships and tankers and were controlled by AdmQu III. They should not be confused with the merchant vessels discussed here.

When any branch of the armed forces required sea transportation, it notified OKW/WFStd/Heimstab of its needs. AdmQu III performed this function

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for the Navy. OKW/WFStd/Heimstab was responsible for determining the degree of urgency and the priority with which merchant vessels under the control of Adm Qu VI would be loaded and sent to sea; also the number of ships in a convoy that would be assigned to the Army, to the Air Force and to the Navy.

Adm Qu VI received the demands of the three armed services for ocean tonnage from OKW/WFStd/Heimstab. Adm Qu VI chartered or otherwise procured the tonnage, including foreign vessels, through its area sea transport officials and sea transport offices, or through direct negotiations with foreign shipping companies. It fuelled and armed these vessels and otherwise ensured that they were ready for sea as cargo vessels and transports. It had charge of loading and unloading the ships, seeing that sufficient crews were aboard and that they were provided with facilities necessary for their health and comfort. It was also charged with seaworthiness of such vessels. Therefore it was also responsible for their docking and repairs.

Satellite nation tonnage, except that of Italy, was requisitioned by Adm Qu VI. No compensation was paid to the owners of vessels so impressed. The Italians ran their own merchant marine affairs and paid their own steamship companies for the use of their vessels. When Italian sea transportation was furnished to the German armed forces, such as troop transportation across the Mediterranean to North Africa, charges were made under the Mutual Assistance Agreement. (See Chapter II for accounting details.) Roumania had sent its three large passenger liners to Constantinople at the outbreak of war. Its remaining tonnage was small. Adm Qu VI chartered what was left. Most of the transportation in the Mediterranean and Black Seas, however, was in small vessels which had been chartered or impressed. The majority of these vessels, according to LCDR Pospischil, had been transferred to those theaters from Germany, France, the Lowland and Baltic countries via the inland waterways to the Mediterranean or via the Danube to the Black Sea and from there to Greece.

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RAdm Voss said:

"The chartered ships remained under the administration of the shipowners. Necessary stores were provided by the shipowners and personnel was paid by them. Oil for the operation of these vessels was furnished by the Navy. The captains receipted for it when delivered but there was no transfer of funds involved. The shipowner was merely charged for it. Settlement of the whole matter of charter fees and fuel and repair services furnished by the Navy was to be delayed until after the war. The shipowner did not pay the government anything and the government gave him nothing."

Some specially qualified merchant marine officers in these ships were commissioned in the German naval reserve for the purpose of having naval representatives on board as many of these vessels as possible. Rates of pay for all personnel in merchant marine vessels operating under naval control were standardized.

With regard to turnaround techniques, LGdr Pospischil said:

"We kept a close watch on the time our ships stayed in foreign ports. Every conceivable means was applied to shorten the time for loading and unloading. However, the removal of ships from danger zones in the ports was the task of the port director who was subordinated to the military CinC of the country. In addition to the port director, each harbor had a representative of AdmQu VI, who was not subordinated to either the port director or to the CinC of the country. Having the responsibility for speeding up the loading and unloading of ships in the harbor, he also had the power to recruit labor to fulfill the task in as short a time as possible. This system proved to be a very good one.

"As far as possible we unloaded and loaded during the night hours. At the African bases we carried out these tasks under fighter cover. Moreover, all the ships operating in this area were heavily armed with AA artillery.

"We had no stevedoring battalions. Additional labor was recruited in the open labor market. In Norway, they were Norwegians, in Italy Italians, etc. Moreover, this representative of AdmQu VI was able to call on the military authorities of the harbor or the area for assistance by troop detachments. These military authorities, according to a Fuehrer directive, had to fulfill these requirements.

"We used a sort of premium system in dealing with native stevedores. We coaxed them to do a job by promising cigarettes and alcohol, and if a team worked well they had a profit. It is difficult to work with the stevedores of foreign nations. You have to consider the mentality of the natives. For instance, during the period between the time we lost Africa and the Allied landing took place in Sicily, the inner resistance in Italy grew immensely

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and very often the Italians did not keep promises given in our conferences. It was difficult to work with them. We always had to kick them, both mentally and morally. In March 1943, on the occasion of a big meeting of Italian and German top rankers, one of the German generals asked for several ships and sufficient support of the German armed forces. One of the Italian admirals, Sansonetti, who normally was quite in favor of Germany and German ideas, but who in that period had lost face bluntly stated, 'You may well issue this order because the Duce has promised the Fuehrer assistance and help, but you never will be able to stop us from making a separate treaty of peace with the Americans.'

"Priorities for loading were issued by OKW/WFStd/-Heimstab. The immediate need in an area was the basic consideration on which a priority was established, e.g., air attacks in the loading area, special needs in combat areas, etc. For instance, ammunition and fuel or gasoline for the Air Force always got first priority. Then came food. Items with lowest priorities were horse fodder and feed and other basic (general stores) shipments.

"No special marking system was employed. The ship was given a load list containing all the items put aboard it, but within the load itself there were no special markings on crates or packages aside from the consignee's name. I know of no failures in the system, however. It was the responsibility of the loading officer to determine where and what he had to load and unload and how he had to handle the freight cars, etc. Anyway, there were no missing stocks on the quaysides. Trains arriving in the harbors were immediately unloaded or loaded and if there was no ship available, the trains were kept out of port away from the air danger zone. The coordination of trains and ship arrivals was effected by representatives of OKW/WFStd/Heimstab. Monthly meetings were held between AdmQu VI representatives and those of the Air Force, Army and Navy, at which the representatives of each service stated what their requirements would be during the next month. In addition, there were daily briefings on operational matters and the situation in general. In Italy, the Italian Navy briefed sea transport officials every day."

When merchant vessels had been loaded and assembled as convoy, AdmQu VI notified 1 SKL, which assigned escort craft and directed the routes to be followed and the time of departure.

When the convoy reached its destination, the sea transport offices, as field representatives of AdmQu VI, again took over and unloaded the ships, effected such repairs as were necessary and again prepared them for sea.

This was the method by which the various armed services obtained their sea transport requirements between 1939 and 1942 and the way the

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Navy handled its logistic responsibility to all armed services within its own organization.

Because of these responsibilities, the Navy took an active interest in Germany's merchant marine before the war. It recommended certain legislation for enactment which would place the merchant marine fleet under the control of the OKW in national emergencies. This was done. It induced the North German Lloyd Line, in conjunction with other steamship lines and the Navy, to compile lists of all German merchant vessels, arranged according to categories, such as colliers, refrigerated ships, etc., so that it would know what ships were available to it if Germany mobilized for war.

The professional training of merchant marine personnel was also taken up with the various steamship lines. For this purpose, the SS ADMIRAL BROMMY was fitted out by the Navy for the training of merchant marine apprentices, in which about 30 boys at a time were given four weeks training before being sent to sea. Plans were also made, and it is believed put into execution, for the training of merchant marine officers aboard this ship.

Spot checks were made in the various harbors of Germany to determine what foreign as well as German ships would be available should mobilization be announced unexpectedly. Subsidies were planned for the construction of high speed merchant marine tankers. Harbor facilities were developed in conjunction with port authorities to expedite fast turnarounds. In general, a complete unification of effort was attained between the Navy, the port authorities and the steamship lines, so that greatest effectiveness could be achieved in the event of war. Attention is also invited to the arrangements made with the steamship lines by the Navy in connection with the establishment of the Secret Supply Service. These details are contained in Chapter XI.

When the Navy mobilized in 1939 and this organization was put into effect, transportation and shipping experts were drafted to service with AdmQu VI to man the many sea transport offices which were set up in the German ports and were to be established in the occupied countries. LCdr

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Pospischil, a former member of AdmQu VI, stated that there were only a few regular naval officers attached to AdmQu VI or the sea transport offices, and that at first the organization was a makeshift one, which demonstrated to the Navy the need of a regular Sea Transportation Corps like those which had been developed in other navies. The fact that most of the officers were not adequately trained in naval techniques, he said, resulted in great difficulty in planning and making dispositions of the ships available to AdmQu VI. He also said:

"Of course, this organization worked quite well as long as there was no scarcity of tonnage. However, in the Spring of 1942, OKW's requirements had increased to such an extent that it was difficult for AdmQu VI to meet all its demands. This in turn brought heavy reproaches upon the Navy. Finally, there was a very big conference in which many high ranking naval officers and members of the Speer Ministry participated. At this conference the Navy stated that it could not fulfill the demands of OKW (expansion of the defenses and supplying every kind of stores required in Norway in sufficient quantity to bring them up to a six months' supply of stock on hand), since the tonnage required for such a movement would have exceeded the peacetime tonnage of the German merchant marine.

"Adm Kranke was the senior naval officer at this conference. When he flatly stated that the Navy could not meet OKW's requirements, Dr. Albert Speer said, 'Oh, you cannot ask me to tell the Fuehrer that!' The representative of the OKW said, 'I would not dare do it myself and I am sure General Keitel would not.' Finally, the Party Gauleiter from Norway, Terboven, said, 'Oh, let's just start to fulfill all three programs set for Norway and then we will see how far we get along.'

"The outcome of this conference was that Hitler established a new agency to take over the sea transportation functions of the Navy.

"It may not be ethical to tell you this, but another sidelight on how nervous the top rankers of the armed forces were when they had to give Hitler information is illustrated by the following. One day Adm Kranke called me from the Fuehrer's headquarters and told me that Hitler had asked that the new transports which were being constructed be fitted with cranes lifting 150 tons. I said, 'Such a thing is impossible and ridiculous and you should have told the Fuehrer that immediately.' 'Oh, yes,' Kranke replied, 'but I just wanted to make sure about it!'"

It was admitted by some officers and officials interviewed that when the Navy failed to find a solution to OKW's problem, it had demonstrated its inability to cope with a civilian authority superimposed over the

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military and with a defense organization in which it had an unequal voice. However, there was another side to the story. The Navy's inability to provide sufficient tugboats, fishing steamers, etc., for the invasion of England in the summer of 1940, for example, had lessened confidence of Party leaders and the OKW in its ability to meet its obligations in sea transportation. GrAdm Raeder, according to Capt Fischer, had told Hitler at that time:

"We are not disposing of the seapower of England and we can only dare take on this enterprise if the Air Force obtains not only supremacy but real power in the air."

Hitler shrank from the invasion of England, Fischer continued, because "he knew such an operation would involve great losses of men and ships."

There had been other differences between the Party, the OKW and the Navy. Relations between Nazi Party leaders and the armed forces had not really been pleasant since Hitler came into power. During the rearmament period, 1933-1939, they had felt no particular pressure from the politicians because of the position of Goering and Hitler in relation to the Air Force and the Army. However, with the outbreak of war, the employment of special police forces behind the lines in the war zones and other means employed by the Nazi politicians to control military forces had bred distrust of them in the minds of most military men. RAdm Schubert stated that the Navy had particularly resented it. Much of this antipathy stemmed from CinC Navy's attitude toward Hitler. GrAdm Raeder, it was said, had little time for the Fuehrer. He took orders from him but did not respect him and, when a conference between the two had ended, Raeder would invariably stiffly pick up his papers, bow and leave, instead of remaining to discuss his problems informally on a social footing. This attitude of Raeder was said to be well known throughout the Navy. The general opinion of naval officers regarding members of the Nazi Party was that most of them were uncouth opportunists with no qualifications for the great responsibilities vested in them.



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OKW's authority and attitude toward the Navy in the field of allocations of raw materials and plant production facilities had also rankled. (See chapter VI for details.) The Navy felt it was not getting its fair share. This also caused friction at top levels. Therefore, it appears reasonable to believe that, as a result of these circumstances, OKW and the Party leaders may have decided to show the Navy who was running the war when they induced Hitler to issue the following order:

"Decree of the Fuehrer concerning the appointment of a  
Reich Commissioner of Maritime Shipping

30 May 1942

I.

The fullest utilization of available tonnage is made necessary by increasing demands for seagoing transports.

II.

The uniform planning of seagoing transports in accordance with the requirements of strategy and of the war economy, as well as the procuring and planned use of shipping space are of decisive importance for the war. I am placing the Reich Commissioner of Maritime Shipping in charge of this task for the duration of the war. He is directly responsible to me.

III.

I appoint Reichsstatthalter and Gauleiter Karl Kaufmann as Reich Commissioner of Maritime Shipping. The office of the Reich Commissioner will be located in Berlin.

IV.

The Reich Commissioner will have the task of handling the uniform planning of seagoing transports in collaboration with Reichsmarschall Goering as head of the Four Years' Plan, the Armed Forces High Command, and the appropriate Ministers. He is to have control of all shipping space, except that in constant use in naval warfare or in troop transportation, and is to keep seagoing shipping moving. He is to take care of the day-to-day replacement and renewal of available tonnage, equipment and personnel, and he is to see that the capacity of harbors is increased.

V.

With regard to transshipping in harbors and the intelligent utilization of shipping space, the appropriate harbor offices (civil as well as military) will be subordinate to the Reich Commissioner.

VI.

The Office of Maritime Shipping of the Ministry of Transportation and the offices subordinate to it will be at the disposal of the Reich Commissioner for Maritime Shipping and will be governed by his directives.

VII.

The Commissioner for the Four Years' Plan and the Reich Ministers, as

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well as all offices of the Party, the Armed Forces, and the Reich, are to support the Reich Commissioner for Maritime Shipping in the performance of his duties.

**VIII.**

The Reich Commissioner is authorized, the Armed Forces High Command concurring, to make all decisions necessary for the performance of his duties according to the degrees of priority established by myself. His decisions will be binding for all concerned. In cases of doubt he will request my decision in a conference at which the Chief of Staff, Armed Forces High Command, will also be present.

The necessary directives will be issued by the Reich Commissioner for Maritime Shipping, in agreement with the Commissioner for the Four Years' Plan, the Chief of Staff, Armed Forces High Command, the Minister of Transportation, and the Minister of Armament and War Production.

Fuehrer Headquarters, 30 May 1942

The Fuehrer

signed: Adolf Hitler"

Under the new organization, the Navy found great difficulty in coordinating the assignment of escort vessels, times of departure of convoys, etc. with the loading and unloading schedules of the new organization. Differences of opinion arose. The Navy believed that the politicians in authority were not qualified for the job. RADM Schumbert said:

"Kaufmann, appointed by Hitler, was solely responsible for creating this new organization. He blamed the Navy for not fulfilling its mission and not being economical enough in the employment of the tonnage available. He held the view that expert knowledge was lacking. He, having no knowledge whatsoever of the close connection between transports and naval operations, was only concerned about loads and tonnage in a business man's way. The Navy, however, held the view that, in addition to these routine facts, the operational requirements had to be considered with especial care.

"It was imperative for the Navy that the load carried should reach its port of destination, a thing in which the Reichskommissar was surely also interested, although his actions did not always show it. The Navy held the opinion that the conduct of transports at sea was essentially determined by the sea strategical situation, therefore the choice of steamers for individual shipments and the fixing of times of departure had to be carried out accordingly. Moreover, the Navy had to provide for the escort at sea and the anti-aircraft personnel aboard the merchant ships.

"One could not help getting the impression that, for the Reichskommissar and the top members of his staff, certain economical facts concerning the far future played a role in pressing to get their jobs."

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ICir Pospischil said:

"This new commissioner being himself no expert, neither in transportation nor shipping, appointed to his staff Director Bertram from the North German Lloyd. The effect of this change in organization was that the Reichskommissar took over the task of procuring the tonnage and the equipment for the ships while the Navy still was the executing agency in the organization, and actually carried out the transport. The loading of all ships outside German harbors was carried out by the Navy organization as before and all troop transports, hospital ships - everything remained in the hands of the Navy. This type of organization was effective in all theaters of war except the Mediterranean. In Italy, however, the organization was quite different.

"The organization finally built up in Italy, under the CinC Mediterranean, Generalfeldmarschall Kesselring, was in my opinion that which best suited the purposes of war. Actually it did not work out so well because the top organization, which was O.K. in principle, was not staffed with naval officers but with general staff officers of the Army. I served in this transportation staff as the naval expert. The tonnage loading, unloading, etc., was organized as coming under the Reichskommissar while the actual carrying out of the job was effected by the Navy Sea Transportation Chief of Naval Command Italy.

"Before the reorganization, there had been a lot of friction between the Navy Sea Transportation Chief, Admiral Horstmann, and the Chief of Transportation in the staff of Army CinC South, an Army general staff officer. That was the reason why I had been detailed to the staff as an expert in sea transportation.

"From then until the reorganization there was no friction between the two transportation organizations. They always followed my advice as far as possible. The whole procedure worked particularly well after a change in general staff officers heading the organization had been carried out. General Teichweier was relieved and reassigned and General Westphal took over the job. From then on, it worked all right.

"Two months after I had taken on this assignment, a representative of the Reichskommissar of Shipping was sent to the staff. From that time onward this representative - Mr. Essen - tried to run the show. He had no experience in sea transport matters. In peacetime, he was the head of a chain store organization in Hamburg. He was a party man in a way. Gauleiter Kaufmann was the top Party man in Hamburg and through his connections appointed another party member, this Essen, to be his representative in the Mediterranean.

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"Fighting and struggling for sea transportation for military requirements actually never stopped until the breakdown of Italy. He tried to combine the Italian and the German shipping business in the Mediterranean, to dominate it and to lead it as his organization. However, the Italians resisted this attempt. Even Generalfeldmarschall Kesselring, who was at first in favor of this man, hoping it would be possible to procure more tonnage and shipping space, saw within two months what type of a man he was."

Ministerialrat Tennstedt, the naval sea transport official in the Black Sea area stated that the Commissioner of Maritime Shipping did not take over the Navy's former tasks in all areas at once, but one after another. "He started", he said, "in Norwegian waters, then in the North and Baltic Seas, then in the Mediterranean and finally in the Black Sea area. The Black and Aegean Sea areas were controlled by the same office, since the latter area was supplied from the Balkan Sea through the Dardanelles until that body of water was closed by the Turks when we lost the Crimea."

It was inevitable that control of sea transportation by politicians rather than by naval officers would lead to complications. Admiral Black Sea informed port directors and sea transportation offices in mid-September 1942 that requirements for transportation in the Black Sea were in excess of bottom space available to meet them, that a priority system had to be instituted, and that requests for sea transportation were to be submitted only to the area sea transportation offices. These conditions multiplied, some officials and officers said, in all theaters of operation. At some ports, qualified steamship executives were drafted by Kaufman to direct operations. Conditions were tolerable in such instances and the sea commandants and group commands worked with these men. On the whole, however, those directing sea transportation were incapable, and the situation progressively grew worse.

Ridm Schubert stated that the Navy was considerably hampered in its operations by Commissioner Kaufman and his local officials, that the direction of transports at sea had to remain an integral part of naval warfare in coastal waters and that representations to this effect

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were continually made in top-level conferences. Finally, the impracticability of at least a part of the organization established in 1942 was admitted by GEM and Hitler. On 12 July 1944, Hitler issued the following directive:

"Developments of the strategic situation make maritime shipping more dependent on naval warfare, and therefore require a strict concentration within the Armed Forces of all matters pertaining to a maritime shipping.

"For this purpose I issue the following orders:

"1. The Commander in Chief, Navy will handle for the Armed Forces all questions involving maritime shipping.

"2. This regulation does not affect the tasks and responsibilities of the Reich Commissioner of Maritime Shipping as set forth in my order of 30 May 1942.

"3. The Commander in Chief, Navy will take over command of maritime shipping in areas which are cut off from Germany by enemy operations, on the basis of my order on sea transport of 25 October 1943 (Translator's note: Not included).

"4. The Chief of Staff, Armed Forces High Command will issue the orders for carrying out these measures, in agreement with the Commander in Chief, Navy and the Reich Commissioner for Maritime Shipping.

"Signed: Adolf Hitler"

As a result, GEM simultaneously issued the following directive:

"The Chief of Staff, Armed Forces High Command      Fuchrer Headquarters  
GEM WFSt/Qu.1 (M) Nr. 604775/44 G.E.      12 July 1944

Secret (German Classification)

"Ref.: The Fuchrer GEM/WFSt/Qu.1 (M) Nr. 604775/44 G.E. of 12 July 1944

"Re: Maritime Shipping

Complying with paragraph 4 of the Fuchrer order, the following regulations are issued:

"1. The Commander in Chief, Navy, in accordance with his suggestion, will appoint the Chief of the Shipping Division of the Naval Staff (AdmQu VI) to take over also the position of "Chief of Maritime Shipping for the German Armed Forces".

"2. The Chief of Maritime Shipping for the German Armed Forces, as the officer dealing with such matters for the Naval Staff, will handle for the Commander in Chief, Navy the unified control of all matters pertaining to maritime shipping for the Armed Forces.

"3. He has two main tasks to perform for the Armed Forces:

a. To look after military interests in dealings with the Reich Commissioner for Maritime Shipping pertaining to tonnage, shipbuilding, and repairs, as well as evaluation of all matters involving shipping space for operations.

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b. To support the Reich Commissioner for Maritime Shipping in carrying out maritime transports, insofar as required by the naval situation.

The Armed Forces High Command, in agreement with the Commander in Chief, Navy and the Reich Commissioner for Maritime Shipping will determine in accordance with the war situation to what extent the authority of the Reich Commissioner of Maritime Shipping is to be curtailed.

The following division of tasks is ordered for the Navy and the Reich Commissioner for Maritime Shipping:

"A. In areas where the Navy is in charge of maritime shipping in accordance with the Führer order of 25 October 1943 (translator's note: not included):

a. The goods of the Army, the Navy, the Air Force, the Todt Organization, and the general economy which are to be shipped by sea are to be reported according to type and amount to the responsible army groups or other armed forces commanders involved. These will determine the order of priority of the shipments and ports of departure and destination.

b. The armed forces loading staffs and similar offices will deliver the goods to be shipped to the anchorages of the ships.

c. The offices of the Reich Commissioner for Maritime Shipping will furnish the tonnage necessary for transporting the armed forces goods according to information from the Chief of Maritime Shipping. The ships not needed for armed forces goods are at the disposal of the Reich Commissioner for Maritime Shipping for other transportation.

d. The Reich Commissioner for Maritime Shipping has charge of shipping all non-military goods, including the bookkeeping involved, even if they are transported on naval vessels.

e. The shipping and transport offices determine the plans for loading the armed forces' supply ships, in cooperation with the Reich Commissioner for Maritime Shipping and the armed forces loading staffs.

f. The offices of the Reich Commissioner for Maritime Shipping will take care of the actual loading and unloading so long as the military situation permits.

g. The Reich Commissioner for Maritime Shipping is responsible for the care of the ships. This includes repairs, welfare of the crew, refuelling and equipping, insofar as supplies are available. The Navy is responsible for arming the ships and supplying additional lifesaving equipment and safety devices.

h. The offices of the Reich Commissioner for Maritime Shipping are obligated to inform the Navy of any events delaying the schedules of the ships.

i. The Reich Commissioner for Maritime Shipping is responsible for replacing merchant tonnage.

"B. In all other sea areas:

a. The Reich Commissioner for Maritime Shipping is responsible for all sea transport, except troop transport which is handled by the Navy.

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b. For the eventuality that the war situation in certain sea areas should force the Navy to take over maritime shipping, preparatory organizational measures should be undertaken to carry out a smooth transfer of responsibility.

Signed: Keitel"

Thus it transpired that the Navy once again was given semi-control over maritime shipping. RADM Schubert stated that in practice the Reich Commissioner was responsible for the disposition of tonnage, loading and unloading and for all administrative work connected with the shipping offices. AdmQu VI, in co-operation with 1 SKL (the Operations Division of the Naval War Staff) arranged for the escorts, kept the necessary armed guard crews in readiness, set the times of departure of the convoys and tactically directed them. In addition, AdmQu VI designated the types of ships suited for the various convoys. He also said:

"One cannot say that this double organization was advantageous. At places where the local partners of the two organization worked hand in hand, it was as if no new parallel organization existed. Yet, there was much friction and the co-operation between the two groups was in no way good everywhere."

ICdr Pospischil was asked what changes he would make in the sea transportation organization of AdmQu VI, if he were assigned the task of organizing another such group for a navy. He said:

"A very important factor is officer training. An officer corps should be developed to deal with such things. I think a Sea Transportation Officer Corps like the British have would be desirable. Reserve training in the merchant marine should be aimed in peacetime for the task that will be allotted to the merchant marine officers and port officials in a war. I also believe that merchant marine experts, such as ship owners, should be members of higher level staffs where their experience can be fully utilized. The main emphasis should be on personnel training."

Summary

When World War II started, Germany had a well integrated transportation system consisting of government owned railroads, state controlled inland waterways, government subsidized commercial air lines and a great interconnected network of hard surfaced roads, a part of which were the famous autobahnen. Its merchant marine, operating under private ownership, was one of the world's finest and one third of the size of that

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of the United States.

In conquering Europe, its armed forces gained control of one of the most densely interwoven transportation networks in the world. For more than four years these transportation facilities became the instruments as well as the victims of warfare. One by one most of the European transportation systems fell under German control, as the length of German supply lines grew longer and longer and the armed forces extended their operations.

More and more locomotives, railway cars, motor vehicles, canal barges and even horse drawn carts and bicycles were required as the supply lines grew longer. Much of this badly needed equipment was obtained through Army requisition and charter. Some was captured. Equipment belonging to countries in which there was an abundance was transferred to those in which the armed forces needed more equipment.

Although there was a constant shortage of transport equipment after the end of the first year of the war, the German armed forces, through the assistance given them by civil agencies of the German government, always managed in some way to provide essential transportation for its personnel, equipment and supplies.

OKW/WFStd/Heimstab controlled all transportation for the armed forces and allocated that which was available among the three services. The Navy received monthly allotments of rail and inland waterway equipment and facilities from that agency. Additional requirements were considered as they arose. It was reported that OKW/WFStd/Heimstab made these allocations in a very fair manner.

At first, the Navy controlled sea transportation, then, through a disagreement, it lost that control. After two years' operations by a civilian agency, part of the Navy's former responsibilities were given back to it. There was no evidence that the Navy was furnished inadequate merchant marine bottom space for the transportation of its personnel, equipment or supplies. The Navy had its own supply ships, tankers, etc., with which to support its forces at sea and on foreign shore. They were



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operated by AdmQu III and its field agencies, the logistic support departments of the main naval bases. These vessels adequately met all the Navy's requirements for sea transportation.

The Navy did not utilize air transportation to the great extent that the U.S. Navy did in World War II. Because of an ingrained resentment, brought on by the seizure of its air arm by the German Air Force, the Navy apparently requested only such air transportation as was absolutely essential to its mission. This was furnished when requested and in the amount needed by OKL within Germany and by OEW/WFStd/Helmstab outside Germany.

As a result, the conclusion must be drawn that the Navy's logistic system did not suffer through lack of transportation. Many petty annoyances and some deeply frustrating circumstances arose, but in general, except for enemy sinkings enroute, naval personnel, equipment and supplies were delivered where and when they were required.

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CHAPTER VIII - FINANCE, FISCAL ACCOUNTING  
AND MUTUAL ASSISTANCE

FINANCE

Introduction

If we are to understand a Navy's logistic system, it is necessary to describe its funding operations, since procurement is usually predicated on the ability of a purchaser to pay for what he orders.

The funding system employed by the German Armed Forces, especially the one employed by the Navy, was unorthodox by American standards, in that some of the money spent was appropriated by the Reichstag and some of it was raised without the knowledge or consent of that legislative body. Cover firms were established to finance behind-the-scenes production of new types of weapons and other equipment in contravention to the terms of the Versailles Treaty. Some vouchers were audited, others were never seen by the Supreme Court of Accounts. Aside from the logistic functions involved, however, the story of the determined steps taken to reestablish the German Navy, by legal or underhanded methods, is one unique in modern history. This deception of the Reichstag and other world powers lasted for more than ten years. The methods used were desperate ones, with only one yardstick by which their merit was measured - success.

When the National Socialist Party came into power, similar measures were employed. Deception of the Reichstag was no longer necessary, however, because its power was curbed to a point where its existence had no meaning, but the same yardstick - success - was employed all during the rearmament years from 1933 to 1939. When war finally broke out and the

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German army overran Europe, a new twist to monetary controls and convertibility was introduced, this compelled the note-issuing agencies of the occupied countries to finance German operations rather than risk inflation and complete loss of control of their own currency in circulation. If Germany had won World War II, the credits so established might have been redeemed. It seems probable that such was Germany's intention. On the other hand, the Treasury probably realized that if Germany lost the war, any effort on its part to raise credits or otherwise meet its obligations in a conventional manner would be so much wasted time. From the time Hitler seized the reins of government in Germany in 1933, until Germany surrendered in 1945, all military financing was based on the gamble that Germany would win the war and dominate the economy of all European countries.

Method of obtaining funds prior to 1933

Before 1933, the Navy obtained its funds in a manner similar to that employed by other navies. The Navy Budget Office (OKM/E) submitted to the various bureaus, technical divisions and offices in the Navy a statement of their appropriations, showing what had been spent or obligated, what collections had been received to the credit of the appropriations, and the unobligated balances remaining in them.

Using the past fiscal year's expenditures as a basis for their computation, the agencies then submitted their proposed budgets for the ensuing fiscal year to OKM/E.

After discussion with responsible persons concerned, OKM/E submitted a consolidated budget to CinC Navy, who determined which items should be retained or eliminated. The Navy budget was then forwarded to the Ministry of Finance.

The Finance Minister was charged with the preparation of the defense budget and therefore was empowered to delete any item which he considered non-essential or not in keeping with the financial position of Germany at the time. If the Navy felt that any item so deleted was essential to its program, it was given opportunity to defend its position before the matter

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was referred to the Reich Cabinet, where the budget in general was again discussed and a consolidated national budget prepared.

The national budget was then submitted to the legislative bodies, the Reichsrat and the Reichstag for further discussion. The Navy was also afforded opportunity to defend its budget requirements before these two bodies. It will be seen, however, that under such a system, the Ministry of Finance had great powers in determining what naval projects could and could not be started or continued.

Naval rearmament during this period was cramped by:

- (1) The Versailles Treaty
- (2) The political situation
- (3) Widespread anti-rearmament feeling, especially in the government
- (4) Germany's precarious financial position
- (5) The constructional difficulties involved in meeting requirements of the Versailles Treaty with technology so little advanced.

The "interference" by the Minister of Finance and the close scrutiny by the Reichsrat and Reichstag of plans to revitalize the military services were roadblocks to the Navy and the Army. The power of these groups, top military leaders agreed, had either to be eliminated or circumvented, if they were to succeed in their plans.

The Secret or Black Budget

To get around these difficulties, the Navy kept a secret budget. In 1925, preparations began for the establishment of a "shadow industry". A Captain Lohmann was placed in charge of the secret building of craft, such as E-boats, fishing vessels, motor boats, etc. A start was also made with naval aviation. The Lohmann scandal in 1927 threatened to upset this secret rearmament, which had hitherto been financed from sources outside the budget. (Lohmann had used government funds for speculations which failed, causing public confidence in the Navy's financial affairs to be badly shaken.)

The cooperation of the Minister of Finance was enlisted about this time. The records are not too clear on this point. A new Minister may have been appointed. However, the manipulation of the secret budget was

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carried on by the President of the Supreme Court of Accounts, the Minister of Finance and the Navy without knowledge or consent of the Reichsrat or Reichstag. The money for these secret activities had to be camouflaged in the budget and withdrawn again by some apparently harmless expenditure; therefore, the assistance of these other agencies of the government was essential. At the end of the fiscal year, unexpended secret funds were paid back into a continuing appropriation, so that they could be carried over into the next fiscal year. Thus, to a certain extent, the use of secret budget funds was sanctioned. Their camouflage was achieved by the use of "extra charges" where the expenditure would be difficult to check. These "extra charges" were removed from the official budget by a general expenditure order and incorporated into the Black Budget. The money thus drawn from the Open Budget was entered in the Black Budget as revenue. Expenditures were divided over the various fields as follows:

<u>Account No.</u>	<u>Purpose</u>
1	Establishment of a naval air arm
2 & 3	Construction of U-boats
4	Secret construction of fortifications
5	Pro-naval measures (probably political influence)
6 & 7	Establishment of a shadow industry (expansion of industry to meet mobilization requirements)

The secret budget, through intermediary agents, also financed the construction of electrical torpedoes in Sweden and the building of a 700-ton U-boat in Spain. A company composed of former German constructors was established in Holland to deal with other U-boat construction. Experiments in naval technology were conducted in Finland and Japan. New types of engines were manufactured. A communication system was built up. In one year, the Navy laid the foundation for its naval air arm by spending 70 percent of the secret budget on that project alone.

A secret pay office, known as the B Pay Office, was established in the Admiralty to deal with these camouflaged expenditures. Its audit section consisted of one Intendantur official. Since the Navy could not appear too openly in its disbursing activities, intermediary agents had

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to be used to pay the various industries. For years the head of B Pay Office sent these remittances through the post under his own name.

The secret budget rose from 6.8 million reichsmarks in 1928 to 21 million in 1933, all without the knowledge or consent of the Reichstag or the Reichsrat.

Method of obtaining funds during period 1933-1935

Upon Hitler's assumption of office as Reichs Chancellor, on 30 January 1933, procedures were changed. On 23 March 1933, the Nazi Cabinet took over the duties of the Reichsrat and Reichstag and issued a resolution excluding the Ministry of Finance from a large part of the military's financial affairs. It also gave the various CinCs of the armed forces wide powers to deviate from supply and budget regulations. This made the CinCs masters over their own budgets. An annual statement of the Navy's rearmament progress and the amount spent was submitted to the Finance Minister thereafter only as a matter of courtesy.

Whereas in normal times procurement of money for the budget was a regular annual procedure following fixed laws, during 1933-1935 the budget, previously a document in which even the slightest alteration was prohibited, now became subject almost daily to minor adjustments and alterations. Important naval commitments had to have priorities. Other projects were delayed if necessary. With new problems arising every day, there was thus a continual fight within the Navy for funds. The financial element was an extremely important factor in the over-all program during this period.

Procedures for the procurement of money were altered substantially at this time. The Minister of War now allocated to each branch of the armed forces, on the basis of its claims and according to the minister's own judgment of priority needs, the money acquired for its operations. These funds came from the money which the minister himself had received in a lump sum. Each service was naturally anxious to obtain for itself as large a share of this lump as possible. In the end, CinC Navy often had to intervene personally in this battle for the Navy's share of the money.

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Allocation of funds

When the Navy received its money from the Minister of War, CinC himself decided what allocation would be made within the Navy. Requirements of bureaus and technical divisions were prepared and submitted as before, the only difference now being that the CinC, and not the legislative bodies, decided what was permissible. If estimated requirements exceeded the amount received, the Naval War Staff (SKL) then decided for CinC which measures should be given priority, and which should be postponed, on the strength of tactics or strategy.

Manipulation of funds

As stated, the budget of the armed forces during this period ceased to be an open book. While to all outward appearances, the Navy continued to conduct its 15,000 man budget, the real budget was divided into three sub-budgets for convenience. These were:

(1) The Navy Budget, referred to as the "Open Budget".

This was the money regularly granted to support the 15,000 man Navy allowed by the Versailles Treaty, with the commissioning and maintenance of ships already in service, the peace time construction projects, and a small increase in the appointment of officials, all details of which were submitted to the Ministry of Finance under the old procedure.

(2) The B Budget

This budget contained the money left over from the Secret Budget. All dispensable funds in the Open Budget were entered in the B Budget as revenue. In turn, B Budget covered any overexpenditures in the Open Budget at the end of the year. In this way, it was possible to scrape the last penny from the Open Budget, draw off savings and make them transferrable. The Open Budget and the B Budget were financed from real sources of the national income, i.e., duties and other government revenues.

(3) The Reconstruction Budget

This budget was essentially the same as the Open Budget. The money was entered in the Open Budget under the annual appropriations as "measures for re-forming the Navy". Personnel and material procurement was financed from this budget. At first, the increased appropriations of the reconstruction budget exceeded the items in the Open Budget, as the latter only contained items for the 15,000 man Navy. Thus, there were extra appropriations which were cleared again at the end of the fiscal year by a corresponding transfer of accounts.

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**Mefo Exchanges (1935-1938)**

To provide credit for the Navy during the period 1935-1938, and at the same time augment the funds available in these budgets, the Director of the Reichsbank, Dr. Hjalmar Schacht, introduced a form of financing known as "Mefowechsel" or "Mefo Exchange".

"Mefo" was an abbreviation for Metallurgische Forschungsgesellschaft (Metallurgical Research Company), a business firm which did not conduct active business. It was one of two firms designated by the Reichsbank to discount bills of exchange issued by the armed forces in payment for work performed for them. Until 1933, a Navy contractor drew the amount of his account against the Navy in a bill of exchange with a certain number (exact quantity unknown) of continuation bonds. Mefo accepted them and the contractor received his money when they were discounted. When the validity of a bill of exchange expired, Mefo surrendered one of the continuation bonds. This exchange of bonds for cash could continue as long as Mefo had continuation bonds and redemption of the bill of exchange could be postponed until it was possible to honor the bill from long term loans. Under this system of using the Reichsbank and private credit at a time when the state was unable to finance its projects directly, considerable sums of money were obtained for rearmament. More than 9 1/2 billion marks were invested by industry and business in Mefo bills of exchange or continuation bonds.

In these bills of exchange, a distinction was made between bills from firms or contractors and financial or global obligations. The firms drew their own bills of exchange. Those under 5,000 marks were redeemed in cash. For this purpose a new firm was set up by the Budget office. It consisted of Antarat (Gdr) Jansen and Lange. They obtained cash for this purpose at the Reichsbank on their own signature. It thus happened that continuing appropriations of the Navy Budget, including expenditures for personnel, came from the straight revenue of the country, i.e., from taxes and duty, while annual appropriations were financed indirectly through the Mefo exchange system. The continuing appropriations were officially



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recorded at the Finance Ministry, but all annual appropriations were taken over by the B Pay Office; that is, all bills of exchange were sent to the Navy Budget Office and, after entry in the books of the B Pay Office, were forwarded to Mofo which then completed the so-called "honoring" of the exchange.

Originally, firms dealing in Mofo exchange received the sum demanded by them immediately on the strength of the bill of exchange drawn by them. After February 1936, however, the firms received instead a bill of exchange maturing after five months. These bills of exchange could be invested or converted through a bank. The Reichsbank discounted the bill at the earliest permissible time under the banking law, i.e., within the last three months of its validity. This procedure was discontinued at the end of the 1937 fiscal year.

In February 1933, Hitler assumed supreme command of all the armed forces, and the Cabinet resolution of 29 March 1933 was given established backing in an official directive dated 4 February 1933. This continued to be in effect throughout the war. Under this directive, any application for deviation from budget regulations, laws, etc., within the Navy had to be made to the Navy Budget Office which referred it, if necessary, to Cinc Navy for decision.

Reich Treasury Bonds (1933-1939)

Commencing with 1 April 1933 the state was able to finance its obligations directly, and contractors were freed from further exchange transactions. Instead of a Mofo bill of exchange, the contractor received an IOU in the form of a Reich Treasury bond to be honored in about six months.

Financial Crises

In December 1933, a financial crisis arose as a result of the increased commitments following Germany's occupation of Austria and Czechoslovakia. This crisis was so serious that Cinc Navy ordered that military pay and allowances were to have first priority. To assist disbursing authorities, he also directed that all individual dealers' bills and contract payments exceeding 20,000 marks were to be handled only by the B Pay Office in the

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Admiralty. All construction projects costing more than 30,000 marks were reviewed, if work had not commenced, and no new work costing more than 30,000 marks was considered.

At first, no restrictions were placed on payments for shipbuilding and the development of dockyards. While both the Army and Air Force had to resort to substantial restriction on payments, which even led to non-payment for food, the Navy was able to manage smoothly without imposing serious restrictions.

In April 1939, another financial crisis developed. As a result, the payment of contractors by means of Reich Treasury bonds was discontinued, the quota having been exhausted.

Tax Vouchers (1939)

After 1 May 1939, payment of armed forces' contractors was made in accordance with the New Finance Plan of 30 March 1939. Previously, future tax yields had been anticipated by means of national loans. These loans bore interest and so meant a continuing increase in financial obligations. Interest owed at that time had already reached 3½ billion marks.

In the new system of financing, tax yields were anticipated by "tax vouchers" instead of loans. From 1 May 1939, the state, provinces, municipalities, state-owned railways, the post office, the national autobahnen and similar bodies had to pay 40 percent of their industrial contracts with tax vouchers. The other 60 percent was paid in cash. This system did not apply to bills amounting to less than 500 marks. Tax vouchers were issued by the Minister of Finance. This procedure was discontinued at the end of October 1939.

Recapitulation

The Navy was able to raise, through the various methods described, the following amounts of money for its budget:

1933	301 million reichsmarks
1934	663 " "
1935	650 " "
1936	1,132 " "
1937	1,428 " "
1938	1,600 " "
1939	3,300 " "
	<u>9,074</u> " "

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Other financing methods employed

Although the reserve funds of savings banks, insurance institutions and private enterprise were continuously drawn upon, other means of state financing and taxation were applied to the utmost during the war. The Nazi policy, in the latter years of the war, was to obtain 50 percent of the state revenues by taxation and 50 percent by state loans. During the first five years of the war, the tax revenues were almost doubled. This violent increase came to a standstill, however, in 1943-1944.

Enormous sums were squeezed out of the occupied countries under the guise of "contributions" for their undesired occupation. Max Seydewitz, a former member of the German Reichstag, in his book "Civil Life in War-time Germany" stated that Norway was forced to pay \$108.82 per capita for its occupation, France \$60.50, Belgium \$42.10, Denmark \$31.90, and the Netherlands \$28.13 to Germany.

In 1941, 1.2 billion kroners were "contributed" by Norway, 1.2 billion guilders by the Netherlands, 600 million kroners by Denmark, and 13.6 million francs by France. The sum that Belgium had to pay per year, converted into reichsmarks at the official rate, was 1.3 billions, almost the same amount that Germany had paid as reparations annually after World War I. France paid 400 million francs per day, later 300 million, and 500 million after the occupation of the whole of France. All in all, France paid 77 billion francs in 1940 and 130 billion in 1941, in addition to a further 20 billion for "expenses for financing the Franco-German clearing scheme". Again at the official rate, she paid 11 billion reichsmarks from her capitulation until the end of 1941, the same amount that Germany paid all told in reparations after World War I. From all Western countries Germany exacted considerably more, namely 20 billion reichsmarks in the eighteen months ending 31 December 1941.

Treasury Credit Notes

In countries occupied by German troops, the legal currency of the Army, according to Reichsbank Director Max Kretschmann, was the Reichskreditkassenschein (National Treasury credit note). By developing this currency, it was intended (1) to avoid the use of German bank notes abroad

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by troops and (2) to create a kind of "requisition money" with which the German army could operate. This second point was of special importance. The German authorities, thus, made available a legal currency with which the German soldier could pay for services received. It was not intended that the Treasury credit notes would replace the indigenous currency of the country but that they would be supplemental to it. This method, Kreschmann said, permitted requisitioning to assume a businesslike form, without endangering business in the occupied countries.

The circulation of these notes from the beginning of the war until the end of 1943 shows the following development:

End of 1939	37 million reichsmarks
" " 1940	553 " "
" " 1941	1,781 " "
" " 1942	2,664 " "
" " 1943	3,100 " "

While the introduction of the Reichskreditkassenschein legitimized procurement transactions in occupied countries, their use compelled the note-issuing banks in occupied countries to adapt their monetary system to the Reichskreditkassenschein, in order to maintain control over the expansion of notes in circulation.

The authorities of the occupied countries gradually realized that it was better to finance the demands of the German military with domestic currency and by this method avoid further issue of the German treasury credit notes. As soon as this result was obtained, the Reichskreditkassenschein were recalled. This took a short time in some countries, such as in Denmark and Norway, while more time was needed in France, the Lowland countries and in the Balkans.

Immediately after German troops occupied a country, a stable relation between the treasury credit note and the domestic currency was established.

In the course of time, however, the European currencies became more and more dependent on the German mark, because the treasury credit notes and their clearance introduced a new form of currency and trade.

Capt Wilhelm Boettcher, former fleet paymaster of Group North/Fleet, said that the Reichskreditkassenschein could not be considered an invasion

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currency. He stated:

"We used it to prevent damage not only to our own currency but also to the currency of occupied countries. Example: If a naval officer had to make a duty trip to Denmark, a percentage of the travelling allowance and per diem was granted to him in Reichskreditkassenschein. He changed these German credit notes on the Danish border into Danish kroner, thus preventing German marks going into Denmark and at the same time preventing damage to the Danish economy."

Dr. Eggert explained that this currency resembled the regular reichsmark in appearance, that personnel of the armed forces outside of Germany were paid with it and that it was acceptable in German shops in those countries. He did say, however, that French and Italians were reluctant to accept this currency but that black market operators wanted it, since it was redeemable in Germany at the same value as regular reichsmarks. (Once it was redeemed into regular marks, the black market operator then had marks acceptable to the industrialist or merchant with which he could purchase more Reichskreditkassenschein at a discount. Thus the cycle commenced again.)

VADM Machens said that when he was on duty in Norway, he was paid in Norwegian bank notes. Marinobehringsspektør zur Mühlen made the same statement. He added:

"It was a regular Norwegian currency obtained by Cinc Norway from the Norwegian government. We did not get very much of it; just enough for our allowances, because we wanted as much of our money as possible to stay within the German economy."

From these interviews, it has been concluded that the Reichskreditkassenschein were surrendered to officials of occupied countries in exchange for local currency to be used to pay German troops within that country and that obligation for services and material procurement were not met by paying contractors with these notes.

In the countries of Italy and Greece, indigenous currency was obtained by German paymasters direct from the treasuries under special agreements. Treasury credit notes were not used in those countries for the payment of troops and for local obligations.

The Navy Budget Office (ONM/R)

When the naval budget had been approved, either by the Finance Ministry

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or the Reichstag prior to 1933 or by the Nazi Cabinet thereafter, OKM/E had the responsibility of apportioning the Navy's funds to the various naval organizations. It also was responsible for the administration of those funds.

Before World War I, supply and budget affairs were jointly administered by the Supply/Administrative Department of the Bureau of General Affairs (MarWahr/C). In 1913, the fiscal section was divorced from the Supply/Administrative Department and combined with the pension section of the Admiralty to form a budget department. At the end of World War I, the pension section was transferred back to the Supply/Administrative Department. The budget section, however, continued independently under an officer. The Supply/Administrative Department was headed by an official.

Thus the Navy's budget organization developed along different lines from that of the Army, and during World War II remained different from that of either the Army or the Air Force. In the Army, the budget section was part of the General Division of the Army, and in the Air Force it came under the Supply/Administrative Department. The Navy Budget Office was independent and directly subordinated to CinC Navy.

The official argument in favor of the Navy Budget Office being responsible solely to CinC Navy was that it could not be forced to deviate from regulations by pressure from senior officers or higher departments.

Adm Erich Foerste, chief of OKM/E in 1934-1937, stated:

"CinC, acting under orders of the Fuehrer, controlled all the money spent by the Navy and there was no further responsibility to the public.

"The money requirements of the armed forces were presented to the Supreme Commander via the Minister of Defense. That was Blomberg at that time. The Ministry of Defense was later transformed into the OKW. There the lump sum allowed for the whole military establishment was apportioned among the three services. The flow went from Blomberg to Raeder and OKM/E where it followed the process described before. It was the task of OKM/E not only to distribute the money but to fight for the money. It was my duty to give the Navy's requirements and good reasons for these requirements to Blomberg and to the Fuehrer, via GrAdm Raeder.

"The Supreme Court of Accounts had no authority in checking the flow of the money once granted to a service. It could only examine and check whether or not the money had been spent according to its intended

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purpose, but could not issue orders as to how it should be spent.

"After 1933, there was no agency of the national government with authority to issue orders about procedures to be employed in expenditure of money. However, during the days of the Reichstag, that body issued all orders concerning the way money was to be spent by the armed forces. After its liquidation, this task insofar as the Navy was concerned lay solely in the hands of the CinC Navy. OKM/E carried out his instructions and issued a type of an annual appropriation bulletin listing the titles to be charged and the purposes for which the money had been obtained.

"When the funds were distributed, we attached orders regarding their expenditure, viz., the purposes set forth in the requests by the bureaus, offices, etc. It was strictly prohibited to spend money for any purpose other than stated in these orders. It was not possible for the head of a department to transfer funds from one title to another. If, in the course of a fiscal year, he found he would not use all the money granted him in one title, he could ask CinC Navy, via OKM/E, for permission to use this money for another title.

"The whole accounting structure was built around titles. If title 19, for example, was the title for the construction of submarines, all expenditures of that type would be charged to title 19. The annual bulletin was distributed widely and all the activities had to do was to see that the expenditures were in accordance with the purposes set forth in the bulletin.

"While I was chief of OKM/E, I would submit requests to spend money for purposes other than those for which funds were allotted to CinC, with my recommendations as to whether or not they should be approved. I did not have the authority to authorize such changes myself. CinC signed all such authorizations.

"In any irregularities in the expenditure of funds allotted, OKM/E had the duty to report the incident to GrAdm Raeder and formally prepare the charges against the offender; however, supervision over the various funds allotted to the different Navy offices was carried out by the bureau, division or office to which the money had been distributed.

"In arriving at our budget requirements, each bureau, division or office submitted a list of its requirements, with a report giving the reasons for them. In each bureau, there were officers or officials who were specialists in questions of the budget. In most cases the reports referred to requirements of the preceding year. If there were no new requirements, no military reasons had to be given. It was a matter of experience to know and to see when the requirement was too high or when it was reasonable and a matter of experience to know the different specialists and to know who exaggerated their requirements."

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Ministerialrat (Capt) Dr. Klaus-Ahrentin Eggert, deputy assistant chief of OKM/E from 1941-1945, added:

"Our fiscal years ran from 1 April to 31 March. All money not spent reverted to Ministry of Finance before 1933, after that to the Minister of Defense or, after its establishment, to OKW. In short, the Navy lost it.

"We maintained no control whatsoever over the amount of money that was spent during the war. We continued to advise the bureaus and offices what amounts they could spend, but permission to overexpend allotments was loosened up, since there was no Reichstag control. All military installations had sufficient money for their needs. Only in instances where we wanted to retain a bit did we give only the amount we intended to spend. In requesting funds, the bureaus, etc., were required to furnish estimates, but they were not binding. You might say that there was no actual budget during the war. We only issued instructions regarding how the accounting offices would report the various expenses.

"All financing of the many Navy-sponsored industries was performed by the bureaus or inspectorates concerned. Each had its own system. My primary duty in OKM/E was to handle these transactions. I gathered all the charges together.

"We had a lot of difficulty in establishing what our expenses were in the occupied countries. When we occupied Greece, the relation between the mark and the drachma was one mark to sixty drachmas. That is the way we set the exchange. We used it for occupation costs because our government had to buy a lot of things in Greece in local currency. But then the currency began falling. Prices rose day by day. We needed this money to purchase Greek material and to pay the Greeks in our dockyards in their own currency. We obtained it from the Greek Treasury.

"Reports of withdrawals from the Greek Treasury were sent to OKW where it was taken up in marks. In the beginning it was all right. But then it mounted into millions. The accounting officer in Greece did not take it up as 50 million drachmas, but as marks at a rate of 60 drachmas to the mark. His expenditure reports were going to the Reichsbank in Berlin stating that the Navy used so much, the Army so much. There it was entered on the books.

"In the beginning of the war, the Navy used about 6 million marks worth of drachmas annually. In 1942 we needed 3 million more, so we said: 'The Navy will need in 1942 nine million and in 1943 it will not be more'. The next year it was 50 million. We could not explain it. The disbursing officer in Greece had not accounted for the cheapening of the drachma and therefore nobody can tell me now what the war cost us in Greece.

"We kept a daily graph on the open market exchange in Greece, but we did not recognize what was happening



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in time to do anything about it, because we had no check on the amount the finance officers were drawing from the Greek Treasury. The Greek Ministry of Finance was forwarding the receipts for money issued to our finance officers to our Ministry of Finance. They did not, however, come to OKM/E. Everybody could take as much money as he needed from the Greek Treasury.

"There were only seven people attached to OKM/E. Capt Baumke as chief, Flottenintendant Thiele, myself and four other officials of the lower brackets. Therefore, accounting was not kept up-to-date. Incomplete accounting is of no value whatsoever. As a result, the cost of the Navy's part of the war will never be known.

"The destruction of Hildesheim on 22 March 1945 is another example of why the cost of the Navy's participation in the war can not be assessed. We consolidated three large accounting groups there, in accordance with instructions received from Dr. Albert Speer. He said we were using too much personnel. One group handled military personnel payments, another civil officials and the third bills for industry. It was a great pity, because all bills had to be sent there for payment. When this central pay office was bombed out, various firms were owed many millions of marks, which otherwise would have been paid. That is one of the great dangers of gathering all accounting features together in one place.

"OKM/E did not have an inspection service. It only allotted, distributed and controlled funds. It could not take action in case of shortage. That was the job of the Intendanturen offices. It also could not disallow a payment. That was the job of the preaudit offices and Supreme Court of Accounts."

Disbursing Agencies

There were four types of disbursing agencies in the Navy. They were:

(1) The Independent Pay Offices

These were offices with sufficient disbursing volume to justify their establishment as an independent entity such as at the Admiralty in Berlin, at a main naval base or a large convalescent hospital. They were located at:

The Admiralty, Berlin  
The Naval Dockyard, Wilhelmshaven  
The Naval Dockyard, Kiel  
The Convalescent Center, Hodsteinsche-Schweiz  
The Naval Torpedo Testing Station, Eckernfoerde  
The Naval Headquarters, Hamburg

These offices paid all military and civilian personnel attached to their station, as well as obligations for services and material contracted by agencies for which they were responsible.

(2) The Central Pay Offices

These offices were located at major ports around which

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was a high concentration of naval activities, each of which had a disbursing office with an insufficient volume of disbursing to warrant its establishment as an independent pay office. These offices paid all military personnel, labor rolls and dealers' bills for all naval activities in the area assigned to them. They were located at:

The Admiralty	The Naval Station,
The Intendantur Office,	Flensburg
Wilhelmshaven	The Naval Station,
The U-boat Pay Office,	Swinemuende
Wilhelmshaven	The Naval Station,
The Intendantur Office,	Stralsund
Kiel	The Naval Station,
The Naval Station, Borkum	Pillau
The Naval Station, Emden	The Central Procurement
The Naval Station, Cuxhaven	Office, Hildesheim

(3) The Special Pay Offices

These offices were regionally situated, so as to reduce transmission of family allowance payments to a minimum. They calculated the salaries of all naval personnel and paid to their families the difference between the amounts earned as salaries and allowances and that paid to the men by their paymaster. They were located at:

Nordhausen	Wilhelmshaven
Luisenlund	Kiel
Floen (U-boats)	Brake
Rudolstadt	

The first special pay office, established shortly after war broke out, was at Brake. The others were established in the years 1942-1944.

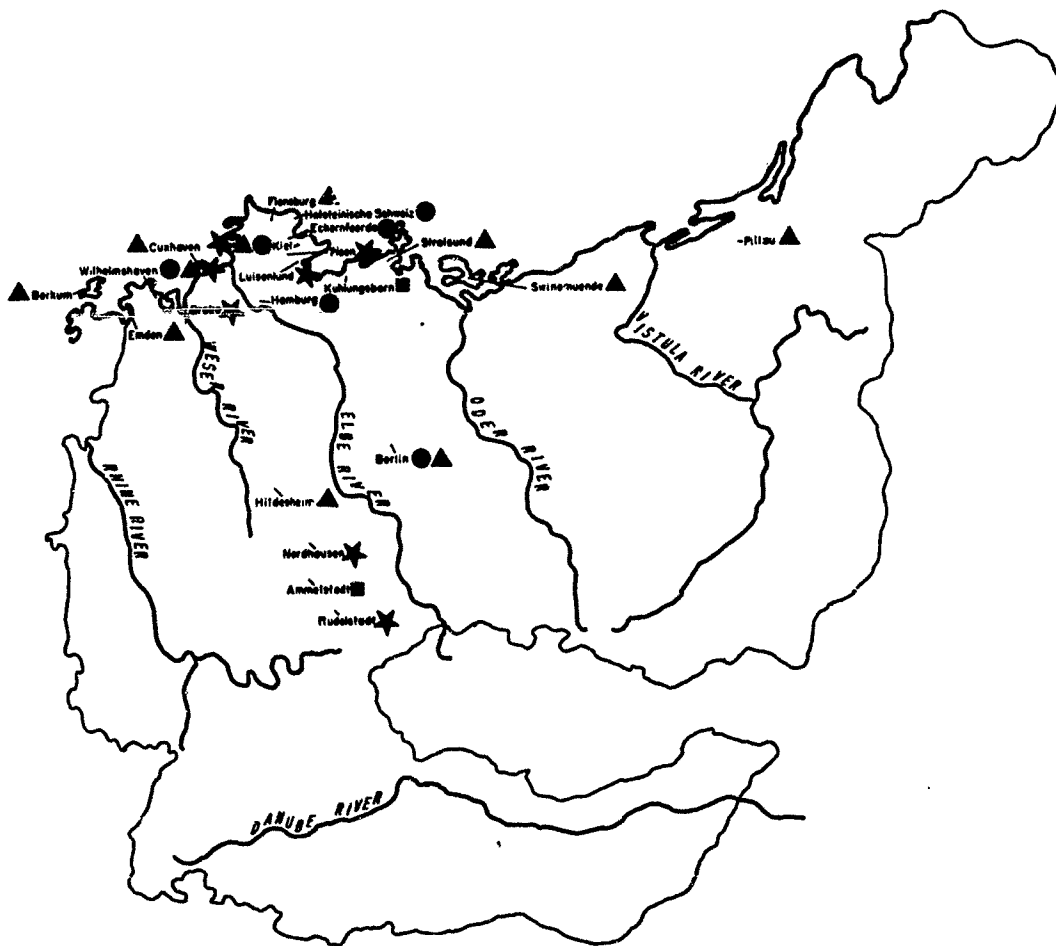
(4) The Compensation Offices

There were two of these offices, one at Ammelstadt and one at Kuhlungsborn. Their function was to compute and transmit the family allowances of dependents of officials and other militarized civilians on duty in the Navy, and make deposits in savings accounts of earned salaries not drawn for persons without dependents. Ammelstadt took care of payments to dependents residing in the northern and western areas of Germany, Kuhlungsborn distributed payments to those dependents residing in the southern and eastern areas.

Disbursing Offices Outside Germany and Aboard Ship

Disbursing offices were established at all large naval bases in occupied countries and aboard major ships and in flotilla staffs for the payment of base pay, dealers' bills and local labor bills. Independent and central pay offices were also established ashore in occupied countries, as the work load of the disbursing offices warranted.

## NAVAL DISBURSING OFFICES



### LEGEND

- INDEPENDENT PAY OFFICES
- ▲ CENTRAL PAY OFFICES
- ★ SPECIAL PAY OFFICES
- COMPENSATION OFFICES

346a

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Effect of Centralization

Capt Boettcher, in discussing the pay office organization, stated:

"With the enormous increase in personnel during the war it was no longer possible for naval pay offices to furnish the families of men with their allowances. Therefore, we centralized the pay system for salaries in special pay offices. In these offices the basic salary of the men, less pocket money allowance, was calculated and transferred to the families, or in the case of bachelors, to bank accounts. One of these special pay offices was located in Brake near Bremen. It was headed by Capt (V) Behrendt. His pay office was responsible for the payment of the families of personnel aboard ships in foreign waters. However, all those special pay offices had their own special tasks and areas in connection with the payment of basic salaries. They were of different size and, as far as I recall, the larger pay offices at Nordhausen (250,000 accounts) and Luisenlund (60,000 accounts) worked with electric business machines of the Hollerith type. One of our experiences in that connection was that these centralized pay offices must at all times be very heavily sheltered. The central pay office at Nordhausen was heavily bombed and destroyed, and with it we lost the pay documents of thousands of men."

Use of Giro Banking System in making deposits to the credit of Paymasters and in paying obligations

On 1 January 1935, the German commercial banking system was nationalized. Control was placed in the hands of a supervisory banking board and a banking commissar. One of the features of the new banking system, as it affected naval disbursements, was the Giro method of bank transfers. Briefly, it worked as follows:

The Reichsbank, the central bank of issue, managed the monetary and rediscount policies of the country and supervised the entire banking system. Several large national interest banks, among which was the Land Bank, some public banks and a great number of small commercial, savings, agricultural, credit and rural banks were welded together into a system of major and correspondent banks, through which the government agencies could make deposits, transfers, etc.

When the annual military budget was approved by the Cabinet, the Director of the Reichsbank was notified of the amount involved. These funds were then placed in the Reichsbank to the credit of the Minister of Defense, later known as the chief of CkW. When the Minister of Defense allocated these funds to the various armed services, he requested credit

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to the account of the service involved with the Reichsbank. In the case of the Navy, this deposit was made to the credit of the Navy Budget Office (OKM/E). Thus the annual budget for the Navy was set up on the books of the Reichsbank, subject to instructions from the Navy Budget Officer.

When funds were made available by the Budget Office to the various bureaus, inspectorates, Intendantur offices, etc., the same system was employed. These allocations were made once a year. Funds to cover the many projects were then available for disposition by the supervisory groups, the bureaus, inspectorates, Intendantur offices, etc., through the Reichsbank.

The same system was employed by these supervisory groups in reallocating funds to subordinate activities. Example: The Intendantur Office at Kiel desired to place funds at the disposal of the Naval Clothing Factory at Kiel, with which to finance the procurement of cloth, etc. The Reichsbank, or its corresponding bank at Kiel, was informed in writing that so many reichsmarks were to be transferred from the account of the Intendantur Office to that of the Naval Clothing Factory. The same system would be employed if the Intendantur Office desired to allocate funds to a clothing or food store, or to a pay office at a naval dockyard coming under its administrative control.

All personnel in the Navy, including officials, whose salaries exceeded 300 reichsmarks per month were required to maintain a bank account. The salaries of such personnel, except in emergency where they needed cash, were deposited to their bank accounts. Personnel in lower salary brackets were paid in cash.

All dealers' bills, family allowances and other obligations were likewise settled in the same manner - through bank transfers. This resulted in a very small amount of cash being required by paymasters, both ashore and afloat.

The system employed in making these payments through the bank involved the preparation of a list of payments to be made by the bank, showing the name of the payee, the bank in which the payee's account was held, the amount to be paid and any pertinent accounting data. This list was then

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PAY AND ALLOWANCES FOR NAVAL PERSONNEL  
(Stated in Reichsmarks)

Rank or Rating	Annual Base Pay	Monthly Base Pay	Monthly Pocket Money in Germany	Monthly Pocket Money at Sea or in occupied Countries	Monthly Lodging allowance	Monthly Child allowance for Each Child (not exceeding two children)	Monthly Sea Pay for Surface Ship Personnel	Monthly Sea Pay for U-boat Personnel
Grand Admiral	26,550.	2,212.50	300.	375.	Tariff #1	20.00	0.75	1.20
General Admiral	24,000.	2,000.00	240.	375.	Tariff #1	20.00	0.75	1.20
Admiral	24,000.	2,000.00	240.	300.	Tariff #1	20.00	0.75	1.20
Vice Admiral	18,000.	1,500.00	210.	262.50	Tariff #1	20.00	0.75	1.20
Rear Admiral	16,000.	1,333.33	180.	225.	Tariff #2	20.00	0.75	1.20
Captain	12,600.	1,050.00	150.	189.	Tariff #2	20.00	0.75	1.20
Commander	9,700.	808.33	120.	150.	Tariff #3	20.00	0.75	1.20
Lt. Commander	7,700. - 8,400.	641.67 - 700.00	108.	135.	Tariff #3	20.00	0.75	1.20
Senior Lieutenant	4,800. - 6,900.	400.00 - 575.00	90.	120.	Tariff #3	20.00	0.65	1.00
Junior Lieutenant	3,400. - 4,200.	283.33 - 350.00	81.	101.25	Tariff #4	20.00	0.60	0.90
Ensign	2,400. - 4,200.	200.00 - 350.00	72.	90.	Tariff #5	20.00	0.60	0.90
Senior Chief Petty Officer	2,500. - 7,934.	212.50 - 247.00	60.	75.	Tariff #5	20.00	0.55	0.80
Junior Chief Petty Officer	2,400. - 2,838.	200.00 - 236.50	60.	75.	Tariff #5	20.00	0.55	0.80
Petty Officer first class	2,394. - 2,646.	199.50 - 220.50	54.	67.50	Tariff #5	20.00	0.55	0.70
Petty Officer second class	2,040. - 2,514.	170.00 - 209.50	45.	56.25	Tariff #6	20.00	0.50	0.70
Petty Officer third class	1,536. - 2,256.	128.00 - 188.00	42.	50.75	Tariff #6	20.00	0.50	0.60
Seaman first class	1,410. - 1,800.	117.50 - 150.00	36.	40.50	Tariff #7	20.00	0.45	0.50
Seaman second class	None	None	30.	30.70	Tariff #7	20.00	0.20	0.35
Apprentice seaman	None	None	30.	30.70	Tariff #7	20.00	0.20	0.35

Notes: Lodging allowances varied with districts in which lodgings had to be found. This allowance was payable to all personnel not occupying government quarters.

Engineer's Allowance

Petty Officer second class 2,040. - 2,514.

Petty Officer third class 1,536. - 2,256.

Seaman first class 1,410. - 1,800.

Seaman second class None

Apprentice seaman None

U-boat Allowance

170.00 - 209.50

128.00 - 188.00

117.50 - 150.00

None

None

45.

42.

36.

30.

30.

Tariff #6

Tariff #6

Tariff #7

Tariff #7

Tariff #7

Diving Allowance

20.00

20.00

20.00

20.00

20.00

Notes: Lodging allowances varied with districts in which lodgings had to be found. This allowance was payable to all personnel not occupying Government quarters.

When there were more than two children in a family, 10 RMs per child was payable for each additional child. This allowance creditable for legitimate, illegitimate and stepchildren.

Engineer's Allowance

All engineroom personnel and dockyard technicians serving afloat were entitled to an Engineroom allowance of 0.30 per diem while in home waters.

Such personnel serving abroad received 0.60 per day. This started after the 30th day away from home waters.

U-boat Allowances

Personnel serving in U-boats were entitled to a U-boat allowance, payable at a daily rate for every day on which the boat submerged. Duration of the dive was immaterial. The rate varied between 4.00 for officers and 1.50 for ordinary seamen.

Diving Allowance

Qualified divers were entitled to the following rates per hour, or fraction thereof, while submerged:

- (a) Dives in Rubber Suits: -  
Up to 16.4 feet 4.05  
16.4 to 32.8 feet 6.07  
32.8 to 49.2 feet 8.10

- (b) Dives in Deep-Diving Gear: -  
(i) Up to 65.6 feet depth 4.00  
(ii) 85.6 to 131.2 feet 6.00  
(iii) 131.2 to 196.8 8.00  
Practice dives were paid at half the above rates.

Ration Allowance for personnel in Merchant Ships

This allowance was payable to naval personnel for each day (not less than nine hours) served at sea in vessels not flying the German naval ensign.

Rates of daily allowance  
Single men . . . . . 0.60  
Married men . . . . . 1.20

Specialist Allowance

A bonus of 60.00 per annum was payable to chief petty officers showing proficiency as machinists, metalsmiths, carpenters, etc.

Front Allowance

An active service allowance was paid to personnel of all ranks who, by reason of their duties, were exposed to special hardships. The rate of this allowance and conditions under which it would be paid were regulated by the Admiralty. It was reported by one official to amount to 30 Rm per month.

Longevity Increases

Longevity increases were granted every two years. They were not percentage increases. A man or officer moved into a new pay grade. The annual base pay of a junior lieutenant, for example, was increased from 3400 Rms to 3700 Rms at the end of two years' service in grade. His lodging allowance, which was roughly one-fifth of his base pay, was likewise increased.

Re-enlistment Allowance

Re-enlistment bonuses, varying from RM 100 to 200, were payable to all ratings.

Ration Allowance for Officers and ORs

Officers and chief petty officers received one-half of the regular ration allowance in each month, although subsidized free of charge. This was given then to assist them in maintaining independent messes and, where available, to purchase supplemental food, such as a cup of coffee between meals, etc. (see chapter on Provisions).

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delivered to the bank. A copy (possibly more than one) was receipted and surrendered to the paying officer. The bank, through its own bookkeeping department or through transfer to a correspondent bank, then credited the account of the payee. This system eliminated the use of checks. The receipted copy of the payment list, supported by the original dealer's bills, became a part of the financial return. This in turn eliminated the preparation of public vouchers and schedules of disbursement.

Arrangements were also in effect for transfers of funds and for making payments through the German Post Office. It is not clear just what differentiation was made between those payments which would be sent through the Reichsbank and those which would be transmitted through the post office. It is believed, however, that the postal system was used for family allowance checks for dependents of non-commissioned personnel, and the Reichsbank for all other transfers.

Payments of bills outside Germany

Payment of obligations outside Germany were made, as shown above, with treasury credit notes or indigenous currency obtained in exchange for them.

If a ship sailed before settling bills incurred in Germany, however, the bills were returned to a central pay office in Germany for settlement.

Personnel could exchange local currency into German marks before leaving a foreign port, provided the disbursing officer could use it in settling his bills and that no loss through exchange resulted to the government.

Pay and Allowances

It is recognized that the amount of pay and allowances earned by personnel does not properly fall within the scope of a logistics study. However, in order to understand the method by which the Navy provided personnel at sea and on foreign shores with incidental cash requirements, it seems necessary to furnish a pay schedule and explain the system of supporting dependents. A pay schedule appears on page 346a. Rates used were established by the Pay Laws of 16 December 1927 and 28 August



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1930. Salaries consisted of (a) basic pay, (b) lodging allowances (when free barrack accommodations were not provided), (c) child allowances, (d) special allowances for personnel afloat and on foreign shore, (e) special family allowances and (f) a pocket allowance known as the "Wehrsold".

The Navy differentiated in pay and allowances between regular and non-regular personnel. The former consisted of officers, non-commissioned personnel, officials and other militarized civilians who were members of the Permanent Navy. The second group was composed of persons inducted into service for short term service.

During national emergencies, all personnel, officers, men, officials - everyone wearing the uniform of the armed forces - was subsisted, housed, clothed, hospitalized and medically treated free of charge by the government. While serving on detached duty, personnel was paid a per diem allowance to take care of such expenses. It was therefore considered that they had no living expenses while in the service.

To offset these costs to the government, the deductions shown below were made from the pay of regular personnel:

Married personnel.....	(a) with no children.....	10%
	(b) with no more than 2 children	6%
	(c) with 3 or 4 children.....	3%
	(d) with 5 or more children.....	none
Single personnel .....		20%

Regular personnel above the rank of seaman, on duty ashore in Germany, drew all pay and allowances, less the deduction mentioned above. Personnel serving afloat or on foreign shore were furnished with pocket money (Wehrsold) only. Non-regular personnel afloat and ashore, either in Germany or on foreign shore, and seamen of the regular Navy drew only pocket money.

The peacetime pay and allowances of regulars, however, were protected, in that the deduction made for food, clothing, etc., could not exceed the amount paid to them as pocket money.

Family allowances for regular personnel other than seamen

There has been no indication in the documents studied or in the transcripts of interviews held that families of regular personnel received any added benefits to offset the increased cost of living during wartime.

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The pay and allowances of regulars was supposed to take care of such increases. Certain assistance grants, such as expenses attendant on child-birth, hospitalization of dependents, etc., were made. These were reimbursable on a percentage basis, about 75%, upon the presentation of paid bills. However, there were no permanent additions such as those allowed dependents of non-regulars. When a regular officer or man was at sea or on foreign shore, he drew only his pocket money. If he was married, all other money due to him was paid to his family. If he was a bachelor, it was banked for him in a savings account.

Family allowances for non-regular personnel and regular seamen

Non-regular personnel and regular seamen afloat or ashore, in Germany or abroad, received only their pocket money allowance in payment for their services. Dependents of these officers and men received a family allowance, commensurate with their needs, on which to maintain themselves. Unlike the regulars, many of these men came from walks of life affording them greater financial advantages and obligations than those enjoyed by service personnel. Therefore, a system was devised to ensure that the standard of living of the dependents of these conscripted non-regular officers and men would not be lowered because of reduced income during the period of their service. It was said that the reason for this was partly political, that the Nazi party desired to avoid any dissension on the part of dependents, and that it was greatly abused, especially during the early part of the war.

In order to establish the family allowance for such dependents, the non-regular filed with the disbursing officer at his first duty station a copy of his last income tax return. This document established the income to which the man had been accustomed. He also filed certificates showing his obligations. Example: A man might have purchased a home, on which he was making mortgage payments. He might also have payments to meet on an automobile, a radio or other appliance. His father-in-law and mother-in-law may have been living with him. His daughter may have been taking music lessons and attending a private school. A cook and/or a maid may have been regular members of his household. All these items

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were considered as a part of his regular living expenses and were included in the establishment of the amount of family allowance his dependents were to receive. Thus, a man earning 400 RM in civil life was inducted into the Navy as a seaman, where he received but 30 RM as pocket money. To arrive at the basic family allowance in such cases, the Navy deducted 150 RM from his regular income of 400 RM, to offset the cost of his pocket money, clothing, food and housing. This established the basic family allowance as 250 RM. To this basic allowance was added the monthly cost of rent or meeting payments on the mortgage on his house, his car, radio and refrigerator and the cost of his daughter's music lessons and tuition at school and maintenance of his parents-in-law, if such added expense was incurred prior to his entry into the service. It was permissible to retain domestics in the household under these circumstances and, where they had been with the family for a reasonable period, their wages were also allowed. It will readily be seen how such a system would lead to abuse. Officers and officials interrogated stated that in some instances, where men anticipated induction into the service, they would purchase on the deferred payment plan household appliances and other allowable items which they could not afford before, knowing that the government would increase the family allowance sufficiently to meet the payments. Restrictions were imposed on deferred payment purchases, after this practice came to light, and such abuse became a punishable offense. Family allowances are fully described in Appendix A.

Pocket money allowances (Wehrsold)

The system of paying only pocket money, or "Wehrsold", was instituted by OKW as an over-all measure to reduce to a minimum the influence of a great number of occupying troops on the economy of a country. The men could not buy souvenirs with the small amount of money made available to them. They could not outbid the native of the country for food, refreshments or other local products. The Wehrsold permitted a man little else than a couple of beers at the local naval canteen and an occasional cup of coffee and car fare on a sightseeing trip on shore leave. Capt Boettcher explained the purpose of the Wehrsold, when he said:

"The Wehrsold was introduced during the war. The intention was to furnish a man at sea and in occupied

SAMPLE PAGES OF AN OFFICER'S PAY BOOK

DISBURSING OFFICE: First U-boat Flotilla Pay Office  
STATEMENT FOR: August 1940

1. Base Pay . . . . .	4	9	3	0	4
2. Ration allowance . . . . .		2	4	9	4
3. Rental allowance . . . . .		3	0	0	0
4. Sea pay . . . . .		3	0	0	0
5. Engineer room allowance . . . . .					
6. Child allowance . . . . .		2	0	0	0
7. Pocket money allowance . . . . .	1	2	0	0	0
8. U-boat allowance . . . . .	1	2	4	0	0
TOTAL	7	4	1	9	8

DEDUCTIONS:

1. Taxes . . . . .	2	2	3	6	
2. Citizens tax . . . . .	4	4	7	2	
3. Officer clothing store . . . . .			3	0	0
4. Life insurance . . . . .		4	5	0	0
5. Pay advances . . . . .		2	9	1	5
6. Loans . . . . .					
7. Naval club dues . . . . .					
8. Athletic charges . . . . .				3	0
9. Excess travel charges . . . . .					
10. Telephone charges . . . . .					
11. Retired Officer's home contribution . . . . .		2	0	0	
12. Officers mess . . . . .		9	1	0	
13. . . . .					
14. . . . .					
15. . . . .					
16. . . . .					
Total Deduction- Amount to Bank- Amount drawn	1	5	5	6	3
	4	6	6	3	5
	1	2	0	0	0

Receipt Acknowledged.  
Date: 26 July 1940  
Signature -----

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DISBURSING OFFICE: First U-boat Flotilla Pay Office  
STATEMENT FOR: September 1940

1. Base Pay . . . . .	4	9	3	0	4
2. Ration allowance . . . . .		2	4	9	4
3. Rental allowance . . . . .		3	0	0	0
4. Sea pay . . . . .		3	0	0	0
5. Engineer room allowance . . . . .					
6. Child allowance . . . . .		2	0	0	0
7. Pocket money allowance . . . . .	1	2	0	0	0
8. U-boat allowance . . . . .	1	2	0	0	0
TOTAL	7	7	7	9	8

DEDUCTIONS:

1. Taxes . . . . .	2	2	3	6	
2. Citizens tax . . . . .	4	4	7	2	
3. Officer clothing store . . . . .			3	0	0
4. Life insurance . . . . .		4	5	0	0
5. Pay advances . . . . .		2	9	1	5
6. Loans . . . . .					
7. Naval club dues . . . . .		1	5	0	0
8. Athletic charges . . . . .					
9. Excess travel charges . . . . .					
10. Telephone charges . . . . .			9	2	5
11. Retired Officer's home contribution . . . . .			2	0	0
12. Officers mess . . . . .		2	2	0	6
13. . . . .					
14. . . . .					
15. . . . .					
16. . . . .					
Total Deduction- Amount to Bank- Amount drawn	1	6	0	5	4
	4	9	7	4	4
	1	2	0	0	0

Receipt Acknowledged.  
Date: 30 August 1940  
Signature -----

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countries necessary cash for his own personal requirements. It was independent from his normal salary. His salary was paid to his family by the special pay offices at home. The Wehrsold was paid aboard ships or in the field. As far as the amount paid as Wehrsold is concerned, the principle followed was that the enlisted man and admiral alike had no need to spend a great amount of money in the field. Therefore, the men received about 30 - 60 marks a month, rear admirals about 180. This amount was deliberately fixed and it was not a percentage of their normal salary.

"Part of a man's salary was deducted before payment was made by the home pay offices to the family. This was so that the soldier could not receive his pay and a full additional second pay. The amount deducted increased with the height of the Wehrsold, so that the deduction from the salary of an admiral was considerably higher than that made from a man's pay account.

"The Wehrsold was not a combat pay. It only gave the man an opportunity to pay for his personal needs away from home in canteens or at recreation centers. It was partly paid in the currency of the occupied countries.

"The amount issued in foreign currency depended on the economic capacity of a country and the state of its finances. For example, in Greece, we could hardly pay any Wehrsold at all in local currency because of the inflation.

"In France, which was heavily occupied by the German army, large payments would have been to the disadvantage of the French economy, and therefore the amount paid in foreign currency was very small. It was paid three times a month, so that the men would not spend it all at once."

Amtsrat Pfeiffer stated that his pay and allowances amounted to 780 marks per month. His Wehrsold was 108 marks. This was deducted from the 780 marks, and 672 marks were deposited to the bank account of his family.

Two sheets from a regular U-boat officer's pay book have been reconstructed and appear on page 352a. Attention is invited to the fact that, after actual living expenses and obligations, such as mess bills, telephone calls, subscriptions to the retired officers' home, etc., had been paid by the disbursing officer and deducted from his pay, the officer was paid his pocket money. The balance was available for transfer to his family by the special pay office carrying his accounts. Attention is also invited to the fact that the entries in the pay book for August 1940 were approved by the owner in July 1940. In other words, the credits and debits posted under August accrued during the month of July.

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Family allowances were paid not only to the men in the Army, Navy, Air Force and Reich Labor Service, but also to members of the Emergency Service, Customs Border Guards, the Post Office and Railway Guards, the Air Protection Service, the Red Cross and to all other organizations affiliated with the military services.

Allotments

The Navy had no personal allotment system. Life insurance premiums were deducted from pay accounts and paid once a year to the insurance company. In the interim, the Navy guaranteed the premium to the insurance companies.

Death gratuities

Death gratuities for married personnel amounted to three months' salary. No death gratuities were paid if the deceased was single.

Prisoners of war and missing personnel

Dependents of prisoners of war and missing personnel continued to receive their family allowances until a man was legally declared dead; likewise all salary, except Wehrsold, continued to be paid into bank accounts of personnel without dependents until they were declared dead. In peacetime, a missing person was declared dead after two years; in wartime, when hostilities ceased.

FISCAL ACCOUNTING

Funds and Appropriations

The Navy had no rotating funds, such as the General Account of Advances, Naval Stock Fund, etc. It did have annual and continuing appropriations, however. Before 1933, each year's annual requirements were appropriated by the Reichstag. Later they were approved by the Cabinet. Sums unobligated in annual appropriations were returned to OKW via OKM/E, thence to the Ministry of Finance or Reichsbank, depending on the period involved. Continuing appropriations, of course, remained available for projects until completed.

Before 1933, annual appropriations were often held up as long as three months after the commencement of a fiscal year, before disbursing officers

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obtained written authority from OKM/E to make disbursements. This delay, it was said, was often occasioned by the Ministry of Finance's delay in preparing appropriations bulletins. In such cases, each withdrawal of cash from the Reichsbank or transfers between accounts had to be authorized by OKM/E. In such instances, several officials stated, cash advances were often limited to two or three days' requirements.

Money Distribution and Fiscal Accounting Responsibilities

In peacetime, the Intendanturen, Kiel and Wilhelmshaven, were responsible to OKM/E for the distribution of money and supervision over disbursements. They distributed the money according to the needs of the various sub-pay officers in the districts, for which they were responsible. These sub-officers were then responsible to the Intendanturen for disbursements made from funds placed at their disposal. All independent central and special pay offices and compensation offices obtained cash or bank credits from the Intendanturen. Expenditures were checked by pre-audit offices established under the Intendanturen.

During the war, the Intendanturen and their successors, the senior administrative staffs, continued to have these functions performed by the pre-audit offices in the areas under their control.

The pre-audit offices at Kiel and Wilhelmshaven were branches of the main accounting offices of the supply/administrative divisions of the naval base. They performed auditing work for naval activities in those areas, thus relieving the administrative load at the Supreme Court of Accounts in Berlin. Their staffs were composed of former officials of the dockyard who were conversant with naval procurement and finance. Pre-audit offices were also established abroad under the senior administrative staffs.

Inspections

Inspections of disbursing activities ashore were made by representatives of the Supreme Court of Accounts and Fleet paymasters inspected the accounts of vessels in their force.

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Disallowances and shortages

The pre-audit offices, as well as the Supreme Court of Accounts, had authority to make disallowances and cause disbursing officers to repay sums paid out in error, where such mistakes could not be justified. In serious cases, they recommended trial of offenders.

Overpayments were usually collectable, either on a voucher deduction basis or by direct collection. In case of disputes, the paying officer or official could resort to litigation.

Geschwaderintendant Schmula stated that the Intendanturen and the chiefs of senior administrative staffs were not merely area funding officers. The senior officials in these offices and staffs were central disbursing officers as well, and responsible for all financial transactions in their areas.

"We had no bonding arrangement. We considered that a paymaster or disbursing official was a reliable man, once our investigation had been completed and he had been appointed. If he desired to carry insurance to cover accidental shortages, he was permitted to do so. Of course, this system was backed by very close checking and controlling. Every official who dealt with money had to make a daily report of his cash on hand. I remember faintly an incident of a shortage in Sylt, an island in the North Sea. I don't know what the trouble was, but it could not have been a very serious offense, since the pay official was only transferred to another base.

"In case a mistake was made, an official or paymaster had to make a report to the Intendantur, who decided the degree of his guilt and punishment. With regard to punishment which the Intendantur could inflict on one of these blundering Intendantur officials at sub-stations, there were certain limits beyond which the Intendantur was not entitled to judge. If, for example, an amount of money was overexpended, the decision had to come from OKM/E.

"Any chief of the Intendantur office or senior administrative staffs had the authority to inspect the accounts of the pay offices and to check and control everything connected with financial affairs and accounts in such offices throughout his whole district. He was also entitled, after having found some mistake, to transfer the officer responsible to another district. Of course, the chief did not do these things himself, especially the checking of accounts. He took finance experts with him who handled the details."

RAdm Schubert stated:

"During my several decades long career, it happened only once that an Oberproviandmeister (chief petty



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officer) committed embezzlement. Naturally such a thing happened now and again, but it happened extraordinarily seldom."

Dr. Eggert said:

"In case of falsification and embezzlement, the man responsible was taken before a court, where it was decided he had to repay his losses. If his offense was so grave that he had to be discharged from the Navy, then it could not be recovered, but frequently the responsible man had personal property which was then confiscated. If there were only minor amounts involved, he had to repay it in monthly increments and, if a minor offense, when he had repaid about 15%, and in serious cases 30%, the whole loss was then absorbed. Of course, 30% could not be taken of a high sum. We often said, when a man had been making restitution for a long time: 'It is sufficient punishment for him.'"

Fiscal Returns

Branch pay offices submitted quarterly financial returns to the central pay office. Returns consisted of a financial report, similar to an account current, in duplicate, supported by the receipted copies of the payment lists, covering transfers through the banking or postal system, dealers' bills, pay schedules, etc. A copy of the financial report was retained by the central pay office and the original, and supporting vouchers were sent to the pre-audit office. Paymasters afloat and disbursing officers and officials abroad also rendered quarterly financial reports to the appropriate senior administrative staff. These financial reports also were forwarded to the pre-audit offices for examination. When audit had been completed, the pre-audit offices forwarded financial returns to the Supreme Court of Accounts.

Intendantur offices and senior administrative staffs made a consolidated financial report annually to OKM/E, showing expenditures of all sub-offices and central and other pay offices, with a schedule of title charges and balance.

Payments to personnel

Officers and men aboard ship or on duty ashore in occupied countries were paid their pocket money every ten days during the war. In peacetime, they were paid once a month.

There was no system of identifying men (pay receipt, witnessing officer, etc.), when they were paid afloat. This was considered unnecessary,

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since division officers paid their men for the paymaster.

Pay lists, signed by the men and surrendered by the division officer to the paymaster in lieu of cash advanced, substantiated payments.

Officers signed their pay books at the time they were paid.

Before the war, both men and officers had individual pay books. During the war, a pay card replaced the men's pay books. These were retained at a special pay office in Germany. These cards show all pertinent data regarding base pay, additions and deductions.

The mission of special pay offices, as has been stated, was to calculate pay and remit balances due to dependents or banks. When such calculations had been made, a list of the men and officers showing amounts due was furnished to their commands. In the case of personnel abroad or afloat, this amount was the fixed sum of the Wehrsold.

Personnel interrogated stated that this type of pay card use was a very simple system, that it contained all the information that might possibly affect a person's pay. It was also said that only about 22 percent of the cards carried by the special pay offices required monthly changes, due to promotions, change of marital status, etc., and that the other 78 percent required no entries. A card was recalculated only when a change occurred.

Payments to Dependents or Savings Accounts

Pay and allowances earned were completely paid out every two months. Pay cards were maintained alphabetically, although pay numbers were assigned. In one month all cards from A to L were completely settled. Cards M to Z were settled the following month.

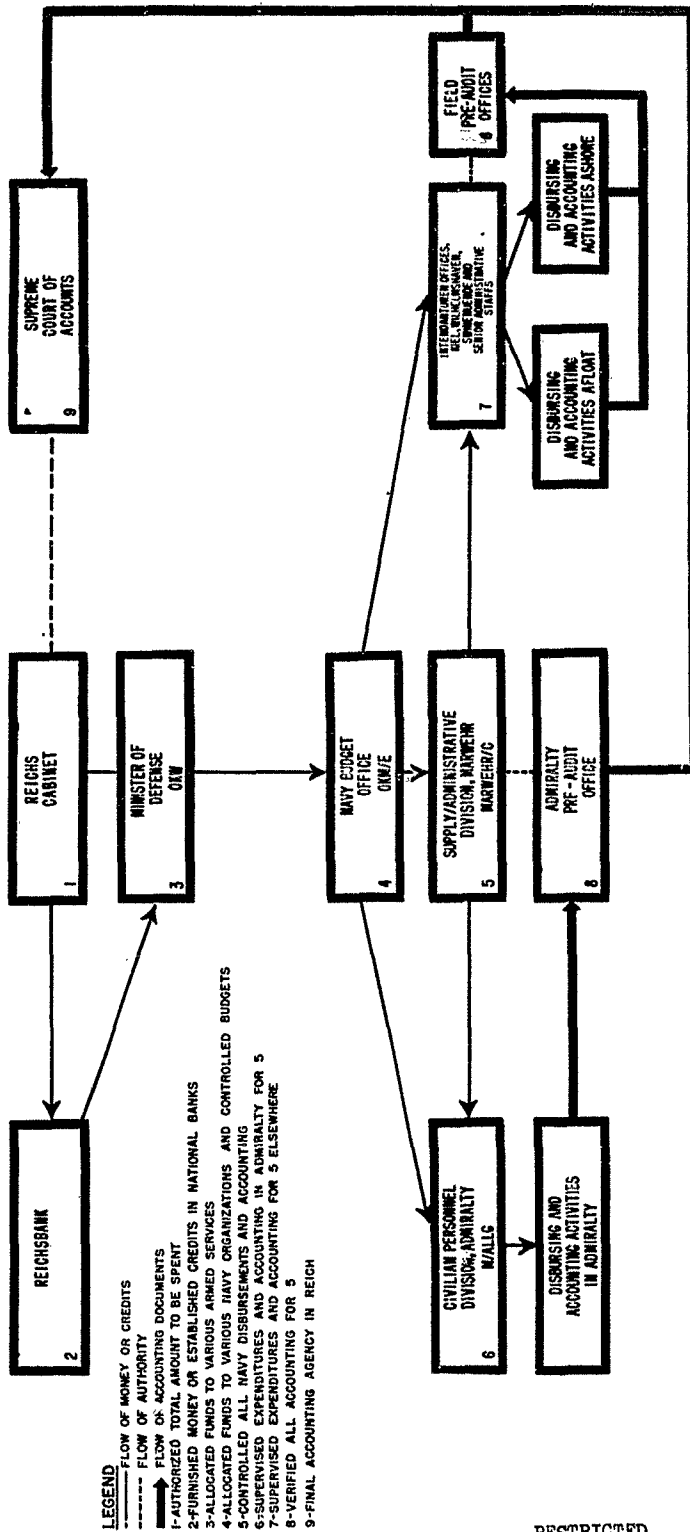
Payments were made to dependents through the post office or through the Reichsbank and its correspondent banks. Payments to savings accounts of individuals were made to the depository designated.

Accounting for Payments to Dependents and Savings Accounts

Accounting for such transactions was limited to filing with the financial return a copy of the list of transfer payments receipted by the bank or post office.

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# WARTIME FINANCE AND ACCOUNTING ORGANIZATION OF THE NAVY



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Payments to Civilians

It zur Muehlen stated that weekly civil pay rolls were prepared. These were based on time sheets made up from time punch cards. Amounts due were entered on small printed sheets of paper. These were distributed to the individual employees with their pay envelopes. Each man signed a pay list when paid.

Accounting for Payments to Civil Employees

Payments thus made were included with other daily cash expenditures. The signed pay lists became a part of the financial returns.

Income Tax Withholdings

Income tax was withheld at source on civil and military rolls alike. A report showing amount withheld and deposited was made annually by the disbursing officer or official to the Ministry of Finance.

Interservice Payments

The armed forces had no interservice pay system. Personnel was paid by its own service paymaster even if serving temporarily in another service. As a result of the lack of cooperation between services, there were delays in paying men on detached duty. Before the war, when detached duty orders were seldom issued, a system obtained whereby men of the Navy could be paid by Air Force or Army paymasters, and accounting therefore effected by interdepartmental transfers of funds.

Summary

A chart showing the flow of money and accounting documents in the Navy during the period 1933-1945 appears on page 356a.

The various bureaus and offices and Adm Qu III assessed their requirements for money, prepared a budget and submitted it to the Navy Budget Office (OKM/E). Theoretically, that office subjected these budgets to close scrutiny and approved them. It then consolidated the various budgets into a Navy budget, which was submitted to the Minister of Defense prior to 1934, afterwards direct to the Reichs Cabinet.

The Reichs Cabinet, after approving the consolidated budget for

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the armed forces prior to 1934 and the Navy budget after 1934 directed the Reichsbank to make the sum so approved available to the Minister of Defense or to the Navy, as appropriate.

The Navy's share of the armed forces budget, or the budget approved by the Reichs Cabinet for the Navy was given to the Navy Budget Office for administration. That office distributed the funds made available to it to the various bureaus and offices and other groups which exercised control over official funds.

All disbursing and accounting activities were subordinated to Mar-Wehr/C. Within the Admiralty itself, all disbursements for pay rolls were made by the Civilian Personnel Division (M/Allg). Contracts and other procurement and production obligations were settled by the technical divisions of the bureaus and by Adm Qu III. These disbursements were pre-audited for the Supreme Court of Accounts by the Admiralty Pre-Audit Office. All other naval disbursements were made by supply officers and officials afloat and at shore activities outside Berlin. These disbursements were pre-audited by the Pre-Audit Offices established under the various senior administrative staffs which were a part of the group commands or chief commands subordinated to group commands.

The pre-audit offices forwarded fiscal and stores accounting returns audited by them to the Supreme Court Of Accounts for final audit.

MUTUAL ASSISTANCE

Agreements with Allies

Prior to World War II, Germany made agreements with the various Axis countries for the mutual exchange of weapons, supplies and raw commodities in the event of war. On 2 November 1940, an agreement was signed with Russia. In early 1941, another was made with Japan. On 14 March 1942, two new agreements were executed with Italy. During this study little information has come to light about agreements with countries other than those mentioned. Capt Vittoria de Luca, the supply officer in charge of mutual aid issues in the Italian Navy was interviewed in Rome in October 1951. Several German officers and officials interested in mutual aid

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matters were likewise interviewed in Germany. Adm Nomura was interrogated in Japan in 1946 by SCAP officials.

Agreement with Russia

Under the Russian agreement, that country contracted to deliver to Germany:

- 1,000,000 tons Fodder and foodstuffs
- 900,000 tons Petroleum
- 100,000 tons Cotton
- 500,000 tons Phosphates
- 100,000 tons Chromium ore
- 500,000 tons Iron ore
- 300,000 tons Scrap and crude metals

There is little definite proof to indicate how far this agreement was carried out. As stated in the chapter on Secret Supply Service, a supply base was furnished in the Arctic Ocean area in late 1939, and ice breakers were furnished to assist Raider Vessel #45, the KOMET, in July 1940.

Agreement with Japan

Because the Admiralty building in Berlin was bombed several times and the Naval Headquarters in Tokyo met the same fate, all documents concerning the agreement between Japan and Germany have been lost. The interview conducted in 1946 between SCAP officials and Adm Nomura of the Japanese Navy is, therefore, the only basis for the following information.

The agreement concluded between Germany and Japan formed the political background of the cooperation existing between the Japanese, German and Italian navies in World War II.

According to Adm Nomura, this agreement was not for militaristic purposes, but mainly for political ones. Japan did not think of entering the war with Germany and Italy. Instead, it wanted to make an immediate settlement of the China incident, to establish a firm friendship with Russia, to avoid universal isolation and also to prevent the United States from entering the war to help England.

Furthermore, when Germany and Italy took non-belligerent action against the United States, Japan, in spite of the Treaty of Alliance, made every effort to avoid entanglement in the trouble. The Japanese Navy, relying

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on this treaty, began to import German mechanical techniques. Japan had been trying to import American techniques, but this had been gradually blocked. Therefore, Germany was the only country upon which Japan could depend. Following an understanding reached through conversations, Japanese naval inspection groups were dispatched to Germany and Italy in the spring of 1941. Adm Nomura (then a vice admiral) went to Germany as the head of that inspection group. VAdm Abe headed the inspection group that went to Italy. The scope of mutual support given, according to Adm Nomura, was as follows:

"The Japan-Germany (Italy) operational boundary line for coordinated submarine operation in the Indian Ocean was fixed at 70 degrees East. Therefore, during the early stages of war, the Japanese Navy, including its Air Force, operated chiefly in the Andaman (Trincomalee) and Ceylon areas while the German Navy operated around the southern coast of Africa. As the war progressed, the employment of troops became possible. The 70 degree East boundary line was removed and it was agreed that there should not be any objection to the Japanese and German navies operating in any area. A combined battle front of the submarines of both countries was formed in the waters around Madagascar, Aden, Bombay, Colombo and the South Indian Ocean and submarines were ordered to destroy the allied transportation system.

"Furthermore, the German Navy planned to set up a submarine supply and rest base at Singapore and to advance in the vicinity of the Philippines if there was any surplus troop strength. The number of submarines of the two countries which operated in the above mentioned waters was only five or ten; consequently, battle results were not satisfactory. The Japanese navy requested that a large number of German submarines be sent to Asiatic waters in 1945, prior to Germany's defeat, but this request was not met with, because of the fuel shortage and increasing danger in the Atlantic Ocean. It is safe to emphasize that coordinated operation by Japan and Germany in the Indian Ocean was the only operation, whether with the Army, Navy or the Air Force, that should be noted as a significant combined operation during the war.

"A few German cruisers, which were temporarily converted from merchant vessels, engaged in sea transportation in the early stages, but it became impossible to continue with this because of increasing danger in the Atlantic Ocean. The plan to utilize submarines for transportation was made, but as the Atlantic Ocean and Asiatic waters became increasingly dangerous, many were sunk and only five German and three Japanese submarines succeeded in making the trip. In addition, a submarine is different from a surface ship in that it has less cargo space. Ships with much larger capacities were impossible to load. These submarines served the purpose of transporting the personnel quite well, but were not satisfactory for transporting munitions and supplies.

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"One Italian plane flew from Italy to Japan successfully, but a second trip became impossible. One Japanese plane which flew as far as the Indian Ocean was lost in action. A German plane had planned to fly to Japan but that did not materialize because it could not fly across Soviet Russia, and because the Indian Ocean, as the alternate route, would invite technical difficulties.

"Of the considerable technical support received from Germany, Hitler's gift of two 740 ton German submarines to the Japanese Navy was most notable. One of them was missing in the Atlantic Ocean for a while en route to Japan, but it arrived safely in September 1943. Using these, we were able to study the merits of the German submarines. The Japanese navy planned to present one of their submarines to the German navy as a return gift, but that plan did not materialize. Several German technicians came to Japan. They helped in the manufacture of submarines, radar, various communication facilities, machine guns, airplane motors and other things. A considerable number of Japanese officer technicians went to Berlin, where they contributed much in their own specialized fields.

"During the early part of 1942, along with the conclusion of the Tripartite Military Pact, a proposal for a German-Japanese and an Italian-Japanese Economic Pact was made when the need for exchange of goods arose. For various reasons, the treaty was concluded one year later in the early part of 1943. Management of these agreements was chiefly handled by the Japanese ambassador. This agreement was large in scope and included not only the exchange of materials but also of patent rights. However, the result was not satisfactory because of the lack of adequate facilities. Transportation of heavy industrial machineries, tools, special steel, etc., was not accomplished because of difficulties; therefore, Japan asked chiefly for small arms and plans for manufacture.

"The transportation of raw materials in large quantities was also difficult. Only small quantities of crude rubber, quinine, tungsten and tin were supplied to Germany."

When Adm Nomura was asked what he considered to be the most effective part of the German/Japanese mutual assistance agreement, i.e., what he thought contributed most to the joint operations of the Japanese and German navies, he said:

"The fact that a German 740 ton submarine navigated safely to Japan led to a detailed research which contributed greatly to the techniques of our submarine production program, even though the exact model could not be manufactured because of the shortage of desired materials in Japan. Later, a second submarine was to be sent to Japan. The Japanese crew was drilled by German personnel for one-half year. This submarine was solely manned by a Japanese crew, and if it had



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arrived safely, it would have been of great tactical value; but we regret that it was lost en route.

"Germany had many technicians who were more skilled than the Japanese. Even though only a few highly skilled German technicians came to Japan, the Japanese Navy greatly benefitted from their direct instruction and guidance. Furthermore, even though the number of plans for the production of new weapons was not great, they rendered great help in supplementing our technical defects.

"The mixed operation in the Indian Ocean was the only cooperative operation in which both countries combined directly. The naval officers of Japan and Germany had opportunities to meet on the submarines and have friendly chats. The number of meetings of the submarines were not many; yet had the effect of supplying mutual military strength. The meeting contributed especially to military spirit and morale. Our navy well acknowledged the fact that the crews of German submarines were much superior.

"We tried to send as exact information as possible and to judge the information we received as soundly as possible. Persons on duty in foreign countries, whatever their nationality, are swayed by policies and propaganda of the government under which they reside. It becomes a custom for them to judge the situation wishfully and optimistically. We deeply considered this point, and with an exceedingly objective attitude we passed judgement and reported it to our Naval Headquarters. This matter, it is rumored, had great effect in the judgment of the OKW of the Japanese Government.

"The relations between Japan, Germany and Italy were very friendly. Germany and Italy, unmindful of what we actually requested, helped us to establish factories, gave us the benefit of their study and observations of new weapons and also placed at our disposal plans, etc., thereby endeavoring to attain mutual assistance. After the situation became worse, the idea of mutual assistance asserted itself and a closer relationship became evident. At this time, the technicalities of superior aircraft, high speed submarines, anti-tank weapons, etc., were extended. However, as is known, transport by submarine became impossible, and the end of the war prevented the utilization of the mechanisms."

Agreement with Italy

According to Capt de Luca, the agreement of 14 March 1942 constituted the foundation of the relations of mutual assistance between the armed forces of Germany and Italy, for the implementation of which the Italian Navy Department issued instructions to its various agencies regarding the details of transfers, work and various services. In this connection, Capt de Luca stated:

"The mutual supplies and services of the armed forces of the two countries were controlled by two boards

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presided over, for the Italian side, by the Minister Plenipotentiary Mr. Giannini and, for the German side, by the Minister Plenipotentiary Mr. Clodius. The said boards were the same which negotiated the commercial agreements, and many representatives and experts of various ministries participated in them. They were called from time to time when questions in their particular fields were being discussed.

"I was at one time the representative of the Italian Navy Department on the Italian Board and chief of the liaison office dealing with the Supply Officer of the German Navy in Italy. This office was under the direct command of Admiral Riccardi, then Under Secretary of State for the Navy and Chief of Staff, who outlined our tasks as follows in his directive No. 214706 of 25 May 1942. They were:

- '(1) To establish relations with the supply office with a view to coordinating mutual supplies and services, including the chartering of ships.
- '(2) To take part in the study and preparation of international agreements regarding the matter mentioned in point 1, at the Ministry of Foreign Affairs, with the participation and under the supervision of the Treaty Office.
- '(3) To maintain liaison communications between the Italian Navy Department, the General Headquarters, other departments, and government and semi-government agencies in connection with any matter regarding the above mentioned reports.
- '(4) To advise the High Naval Operations Command of the Italian Navy and the departmental bureaus on all subjects within the field.
- '(5) To issue rules to the naval authorities for the carrying out of the agreement with the Germans, as stated in point 2.
- '(6) To coordinate in substance the authority of the High Commands and bureaus so that the transactions regarding the relations with the Italian and German navies were carried out in a uniform manner.
- '(7) To take part, for either side, in the agreements of an operative nature between the Italian and German navies.
- '(8) To solve in substance the questions regarding the peripheral agencies.
- '(9) To transact in detail directly with the Italian and German navies all the questions concerning mutual supplies and services.'

"From March 1942 to 8 September 1943, I took part in the work on the preparation of the Agreement of Rome of 14 March 1942, of the Agreement of Berlin of December 1942, and of the Agreement of Assisi of August-September 1943. The latter was not completed because

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the armistice put an end to the meetings which were taking place between the two delegations.

"The Italian Board met once a month to determine the value of the German requests, which they were authorized to make directly in Italy on the basis of the treaties, and to discuss and examine questions of a general nature which came up during the month.

"Part of the board consisted of myself and other officers of the Army and the Air Force, who held similar positions with the staffs of the respective armed forces.

"In the main, according to the agreements, only in limited and unimportant cases was direct acquisition of items or services on the part of one of the armed forces while in the territory of the other permitted, but the corresponding armed forces of the locality were to provide in that territory everything necessary which could not be supplied from the mother country.

"Receipts were obtained for all supplies and services. This created a corresponding debit and credit book entry. Some of these entries were settled immediately through the special clearing account "War Material" or through other accounts, while other entries had to be balanced through postwar agreements which, due to the military failure, were prevented from taking place.

"The obligation to furnish in advance as quickly as possible vital raw materials to be used in the repair or restoration of ships or other war equipment was still in force.

"The exchange and supplies, as mentioned above, were handled particularly by the Ministry of War Production for the Italian side and by the Military Economics Officer for the German side, the two agencies which were largely represented in the two Boards, and which were present when all the agreements between the two governments were made."

The function of the military board referred to by Capt de Luca was to ascertain and settle accounts between the two allies, to arbitrate disagreements between issuing and receiving supply officers, to fix prices, and make decisions regarding action to be taken in disputes or difficulties that arose between the armed forces in evaluating services and supplies.

The agreement of 14 March 1942 provided that Germany would furnish the armed forces of Italy in Germany or countries occupied by German troops and that Italy would furnish the armed forces of Germany in Italy, Libya, the Italian possessions and territories occupied by Italian troops with the following:

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- (a) Funds in Italian or German currency for:
  - (1) Salaries and wages (the Wehrsold only for German troops) for military and militarized personnel
  - (2) Other costs of operation
- (b) Food, as available and in the same quality and quantity as allowed the furnishing nation's troops, and desirable substitute food where the eating habits of troops varied from those of the furnishing ally
- (c) Quarters, furniture and maintenance
- (d) Transportation of personnel and equipment by rail, water and air without cost or tax
- (e) Freedom from customs inspection and currency controls, except where the traveller was not with troops
- (f) Services and repairs to warships, merchant vessels, motor vehicles, aircraft and other war equipment
- (g) Raw materials required in performing such services, subject to replacement in kind by armed forces receiving the service.

Accounting Procedures Employed by the Italian Navy

The Italian Navy, on 22 April and 8 June 1942, issued directives to implement their agreement. Copies of the agreement and these directives are included in this report, marked Appendices A, B and C.

Capt de Luca stated that he had a difficult time in his post because of the fact that German naval personnel wanted more material and services than they actually required. For example, they wanted more bronze, copper and other metals and supplies than both Germany and Italy had in their reserve stocks. Billets in large numbers were also requested. Therefore, when a demand was received from a German supply officer, it was necessary for Capt de Luca or members of his staff to determine first whether or not an operational agreement existed between the two countries permitting the troops (or naval forces) to be in Italy. It was then necessary to determine if they actually needed the hotels or other billets requested. Some food was furnished by the Italians to the Germans.

He estimated that the Italian Navy turned over to the German naval forces an average of 22,000,000 lira in cash per month in addition to making repairs to ships.

He also stated that the agreement between the two countries, that all material used in repairing vessels was to be replaced in kind, was not

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carried out by the Germans. A clearing house system was used to account for the cost of such material delivered to the Germans, and at the end of the war the Italians were the creditors. All agreements made between the two countries were completely drawn to the smallest detail. The Ministry of Production for War Material carried on the accounting for the Italian Navy as well as for the other armed forces of Italy.

The Germans signed receipts for all material, money and stores given to them by the Italians. Otherwise, Capt de Luca said, the Italians would give them nothing. There were great shortages of material in Italy. The Germans always insisted that they be given more. When Italian and German troops were operating jointly in France, the two services continually bid against one another for material available in that economy.

The Italians, he stated, were obliged to buy everything they could from Germany. There was a great shortage of fuel for ship operations and the Germans provided some, but only a little. Capt de Luca did not take care of fuel matters and when questioned about the 35,000 tons of fuel supposedly given to the Italians by the Germans, he said that he felt that the amount stated was greater than Italy actually received.

Some commands, he added, worked very smoothly. Others did not. It depended very much on the commander. Some had rough temperaments and could not control themselves. This, however, was not true in command relationships. An extremely cordial relationship existed at the top level and the commands would punish individuals who got out of line if the authorities were informed of any disrespectful or other disagreeable action on the part of their men. At the end of the war, cooperation was not very good. The Italians knew they could not win the war. They were tired. The Germans could not understand such an attitude. Those Germans who were in sympathy with the Italians were still nationalistic enough not to give up. As a result, there was some discomfiture and embarrassment between even the top level naval officers. The Germans understood the reason for it, but of course did not discuss it.

On the 11th of September 1942, the Italian navy department was occupied by German troops. Capt de Luca said that he was incensed over

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this act and tried to leave the Navy Department, intending to return to his home. However, German troops captured him. Several Italian officers were executed for refusing to work with the German Navy and for attempting to escape, but in the case of Capt de Luca, Geschwaderintendant Schmula, de Luca's opposite number in the German Navy, took him in custody, procured an automobile for his use and sent him to Naples, from which point he escaped. He therefore did not know what happened to the records of his office.

Accounting Procedures Employed by the German Navy

Two methods were employed by the German Navy to account for issues of equipment and material to allies, namely:

- (1) A civilian business organization, DKG, the Deutsche Kriegslieferungsgesellschaft (German War Shipment Corporation), handled the details of shipment and accounting for all issues of equipment and material from Germany to its allies. This company, established by the government, but owned by armament companies, such as Krupp, etc., financed the cost of collection, repacking if necessary, and shipment of all such equipment and supplies. It was intended that it should act as an accounting firm only and that no profit would accrue from its transactions. All military transportation facilities were made available to DKG. However, it was required to prepay the cost of handling and shipping. OKM/E settled these bills monthly. They were then sent to the Reichsbank for use after the war in final settlement of allies' claims.

Italy, Japan, Roumania, etc., had similar civilian business organizations within their own countries to handle the cost of equipment and supplies shipped by them to Germany.

- (2) For deliveries made to allies by German supply officers abroad, the unit making the issue prepared an invoice, obtained a receipt and forwarded the receipted invoice to OKM/E, where it was priced and forwarded to the Reichsbank for accounting purposes.

Dr. Eggert stated:

"Our allies were always wanting something. Roumania wanted food. Italy wanted fuel. They always wanted new cars or new weapons. We tried to make these transactions abroad simple. We gave instructions to every unit in Italy, etc., that they were to keep a strict record of everything issued to our allies and to show the condition of the item when it was issued.

"An Italian accounting officer and three men came to Berlin to compare their receipts with our records. They waited one year but never saw them.

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"We also had to get many millions of lire from the Italians. We took the accounting procedures for these issues very seriously, but did not get much information from our personnel in Italy. We knew that after the war the Italians would come to us with a long list of things they said they had issued to us, and then we would be in debt to Italy and our political relations would be endangered.

"When our troops got something from Italy, they did not have to report to us, but had to sign a receipt, as the Italians did when they got something from us. Both countries maintained their own receipts. We really did not know what our troops were getting in Italy. We feared that the Italians would raise the prices on the receipts given by our personnel."

The fuel procurement agreement with Roumania stipulated that Germany would pay for all oil received. The purchased oil, according to Oberregierungsrat Boeker, was shipped by chartered tankers up the Danube River and unloaded at Regensburg and Deggendorf. He continued:

"Until 1939, Roumanian oil was paid for in foreign currency, in Roumanian leis. After that it was handled by bank transfers, i.e., commercial methods. Later, such payments were regulated through a clearing house system between the two governments, via a clearing bank in Germany, where we booked the oil received to the credit of Roumania and deducted the value of items purchased by the Roumanians from Germany.

"There were three commercial firms doing this accounting for the Navy - the Deutsche Montan Union at Berlin, the Schiweg in Essen and Von Appen in Hamburg. In 1938, by direction of the German government, a private company was established named Ruminol, which effected purchases of gasoline and oil derivatives from Roumania."

The agreement that raw materials used making repairs or manufacturing materials would be replaced by both governments "in kind" was the basis for many recriminations on both sides. If, for example, the German Navy required steel plating to repair a damaged warship, Italy would issue the material, but Germany was required to ship an exact amount of steel plating to Italy to replace it. Likewise, if an Italian submarine required repairs at the German submarine base at L'Orient, France, or at Kiel, the materials issued in connection with her repairs were supposed to be shipped by Italy to the submarine repair base at L'Orient or the naval dockyard, Kiel. In connection with this, Dr. Eggert said:

"I had a very difficult conference with a commander in Rome. He had a blotter which came apart. He showed me the screw and stated: 'If we furnish you with such

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a blotter, you have to furnish us the steel for the screw and we must charge you with the electricity for construction and the coal for transportation."

RAdm Max Adam stated:

"We had to transport sometimes up to 40-50,000 tons of liquid fuel by rail tank car over the Alps to Italy. The country had no fuel sources of its own. If and when the bunkers were filled up, the Italian Navy went to Malta to engage the enemy; otherwise it stayed in Italy."

RAdm Voss added:

"In 1944 it was agreed that the Italian Navy should get 35,000 tons of fuel per month. When their politics changed, we stopped such deliveries.

"With regard to the development of Italian Navy fuel requirements, I was in constant touch with them. In February 1942, we had a discussion between Raeder and Ricardo of the Italian Navy. This discussion was mainly about fuel. The Italians wanted about 125,000 tons of oil a month and I had to tell them that we could not provide that amount. They showed me papers stating that we had so much and that our output was so much a month and that we should be able to provide them. However, their information was not true. The tables they used were not correct. The result was that we gave them a monthly allocation of about 35,000 tons. We had to draw that quantity out of the teeth of OKW/Rue W1, which was in charge of all material of importance for the German armed forces and their allies. We usually allocated the Italians the quantity of fuel oil we expected to receive from Roumania, but the Roumanians, as well as the Italians, were unreliable in keeping their promises.

"We were very often informed by our observers in Roumania that we could expect about 85,000 tons of fuel oil during the next month; however, when the next month came and we looked into the matter, there was no more than 35,000 tons. You may remember that, according to an agreement between Hitler and Mussolini, the Italians were in charge of the occupation of those parts of Roumania through which the railroad lines ran to Italy. Instead of keeping the lines safe from insurgents, now Titoists, they did not, and so the oil sent by railroad to Italy was taken over by these insurgents. Sometimes the Italians could not get the oil because they could not pay the Roumanians for it. I think we, the Germans, had to pay the Roumanians 10 million marks in gold to keep the Italian oil supply flowing."

VAdm Machens said:

"We had to control this 35,000 tons we gave to the Italians. It was difficult since they objected to any control as being against their 'honor'. We had some observers in Italy, but officially they could not control the issues. We could control about 30,000 tons but the last 5,000 always disappeared.



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RAdm Voss continued:

"We suspected at one time that something was wrong with Italian oil issues, and observers made a trip to Naples. There they saw the recreation steamers running as in peacetime. That was the starting point and we sent a staff to Italy to control our oil issues. I know from Chief Chemist Dr. Jannsen that the Italian ships which tried to get over to the French coast got their oil from secret stocks obviously kept in the mountains. That was where the rest of our oil was."

Dr. Jannsen stated:

"During the time when we supplied Italy so generously with coal and fuel, they never used it for the war effort, but stored it in depots where we were not allowed to go. After the breakdown we found it there. In supply and procurement procedures in Italy, the organization was cluttered with red tape. I watched an Italian naval captain for days and he did nothing but sign requisition slips."

Despite the difficulties encountered in administering the mutual assistance agreement between Germany and Italy, as evidenced by the statements of officers of the two navies, it appears that in many ways the procedures established worked satisfactorily. Capt Wulff, when asked about his experience as supply officer of Naval Command Italy, said:

"When I served in the Mediterranean (1942-43), we got everything we needed. It was not difficult to fulfill our requirements. We received vegetables, fruits, wine, professional services, transportation, housing for personnel, etc. The Italians required ammunition, fuel and also anti-aircraft guns and mines. The last item was very essential because the Italians did not have a good mine. The scheme of operation was that in the Italian Navy Department there was a liaison officer, my opposite number so to speak, a high ranking officer, a Capt de Luca. I made a routine visit to him each morning and we told each other what was wanted and both tried to help the other as much as we could. As a whole I should say the operation was very effective.

"We used the normal Italian-German clearing system for settling cash advances. As I now recall, there were two separate accounts. One was a military account. (The other was for civil agencies.) I don't know whether there were any arrangements to take care of overlapping accounts or not.

"Getting materials from the Italians to repair our ships was one of our biggest headaches. They were in short supply and the Italians didn't want to release them to us. Then we needed spare parts. We could not make them as fast as they were required. We had to ship everything by rail from Germany. Sometimes we used trucks, but usually rail. After Roumania broke down, we especially tried to get oil for the Italians by sea and avoid rail shipments across the Balkans.

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"We had a series of supply depots in Italy and the Balkans, but we couldn't get authority to erect them where they were needed. The Navy was of the opinion that we should erect smaller depots, but the Army point of view was that it would be much more difficult to defend small installations against partisans, air raids, etc. Finally we erected special clothing and food depots along with other large stores of spare parts, mines, etc. (supply centers). The depots themselves were run separately of course. It may not have been too economical, but it was a front line problem that had to be solved."

Caut de Luca was asked what change would he make in the mutual assistance system employed during the war, if he had to establish another mutual assistance system. He stated:

"I would say that this system was very well planned and that it met all the needs of the moment very well, but that at the present time it could in no way be practically carried out in case of war."

"In fact:

"The Italo-German agreement was a purely bilateral agreement between two countries extremely poor in vital raw materials.

"Reciprocity was possible since German units fought in Italian sectors and Italian units in German sectors.

"The economic and industrial conditions in Italy after the war started were considerably different from those before the war.

"It can be concluded that while the informative principles of the bilateral pact must be considered out of date and no longer applicable under present conditions, the experience gained from its practical execution must be taken into consideration. For example, it is necessary that the part of the pay and allowances paid in local money to the military personnel who are in allied territory should be reduced to the utmost, in order not to increase the devaluation of the money and the discomfort of the civilian population. It is furthermore indispensable that the armed forces distributed outside of their own territory should make no acquisitions, requisitions or requests for services, except through the corresponding armed forces of the allied territory in which they are stationed. This is not only in order to be served better and more economically, but also as not to disturb the order and the economy of the host nation or harm the prestige of her territorial sovereignty.

"In order to comply with the needs and requests of both armed forces promptly and competently, I consider that the officers of each armed force handling the matters must be highly efficient and have great authority."

A copy of the mutual assistance agreement of 14 March 1942 between Germany and Italy and the instructions issued by the Italian Navy Department regarding its implementation are contained in Appendices B and C.

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CHAPTER IX - CLOTHING, SMALL STORES, PROVISIONS  
AND SHIP STORE ACTIVITIES

General

The development, procurement, production, storage, inventory control, distribution of and accounting for clothing and small stores (not special purpose clothing) and provisions, including horse fodder, was a function of MarWehr/C, as was the administration of ship stores and ship store activities.

The Intendantur offices at Kiel and Wilhelmshaven, later the senior administrative staffs, supervised work performed by clothing contractors, naval clothing factories, clothing supply centers and depots, naval clothing stores and clothing issue rooms ashore and afloat. They also had the same responsibilities for food procurement, naval garden projects, food supply centers and depots, food stores, commissary departments and ship stores and ship store activities ashore and afloat.

Supply officials were in charge of the activities ashore. Supply officers were in charge afloat.

The chain of responsibility for clothing and provisions ran from the supply official or supply officer ashore or afloat to the area supply official ashore or the fleet paymaster afloat, to the Intendantur office at Kiel or Wilhelmshaven or the appropriate senior administrative staff, to a pre-audit office, to MarWehr/C, to the Navy Budget Office, and then to the Supreme Court of Accounts. Ship stores and ship store activities were handled on a concession basis, profits therefrom becoming the property of the ship or shore command. The commanding officer or commandant was the reviewing authority in ship store matters.

CLOTHING AND SMALL STORES

Funds

Funds with which to finance the manufacture and procurement of clothing were budgeted annually, together with those to cover allowances for clothing maintenance. The Navy had no rotating fund similar to our Navy Stock Fund, or old Clothing and Small Stores Fund. Since clothing was issued gratuitously to officers, officials and men alike, there was no need for such a funding arrangement.

Unobligated clothing maintenance allowances were taken up at the end of the year as a credit to Navy revenues. The Navy Budget Office was authorized to augment funds granted for the procurement of clothing and small stores by transfers from other funds (appropriations) or if necessary, to transfer money from it to other funds. Annual deficits or overages in the clothing budget were often adjusted in this manner.

Specifications and types of uniforms

Specifications for uniforms were developed by MarWehr/C. Models based on these specifications were available for inspection by contractors and other interested persons at Wilhelmshaven, Kiel and Berlin. Samples based on these models were manufactured and approved by the Intendantur before contracts were finalized by MarWehr/C.

Uniform regulations were not observed closely in the Navy. There were two types of uniforms. Both were of the same cut and bore the same insignia, but were not of the same material or workmanship. One was issued by the Navy. The other was non-regulation. Both were acceptable. The regulation uniform was worn while on duty, the non-regulation one ashore.

If a sailor desired to purchase a non-regulation uniform, his commanding officer could authorize him to do so. These uniforms were known as "Colanis", Colani being the name of a firm that manufactured the most popular non-regulation outfits during the days of the Kaiserliche Navy. This name is still used in the Navy when referring to any non-regulation item of naval uniform. Another example of laxity in uniform regulations, a

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development no doubt brought on by Hitler's equalitarian doctrine, was that of sailors' cap ribbons. They were attached to the back of the cap and were supposed to be only long enough to reach the tip of a man's nose when brought over the top of the cap. However, non-regulation caps had long ones. It was said that sailors, when going on leave, liked extraordinarily long ones and that naval personnel called them "Heimatwimpel" or "Homeward bound pennants".

Procurement

The system of obtaining raw materials for the production of clothing and finished items of clothing common in use to all services has been explained in Chapter VI. Prior to 1934, all uniform outer garments for rated and non-rated men, as well as all special purpose clothing, were manufactured by the naval clothing factories at Kiel and Wilhelmshaven. Shoes, underwear, shirts, ties, etc., were procured under contracts made by MarWehr/C. Officers and officials obtained their uniforms from civilian tailors.

During 1934-1942, OKW/Ruo W1 allocated such raw materials as it believed the Navy required for the production of clothing and small stores. It also allocated plant facilities for the production of items the Navy was unable to manufacture in its clothing factories at Kiel and Wilhelmshaven. MarWehr/C let its own contracts and its inspectors, assisted by the naval departments of the armament inspectorates and later by the Armament Acceptance Inspectorate, supervised actual production. In 1944-1945, the Speer Ministry took over all production of clothing, including that performed by the naval clothing factories. After that, MarWehr/C and the Intendantur offices had no further production responsibilities.

A list of items common in use to all services was not obtained. It is believed, however, that outer garments for naval personnel detailed to artillery regiments, moleskin jackets, marching boots, high brown shoes, gymnasium pants, shorts and shoes, toilet articles, sea and ditty bags and shoe shining kits were some of them. These items, as has been reported, were produced prior to 1944 under the supervision of the armed service having greatest need for them. During 1944-1945, the Speer Ministry was responsible for their production.

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When clothir was rationed and shortages in textiles became evident in 1940, production of uniforms for officers and officials by civilian tailors was discontinued and the naval clothing factories manufactured them. The purchase of non-regulation clothing by rated and non-rated men was also disallowed.

In 1944, it was reported that Germany's textile industry, although sharply curtailed, was able through the development of artificial fibers to supply 75% of its needs by domestic production. The other 25% came from stockpiles and imports. Some shortages could not be remedied, because substitutes were not always satisfactory due to the peculiar properties of the different fibers. The supply of cotton and wool was inadequate.

Turkey was the only country still exporting cotton to Germany in appreciable quantities. The cotton seized by the German Army in the Kuban area (around Kessner in South Russia north of the Caucasus Mountains) was lost when the army evacuated that area. Silk imports from Italy were still ample. Supplies of hemp, although inadequate for war conditions, were not dangerously low. Exports from Croatia had been temporarily stopped and shipments from Hungary were almost at a standstill.

Purely synthetic fibers were increasing in importance, chiefly because of their resistance to dampness, acids and alkalies. Silk made of spun glass was being used as a substitute for asbestos.

Synthetic materials had acquired enormous importance in war production, not only as substitutes for scarce raw materials but also with satisfactory results as entirely new materials. It was said that they had technological potentialities never before attained by the German scientists.

In 1928, German scientists developed Zellwolle (cell wool), a viscose rayon mixture of wood blended with wool spun into yarn. At first the product was hopelessly inferior, and it was not until 1933 that its development was brought to a point where it was considered a satisfactory substitute for cotton and wool. According to Marineoberinspektor zur See Hahlen, this material was very rough but wore very well. When Germany was

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stockpiling wool, Zellwolle was used widely in the manufacture of civilian clothing, but not to any great extent for military uniforms. It was reported that over two-thirds of the woolen and worsted industry of Germany was destroyed during the war. As a result, in 1944 and 1945, cloth was in such short supply that the armed forces had to resort to the use of Zellwolle in manufacturing their uniforms. Shoes with imitation leather tops and wooden soles were also developed in 1942 for use by civilians, but there is no evidence that military shoes were manufactured of any material other than leather.

The development of Arctic clothing was not commenced until 1940, when the Germans invaded northern Norway. The Medical Division (MarWehr/G) assisted the Intendantur Corps in this project. Arctic clothing consisted primarily of fur-lined coats, fur mittens, fur caps and heavy woolen underwear similar to that used by divers. The use of fur, however, was judged to be impractical for mittens and caps, since it was difficult to dry. Leather suits and leather boots with felt inner linings were developed for submarine personnel. One official stated that the Navy tried to develop a synthetic leather but did not succeed.

Foul weather clothing developed during the war was made of rubber, not oilskin, and consisted of coats, trousers, boots and a sou'wester type hat, cut to cover the shoulders and chest. The sou'westers were fastened around the shoulders by straps under the armpits. Foul weather overalls, difficult to put on and take off, were also developed. This clothing was not considered successful, however, because of the difficulties encountered with zippers, in making collars and cuffs waterproof, and drying out coats and trousers once water had penetrated them. Safety belts, straps and carbine hooks built into special purpose coats were also unsatisfactory because they failed to withstand the service expected of them.

Unusual size clothing was often manufactured in emergency by local civilian tailors. The cut and quality of the cloth in such cases followed Navy specifications. Each clothing store, however, had a tailor's shop in which uniforms could be altered, or unusual sized garments manufactured.

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Items surrendered when men drew replacement clothing were repaired and cleaned for reissue. Special maintenance shops in naval clothing stores and naval clothing factories performed this service. Men did not always receive new clothing when drawing replacement articles, but clothing issued was always serviceable. It was said that the naval clothing factory at Wilhelmshaven had many technicians, some of whom were chemists, who could restore clothing to almost a new condition and appearance; moreover, they had machines with which to test fabric strengths and degrees of wear sustained. Before the war, when renovated clothing did not meet reissue standards, but was usable, it was packed and set aside for mobilization purposes. Unusable clothing was reduced to a manufacturing state.

Distribution

Before 1939, the main stocks of clothing and small stores were held by the Intendantur offices in the clothing factories at Kiel and Wilhelmshaven. The Intendantur at Kiel was responsible for distribution to forces in the Baltic area, Wilhelmshaven for those in the North Sea area. MarWehr/C determined what inventories would be held. Contractors sent their finished items to these factories.

As in the case of general and technical stores, however, when the Allies made their first aerial attacks on these ports in 1940, dispersal of clothing was necessary. All stocks not actually required for immediate issue was sent into the surrounding countryside. Items required for shipment or issue were sent to Wilhelmshaven or Kiel. Items being manufactured under contract were retained at contractors' plants until needed.

Clothing supply centers were established at Magdeburg and Breslau in 1940. Items of clothing and small stores in dead store in the Kiel and Wilhelmshaven areas were used to initially stock these centers. Later, when naval forces entered the Balkan countries, another clothing supply center was set up at Vienna. Clothing procured through OKW/Rue W1 or manufactured under contract was sent to these centers, as were items produced by the naval clothing factories in excess of current needs at Kiel or Wilhelmshaven.

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The rapid expansion of the Navy's logistic responsibilities has been described in Chapter II. As naval forces penetrated the Lowland Countries, France, Norway, the Mediterranean and the Balkan countries, clothing stores were established in each major operating port as a part of the port organization.

Magdeburg and Wilhelmshaven were responsible for the support of clothing stores in the North Sea area, Holland, Belgium and France. Breslau and Kiel supported those in Norway and the Baltic. Vienna supported the Black and Aegean Sea area. Naval Command Italy requisitioned its clothing direct from Kiel.

In addition to clothing stores at major ports, flotillas (E, R, S and U-boats) had their own flotilla clothing stores which were moved from port to port with them.

**Clothing Allowances**

Officers and officials received a clothing allowance of 750 marks, a prewar equivalent of \$300, upon commissioning. This amount was credited to their clothing account. They then ordered such articles of uniform as they needed, either from a clothing store or, before mobilization, from a civilian tailor. Tailors' bills were sent to the nearest clothing store, where they were paid and the cost debited against the officers' clothing accounts.

Clothing maintenance allowances for officers and officials were also credited to their clothing accounts. It is not known what these allowances were. They changed with each annual budget. Unobligated allowances, however, were paid to officers and officials quarterly. They were permitted to overdraw these accounts and no supervision was exercised over the value of clothing purchased by them from civilian tailors or drawn at clothing stores. Geschwaderintendant (Cdr) Wolfgang Schmula stated that they could run up a pretty high debt in these accounts. In addition to outer garments, they were authorized to draw underwear, socks, handkerchiefs and toilet articles.

Before the war, clothing for rated and non-rated men was issued on a turn-in-replacement basis. Each man was given an initial outfit. In addition, he too received a clothing maintenance allowance, amounting to 9 marks 60 pfennig (\$3.84) per month for petty officers second class and lower

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ratings, and 18 marks (\$7.20) per month for petty officers first class and chief petty officers, it was credited in his clothing account book. When he first drew clothing, he was charged six months' allowance.

During his first six months service, his pay account was debited for any clothing drawn. Clothing drawn after he had been in the Navy for six months was charged against his clothing maintenance allowance. If he was profligate and needed more clothing than his accumulated allowance would finance, he paid cash or authorized checkage against his pay account.

In June of each year, a special bag inspection was held by commanding officers on board all ships and at all stations. Men were required to replace their unserviceable or lost clothing at that time. These inspections were in addition to those conducted monthly by division officers. When these inspections were completed, the amount accrued in a man's account book, less one month's allowance, was paid to him, provided he had been in the Navy over one year. A certificate stating that the man had a full bag was furnished to the paymaster to substantiate entries in the clothing account book. This certificate was prepared by the division officer.

A unique method was employed to account for clothing surrendered by discharged or other personnel. It was appraised by a commission, similar to a survey board, comprising two officers, one of whom had to be a supply officer. The appraised value was credited to the man's clothing account book. After audit, the accrued balance was certified for payment to him.

The articles were then sent to the nearest naval clothing store, where the appraisal was reviewed by a second commission. If the first appraisal exceeded the second one, the ship or station was expected to reimburse the clothing store in the amount overpaid or credited to the man's clothing account. The Intendantur could, however, if he desired, write off the difference at the end of the fiscal year, charging it against a special fund controlled by him.

When a man died, his clothing was appraised in the same manner and the balance paid to his next of kin.

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This system was abandoned during the war and monthly allowances were discontinued. Clothing was issued gratis in accordance with tables I and II appearing in this chapter and remained the property of the government. It was thus in effect only on loan to a man. Officers continued to receive a clothing maintenance allowance. Their uniforms were their personal property.

Stock Carried

Clothing in quantities sufficient to meet the needs of an activity, but no more, was carried at clothing stores and in issue rooms afloat. Replacement stock was obtained as needed.

Replacement stocks of clothing were obtained by the clothing stores and large ships and stations from the clothing supply centers. Small vessels, however, and personnel attached to port commands obtained their requirements from the clothing stores. A requisition signed by the supply officer was required for all transactions between ships and stations. Items were transferred on a conventional type of invoice which contained a certificate: "The clothing listed hereon is to be used for service purposes only."

The accumulation of excess or dead stock was considered a professional blunder on the part of supply officers, especially during the war when clothing was in such short supply. Before the war, there was a wide range of sizes available. However, as materials became scarce, the range of sizes was reduced. It was said that all shoes were standardized and that only a minimum of widths were available. The number of widths was not ascertained. The U. S. Army reduced its standard shoe widths from 9 to 6 during World War II. The same standardization was followed in clothing sizes. All clothing was either small, small medium, large medium or large. Each clothing store had a tailor who made the necessary alterations. This system, of course, considerably reduced the number of sizes carried in stock.

Stock in clothing issue rooms was kept in wooden racks or bins, stacked in piles to facilitate inventory. There was but little bulk stock of clothing kept on board ship, lest such critical material be lost in action.

FORM C-1

INVOICE/RECEIPT

NO. \_\_\_\_\_

(Issuing Office or Transferring Unit)  
to the Clothing Office at \_\_\_\_\_ (Ship or Station)  
covering items of clothing for rated and non-rated men

NO	UNIT	ITEM	SIZE	UNIT PRICE	TOTAL	ISSUED	
						Card	19 Line
1		Caps, cloth					
2		Caps, white					
3		Frames, cap					
4		Covers, cap					
5		Cap bands	1 2 3 4				
6		Jumpers					
7		Jackets, mole skin					
8		Trousers, blue					
9		Trousers, work					
10		Trousers, white					
11		Underpants					
12		Shirts, wool					
13		Shirts, white					
14		Collars, detachable					
15		Undershirts					

Received: Storeroom Book \_\_\_\_\_ 19\_\_ Page No. \_\_\_\_\_ Line \_\_\_\_\_

Issued: Storeroom Book \_\_\_\_\_ 19\_\_ Page No. \_\_\_\_\_ Line \_\_\_\_\_

I certify that the clothing listed on this invoice will be  
used, without exception, for service purposes only.

\_\_\_\_\_  
(Supply Office of Receiving unit)

19\_\_

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TABLE I

Clothing required to be maintained by chief and first class petty officers

-Additional requirements for  
Duty Overseas (see note #1)

No.	Life-expectancy (in months)	Requirements when not over- sized	3 Months	6 Months	9 Months	12 Months	Over 12 Months
1. Overcoats, fine-cloth or doeskin	30	1	-	-	-	-	-
2. Suits, naval fine-cloth or serge (to measure)	Coats	1	1(2)	1(2)	1(2)	1(2)	1
	Vests	1	1(2)	1(2)	1(2)	1(2)	1
	Trousers	1(2)	1(2)	1(2)	1(2)	1(2)	1
3. Caps, blue	(a) fine-cloth	1	-	-	-	-	-
	(b) doeskin	1	1(3)	1(3)	1(3)	1	1
4. Frames for white cap	(a) ordinary quality	1	-	1	1	1	2
	(b) better quality	1	-	-	-	1	2
5. Covers, white cap	(a) cotton drill	2	-	1	2	2	3
	(b) moleskin	2	-	-	2	4	6
6. Helmet, tropical	-	-	1(1)	-	-	-	-
7. Jackets, white (see note #4)	(a) deck personnel	3	-	2	4	6	8
	(b) technical personnel	4	-	3	6	9	11
8. Trousers, white (see note #4)	(a) deck personnel	2	-	2	4	6	8
	(b) technical personnel	3	-	3	5	9	11
9. Shirt, dress with stiff or turned up cuffs	6	5	-	1	3	3	5
10. Shirt, sport	6	3	-	2	4	4	6
11. Collars, dress shirt (with corners)	6	6	3	3	4	6	9
12. Collars, dress shirt (turned down)	6	6(3 stiff ones)	3	3	4	6	9
13. Ties, black (half could be long ties)	6	2	-	1	1	2	2
14. "Portreeve" (sword knot)	12	1	-	-	-	-	-
(a) dagger	24	1	-	-	-	-	-
(b) sword (see note #5)	24	1	-	-	-	-	-
15. Gloves, natural leather	24	2	-	-	-	-	-



36. Pants, gym (10)	24	1	1(10)	1(10)	2(10)	2(10)	1(10)
37. Shirt, gym	24	1	1	1	2	2	3
38. Supporter, gym	-	1	-	-	-	-	-
39. Trunks, bathing	24	1	-	-	-	-	-
40. Pajamas							
(a) jackets	12	2	-	-	-	-	1
(b) trousers	12	2	-	-	-	-	-
41. Trousers, working	6	1	-	-	-	-	-
42. Muffler, woolen	36	1	-	-	-	-	-
43. Under jacket, blue woolen	24	1	-	-	-	-	-
44. Socks, sock (11)	72	1	-	-	-	-	-
45. Kits, shoe shining	72	1	-	-	-	-	-
46. Socks, shoe (11)	72	1	-	-	-	-	-
47. Toilet articles	72	1	-	-	-	-	-
48. Bags, ditty	72	1	-	-	-	-	-

# NOTES

- Overseas requirements were based on the area; the length of time overseas; and the life-expectancy of the individual item.
- Life-expectancy of these articles was based on No. 2(b) and a sliding scale, contingent upon the period of time spent overseas. Therefore in the case of a coat worn by a man stationed overseas for 3 months the normal life expectancy of 24 months was reduced to 21 months. Corresponding reductions were made as follows:
  - 6 months overseas = 18 months
  - 9 months overseas = 16 months
  - 12 months overseas = 12 months
- As in (2) above:
  - 3 months overseas = 9 months
  - 6 months overseas = 6 months
  - 9 months overseas = 3 months
- For items 7 and 8, it was optional whether or not they were drawn from stores or made to order. The established price prevailed in either case.
- Naval Uniform Regulations did not include a sword as a part of the uniform for chief petty officers and petty officers first class, however, sword knots, scabbards and buckles were included.
- High-cut white shoes or low-cut brown shoes could be worn only by permission of the commanding officer.
- When leather boots were issued, a man could have only one pair of black shoes in his possession. Leather leggings were not required.
- For duty in Germany, underdrawer requirements could be reduced to two when ordered (items 22 and 23).
- Foot lockers were optional and were charged to clothing accounts at a cost price. See note (11) also.
- An additional allowance of 100¢ was made for extended duty in the tropics
- When a useable cabin trunk or handbag was on hand, articles No. 44 to 48 could be disregarded.

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T A B L E II

Clothing required to be maintained by all men below the rating of first class petty officer.

No.	Life-expectancy (in months)	Required Articles of Clothing	Additional Requirements for Duty Overseas PO2c and Non-Rated Men	Remarks
1. Caps, white	18	2	1	1
2. Caps, for non-rated men, removable blue and white covers (a) frame (b) blue cover (c) white cover	12 12 18	2 2 4	1 - 3	1 1 3
3. Caps, sailing	24	1	-	-
4. Cap bands	- 9	2	-	-
5. Helmets, tropical	-	-	1	1
6. Coveralls	36	2	-	-
7. Jackets, blue	24	1	-	-
8. Trousers, blue	8	2	-	-
9. Shirts, woolen, blue	15	2	-	-
10. Shirts, white	18	3	2	1
11. Trousers, white	24	2	3	2
12. Trousers, moleskin, working	6	3	1	1
13. Blouse, moleskin, working	6	3	1	1
14. Jacket, moleskin, white, working	12	2	-	-
15. Trousers, ticking (coarse cotton), working	6	2	-	-
16. Blouse, ticking (coarse cotton), working	-	-	-	-

On service sailing yachts only

When ashore for one quarter, only one required

3 for petty officers (see note #1)

12 months wear required when over-seas

Hospital personnel wear white work clothes

Petty officers did not use working blouses, instead they used moleskin working jackets as specified in note #2.

Shipboard requirements (only one required ashore)



15. Trousers, ticking (coarse cotton), working	6	2	-	-	-	Shipboard requirements (only one required ashore)
16. Blouse, ticking (coarse cotton), working	6	2	-	-	-	
17. Under jacket, woolen, blue	24	1	-	-	-	
18. Undershirts	9	4	5	5	5	Technical personnel 4 of each (see note #3)
19. Collars, detachable	12	3	1	1	1	
20. Kerchiefs, silk	18	1	1	1	1	
21. Kerchiefs, wool	36	1	-	-	-	
22. Stockings	3	3	8	8	8	Tropical socks for cruises overseas
23. Gloves, cloth	12	1	-	-	-	
24. Gloves, natural-leather	24	1	-	-	-	Submarine petty officers only
25. Boots marching	21	1	-	-	-	
26. Shoes, leather	14	1	-	-	-	2 pairs on board ship
27. Shoes, canvas (see note #5)	12	1	1	1	1	
28. Soles and heels	-	-	-	-	-	3 pairs a year
29. Pants, 67M	24	2	3	3	3	3 white for the tropics
30. Shirt, 67M	24	2	3	3	3	
31. Shoes, 67M	18	1	1	1	1	In addition to sports, required for duty aboard sail yachts only
32. Pajamas (a) jackets (b) trousers	12	2	-	-	-	
33. Trunks, bathing	24	1	-	-	-	
34. Sea bags	72	1	-	-	-	
35. Shoe shining kits	72	1	-	-	-	
36. Ditty bags	72	1	-	-	-	
37. Shoe bags	72	1	-	-	-	
38. Toilet article bags	72	3	-	-	-	On board ship 4

NOTES

31. Shirt, <i>SM</i>	24	2	3	3
32. Shoes, <i>SM</i>	18	1	1	1
33. Pajamas (a) jackets (b) trousers	12 12	2 2	- -	- -
34. Trunks, bathing	24	1	-	-
35. Sea bags	72	1	-	-
36. Shoe shining kits	72	1	-	-
37. Ditty bags	72	1	-	-
38. Shoe bags	72	1	-	-
39. Toilet article bags	72	3	-	-
				On board ship 4

#### NOTES

1. Petty officers of the hospital corps when stationed at hospitals, were required to have an additional white shirt in lieu of the required blue shirts.
2. Petty officers of the supply, carpenter, engineering and communication branches, who were without "Portepes," could wear white working jackets when they were engaged in work. Wearing of this jacket for any purpose other than work was forbidden.
3. When ordered by the commanding officer, issues of short undershirts were issued, two of which had long sleeves. Gray was worn in addition to blue clothing, four undershirts were issued, two of which had long sleeves.
4. The log of the ATLANTIS, Raider Vessel No. 16, contains the following entry: "The wear and tear on canvas shoes in particular threatened to assume unpleasant proportions. Therefore on 3 October 1940, orders were given that canvas shoes were to be worn only in storerooms and at quarters. As long as there was no danger of catching cold, work over the side and swabbing the decks was carried out in bare feet. During free time, home-made or captured sandals were worn. Finally in January 1941, orders were given that canvas shoes were to be scrubbed only if special permission was given. It may also be pointed out that the wearing life of twelve months allotted for canvas shoes in the Clothing Regulations appears much too long for the quality of the canvas now being manufactured."
5. The periods of time which uniforms were to be worn were used in computing clothing allowances. Rating badges were issued for all uniforms. Men performing officer duties for extended periods of time had to maintain the uniforms required for petty officers. When two or more items of the same clothing were held by a man, correspondingly longer periods of wear were required, e.g., a pair of workshoes had a life expectancy of six months; 3 pairs had to last eighteen months. Additional allowances of clothing for duty overseas were based on the length of the cruise and the location of the operating area.

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The Navy, as stated before, renovated and repaired as much of its clothing as possible. Uppers on shoes were repaired. New eyelets were inserted. Trousers were invisibly mended and tucks put in them by tailors who had adjusted them to the last owner's size were removed. Every step possible was taken to use clothing as long as possible. A man was required to have a full bag, but was permitted no excess clothing. As a result of this policy, such used clothing in stock was issued before new clothing was given to the man.

After used clothing had been made fit for reissue by the naval clothing factories, it was equitably distributed between the various units of the fleet and shore establishment. MarWehr/C was responsible for this distribution.

**Storage Precautions**

Storage precautions for clothing were observed, both in peacetime and during the war. Naphthalene and camphor flakes were used to protect woolsens. Cap bands were wrapped in tissue paper not containing chloride. Shoes were kept in storerooms in which constant temperatures were maintained. It was impossible to determine what precautions, if any, were observed when storing rubber articles such as boots, raincoats, etc.

The log of the raider *ATLANTIS*, Ship #16, contains a reference to the monthly use of insect powder and Parax, a liquid insecticide, in its clothing storeroom.

**Issues**

A system similar to one employed by our Navy at one time was used to control clothing issues. Division officers held monthly bag inspections and noted deficiencies. Tables I and II, on pages 382c and 382e, show the items required and their life-expectancy. Attention is invited to the fact that the number of months a garment was expected to be usable varied with the duty station of the man, e.g., Germany or overseas, and that some items were issued only to men who were on duty in tropical climates.

When the division officer had completed his inspection, the senior petty officer prepared a divisional clothing requisition for the items required by

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the man and submitted it to him for approval. It was then sent to the supply officer for scrutiny and establishment of a clothing issue date. The supply officer forwarded it to the executive officer for final approval (see sample requisition appended) after which it was returned to the supply officer.

All columns on this requisition were filled in or had a horizontal line drawn through them. Erasures were not permitted, and all changes, after approval, had to be certified by the officer witnessing the issue.

Emergency issues to individuals were permitted but the normal procedure was for the men to proceed to the issue room once a month in a group, accompanied by a witnessing officer. The witnessing officer was responsible for seeing that the man drew the items prescribed by the division officer and that the clothing received fitted properly. On small vessels or elsewhere where an officer was not available for such duty, petty officers performed this task.

All issues were made on a turn-in-replacement basis. The supply official at clothing stores, the supply officer of the ship, or clothing officer in large ships or at shore stations, and one other member of an appraisal commission, appointed each month by the commanding officer, were required to be present when issues were made and to inspect personally and assess the value of the items surrendered and issued. As stated, a man did not necessarily receive new clothing at such times. In some instances the item issued was a repaired or renovated one. It was serviceable, however. Likewise, he was given credit for items turned in if the garments had any value. Because of this, the appraisal commission had to indicate on the requisitions the value of the item issued as well as the value of surrendered items, so that this information could later be posted to the clothing ledger and the proper amount charged or credited in the man's clothing book.

Appraisal was based on the time in use by its owner, fractional parts of the value of the item when new, how much longer it could be used after repair, and the current cost of similar items. Fractional factors of  $1/10$ ,  $1/4$ ,  $1/2$ ,  $3/4$ , and  $1/1$  were used in making such appraisals. Appraisals of  $1/10$  of the new value, as a rule, were confined to jackets, jumpers, trousers, blue woolen

DIVISION  
for (Month)

CLOTHING REQUISITION/ISSUE LIST

19

FORM D

1	2	3	4				5				6	7		
LINE NO	RATING	FULL NAME	SERVICE NUMBER	ITEMS OTHER A--THAN RATING INSIGNIA				B--RATING INSIGNIA				VALUE RM	SIGNATURE	
				HATS	TROUSERS	SHIRTS	ETC	CFO	PO1c	PO2c	PO3c			NON- RATED
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
Prepared 19				Inspected 19								I certify that the clothing issues shown hereon were made in my presence on 19		
Division Petty Officer				Supply Officer								Witnessing Officer		
Approved 19				Approved 19								Issues posted in cloth- ing ledger, page line number on 19		
Division Officer				Executive Officer								Supply Officer		

CLOTHING LEDGER SHEET										Sheet #1 FORM E	
I	II	III	IV	1 CAPS			2 CAP BANDS	CONTINUA- TION OF ITEMS AND APPRAISAL FACTORS	VALUE	V	
		RECEIPT OR ISSUE	VOUCHER NUMBER						RM	REMARKS	
NO	DATE	RECEIPTS	ISSUES	1/1	3/4	1/2	1/4	1/1	3/4	1/2	1/4
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
NOTE: There were 45 items of clothing and small stores. Each ledger sheet contained so many items. Sheets 2, 3, etc., contained other items. Supply officer controlled receipts, expenditures and inventory on these sheets by posting invoices received and signed lists of issues and inventories submitted to him by storekeeper.										CERTIFIED CORRECT:	
										(Date)	
										Supply Officer	

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shirts, work clothes and shorts. Items appraised under 1/10 were considered valueless. In case of disagreement by the committee, the commanding officer set the appraised value.

To avoid mixups, used clothing was stowed separately according to its appraised value. Values of such items, where appraisal was under 1/1, were stencilled on the garment in red.

Replacements of clothing lost through disaster or other accidents were issued without charge.

Commerce raiders required large quantities of used civilian clothing.

The log of the ATLANTIS contains the following entry:

"It is needed for both white and colored prisoners, because for the most part they bring only the clothing they are wearing when their ships are sunk. Canvas is issued to cover the bodies of the colored prisoners when they are put to work. For white prisoners, we have to make such extensive use of worn uniforms and undergarments belonging to the officers and chief petty officers that some of them have found it necessary to procure a completely new outfit upon their return home. As far as possible, gear of every kind for camouflage purposes and for clothing the prisoners has been obtained from the captured steamers."

Clothing issues afloat were made by storekeepers assigned to the pay office. At naval clothing stores and depots, supply officials performed these duties.

Records

A priced stock ledger, in which the supply officer posted all clothing receipts and expenditures, was maintained by all clothing issuing activities ashore and afloat. This ledger was closed at the end of each fiscal year and submitted to the Intendantur office for examination, and a new ledger opened. A monthly inventory was taken by the issue room storekeeper and submitted to the supply officer. This inventory was substantiated by the signed divisional clothing requisitions. No evidence was found to indicate that the inventory was checked by the supply officer or his assistants. After posting the issues shown on the divisional requisitions and the storekeepers inventory in his stock ledger, the supply officer verified his entries, approved the clothing requisitions and filed both vouchers for inclusion with his quarterly clothing return.

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Each man in the Navy had a clothing account book, in which the supply officer was required to enter monthly the value of all items turned in and all issues made to the owner. These entries were substantiated by the signature of the man on the divisional clothing requisition. These clothing account books (see sample sheets included herein) contained the following information:

Debits

1. The value of clothing issued
2. The cost of shoe repairs
3. The cost of issues of small personal items

Credits

1. Clothing maintenance allowances
2. Supplementary clothing allowances
3. Credits for police petty officer equipment
4. Credits for other special items
5. Value of returned articles
6. Value of deceased effects
7. Allowance for cleaning materials (shoe polish, cleaning fluid, soap, etc.)

Each clothing account book was made available to its owner for inspection, verification and signature twice a year. Inaccuracies had to be noted at that time. Once signed, no claims were entertained for errors made during the period covered. These books were closed each December or when a man died, was transferred or discharged. They contained a space for the supply officer to certify them correct when the account was closed.

Returns

Quarterly returns consisted of a balance sheet, substantiated by receipt and expenditure invoices, surveys, a statement of all issues made, which was supported by the approved divisional requisition, a certificate of credits for clothing maintenance allowances, cash collected from sales and pay record checkages.

Supply officers afloat forwarded clothing returns to the force supply officer. After that officer had inspected them, he forwarded them to the appropriate Intendantur office of senior administrative staff, which pre-audited and forwarded them to MarWehr/C. They were then sent to the Supreme Court of Accounts for final audit.



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CLOTHING ACCOUNT BOOK

COVER PAGE

CLOTHING ACCOUNT BOOK  
OF

FORM A

SERVICE NO

SHIP OR STATION

Entered the Navy19

SHEET 1

SHEET 2

1											2
CREDITS							DEBITS				
Ship or Station	Month	Year	Clothing Allowance	Deductions	Sub-Balance	Other charges	Total	Remarks	Explanations	Amt.	Signature
											</

SHEET 3

SHEET 4

3										4	
Explanation: Figures parenthesized indicate the number of months of required wear				Number re-ceived	Unit Price	Value in Reich Marks	Re-marks	Number re-ceived	Number re-ceived	RM's	RM's
Caps, cloth				(12)							
Frames, cap				(12)							
Covers, Cap, Blue				(12)							
Covers, cap, white				(18)							
Bands, cap				(9)							
Jackets				(24)							
Jumpers				(36)							
Trousers, blue				(8)							
Trousers, white				(24)							

Sheets 5 and 6 are a continuation of items allowed with the same headings.

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Clothing ledgers were also submitted for inspections and verification by the Intendanturen at the end of each fiscal year.

Inspections

An inspection of clothing stocks afloat was made annually by the force or fleet paymaster. Surprise inspections ashore were made by representatives of the Intendantur offices every two years. During these inspections special attention was paid to storage, condition of stocks on hand and slow-moving or dead stock.

PROVISIONS

Introduction

Before the war, the Navy maintained a general mess on all ships and stations, in which all men, except chief petty officers, were subsisted. Each general mess had its own galley and bakeshop. Men of the same rating and/or department were grouped together and a mess cook assigned to them to bring their food from the galley, wash dishes, etc.

Independent messes for flag, cabin, wardroom and chief petty officer personnel were established on all large ships and at all stations. These messes were advanced funds by the supply officer with which to purchase food. There were no mess bills for food consumed at regular meals in these messes. Extra food over and above that allowed by the Navy, e.g., eggs for breakfast when eggs did not appear on the menu, a sandwich and a cup of coffee between meals, wines and spirits in excess of allowed items, etc., was charged for and the officers and chief petty officers paid for it monthly.

When Germany went to war, all independent messes were abolished and all officers and men were subsisted in the general mess. There was no difference between the food served in the flag mess and that served in the common mess. A caloric system of feeding was introduced. Persons interviewed stated that it was an adequate, well balanced diet and that there were no complaints, however, there were no night steaming rations or other food available except at regular meal times. Each officer and man was entitled to his ration and no more.

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In this report, differentiation has been made between procedures employed in times of peace and war, on large ships and small ones, in general and in independent messes. It is believed that in this way only may an otherwise complicated system of feeding a navy and accounting for issues of provisions be explained.

Subsistence Funds

Funds for subsistence of naval personnel and civilians employed on ships of the Navy (cooks, bakers, stewards, tailors and cobblers) were made available annually by OKM/E under the appropriation "Subsistence". Before the Reichstag was stripped of its legislative power on 1 January 1934, that body voted on the appropriation of these funds. After that date, as has been explained, the Supreme Commander, Hitler made these funds available to GmC Navy. GmM/E established the budget. KmrWehr/C administered it. This appropriation covered subsistence allowances, commuted rations, all expenses of the procurement and preparation of food (heat, light equipment and water for bakershops and galleys), commercial transportation of food and the initial procurement, maintenance and cleaning of work clothing for cooks, bakers and stewards.

Subsistence Allowances

Before the war, subsistence allowances were determined every three months by the Intendantur offices. The one at Kiel determined these for ships and shore stations in the Baltic Area; Wilhelmshaven for units in the North Sea area. These functions were later absorbed by the senior administration staffs of the various group and area commands.

Subsistence allowances were based on the type of ship, its complement and the cost of food in the area. Allowances during the summer months, when vegetables and fruit were cheaper, were less than those during the winter.

Large ships and shore stations were supplied on a component basis and the supply officer was not permitted to over spend his allowance. Small ships were granted a money allowance with which to subsist their crews.

If food prices changed perceptibly in any area, corresponding changes were made in the allowances of ships and stations in that area.

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Although allowances varied by ships, stations and seasons of the year, Capt Roessing stated that they averaged 44-52 cents per day per man ashore and 44-48 cents per day per man afloat.

Additional Allowances

To the basic allowance, i.e., the one granted to large ships and stations, was added 28.6 percent for personnel serving in submarines, torpedo boats, minesweepers and E, R and S-boats not attached to a tender or depot ship.

U-boats were given further allowances. On operations, they were furnished 50 percent additional meat: in port 12 percent. Coffee allowances were doubled at sea.

A ten percent increase in food was also allowed to personnel of the engineering force of large ships, and members of the deck force assigned to the engineer for work in shaft alleys or cleaning bilges and coaling ship. Cooks and bakers and hospital corpamen on night duty were also given extra rations. The reason, according to Antarat Pfeiffer, for this was:

"Engineer personnel had to work harder. Air conditioning in ships was not so good, so some incentive had to be given them to become engineer personnel. The German mentality is such that if a sailor is given larger quantities of food he believes himself a more important person. This psychology was used to procure engineer personnel, cooks, bakers and hospital attendants."

Independent messes were granted additional allowances as shown below to offset necessary costs of mess operation, such as salaries of stewards and messmen, supplemental foods items, etc.:

Mess	In Home Waters	Abroad
Flag	50%	100%
Cabin	50%	100%
Wardroom	30%	60%
CPO	15%	30%

If meals were from time to time transferred from the general mess to an independent mess, only one-half of this allowance could be claimed. None was payable if meals were so transferred all the time.

Mess Committees

In large ships and at shore stations, a mess committee, appointed by the commanding officer and crew, was in charge of the general mess, the adminis-

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tration of provisions and of the general mess funds. It performed its duties under the supervision and direction of the executive officer. A commissary steward was assigned to assist it in actual supervision over food preparation and accounting. This committee consisted of a line member, a medical member, a supply member and a few men elected by the crew.

In vessels not having a supply and/or medical officer, suitable chief petty officers and/or petty officers from the supply and medical departments were appointed to the committee. Under such circumstances the line member was usually the commanding officer.

These committees were responsible for seeing that the general mess provided a good, nutritious and varied diet. They inspected the quality of provisions received and cooked, and supervised the proper stowage, care of and accounting for stocks on hand.

They determined what food would be served, prepared the menus, supervised the preparation of meals, observed which dishes the men did not like and ensured that waste was avoided.

A committee member who neglected his duties was held liable for losses which could not be collected from the commissary steward. If a change occurred in the membership of the committee, it was up to the new member to determine the correctness and completeness of provisions. The member who was relieved was held liable for shortages discovered at a later date only if the new member could prove that the shortage existed before he took office.

The duties of the members of the mess committee were as follows:

The Line Member

- a) Supervise the proper handling of provisions when bringing them aboard. (This meant all methods of handling from the time provisions were received until they were stowed below.)
- b) Supervise the issue of food to independent messes, galley and bakeshop and distribution of prepared meals to the various general mess tables.
- c) Examine and determine validity of complaints and requests submitted by personnel and, when necessary, submit them to the executive officer for final decision.

The Medical Member

- a) Ensure that provisions received on board and issued to messes were of proper quality.

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- b) Examine and sample prepared meals in order to ensure that the vitamins had been preserved. Endorse the menu once a week to the effect that he had sampled the meals.
- c) Examine provisions in storerooms from time to time to ensure that old stocks were used first; also check whether storage spaces and all galley equipment were in compliance with sanitary regulations.
- d) Check that meals were well balanced, and that food prepared did not vary too greatly from the weekly bill of fare. Compute a monthly list of vitamins and calories consumed. This report was filed with the provision return and a note covering such computation entered on the menu.
- e) Prepare in consultation with other members requests to the Captain for special rations deemed necessary for the health of the crew.
- f) Examine all galley personnel, including civilians, for contagious and other diseases.

The Supply Member

- a) Supervise the cleanliness and orderliness of the galley.
- b) Ensure that provisions were properly stowed, that storerooms were locked and persons admitted only for the performance of assigned duties, and that necessary fire precautions were observed.
- c) Prepare purchase orders and requisitions.
- d) Check suppliers' references, scrutinize bids and samples.
- e) Ensure that provisions were delivered in the quantities ordered, and that packaging was correct. Spot check to make sure that the chief commissary steward performed his duties properly.
- f) Check book inventories with actual stocks and certify the agreement of stock with inventory shown on the subsistence statement. When official inventories were taken, furnish any information desired by inventory officers.
- g) Draft all correspondence connected with the administration and the operation of the general mess, except that part which came under the cognizance of the medical member. Maintain schedules issued by Intendantur Offices and other procurement documents. Prepare all necessary statements and vouchers and certify the correctness of all invoices covering provisions received. (This in no way affected the responsibility of the chief commissary steward to account for the supplies.)

The Crew Members

It is believed that these members were included for political reasons only and that their sole contribution to the administration of the general mess consisted of giving a nominal approval

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to menus prepared by the officer members of the committee. There has been no indication during this study that they performed any other tasks.

The Commissary Steward

- a) Supervise the preparation of meals
- b) Maintain accounting records for provisions and money received.
- c) Issue alcoholic beverages in accordance with the written orders of the executive officer. (Such orders specified the quantity to be issued. They were turned over by the commissary steward to the supply officer for retention.)
- d) Slaughter live animals. (Raider vessels carried live stock to supplement food stocks, other vessels did not.)
- e) Maintain goods under bond while the ship was within a customs district and keep a record of any such items used in port.
- f) Reimburse the ship for losses caused by his own negligence or by his disregard for instructions.

The Navy was required to pay a tax on certain foodstuffs and beverages served inside the territorial waters of Germany. (See asterisked items on list of items required for 1200 men for 12 weeks). A system similar to that employed by the U. S. Navy for sea store cigarettes was followed, i.e., supplies were retained in bond in port and brought out of store for consumption at sea. When a ship drew provisions and beverages, the supply officer reported the quantities of dutiable items previously issued to him that had been consumed within German waters and paid the tax to the customs agent at the naval food store.

The General Mess

Men of the same rating always messes together. The system of food distribution was similar to that employed in the American Navy prior to the introduction of the cafeteria system, i.e., mess cooks carried food from the galley to the mess tables.

All food for the general mess was prepared in the ship's galley and bake shop under the supervision of the commissary steward. Where necessary, civilian cooks and bakers were employed under contract to supplement personnel shortages. The Navy had no rated cooks or bakers. Seamen were assigned such duties. They received \$3 per month extra compensation and extra rations. Commissary stewards received \$12 per month extra compensation.

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FOOD ALLOWANCE FOR 1200 MEN FOR 12 WEEKS

(INCLUDING EXTRA RATIONS FOR ENGINEERS)

IN PEACETIME

<u>Obtain at Naval Food Stores</u>	<u>Lbs.</u>
Beef, canned	8,600
Pork, canned	6,625
Liver sausage, canned	1,764
Black pudding, canned	1,764
Ham, canned	992
Meat sausage, canned	2,646
Corned beef	793
Frankfurters	200 cans of 100 each
Bockwurst	260 cans of 50 each
Ham	5,512
Sausage preserved	5,512
Herrings in tomato sauce	5,400 cans
Sardines in oil	1,800 cans
Jelly	1,800 cans
Peas, split	1,600 cans
Beans, haricot	800 cans
Lentils	1,300 cans
Peas, canned	2,000 cans
Carrots, canned	2,200 cans
Beans, canned	2,500 cans
Asparagus, canned	1,000 cans
Mushrooms, yellow	1,700 cans
Plums, canned	1,200 cans
Peas, canned	1,400 cans
Mirabelles, canned	900 cans
Cherries, canned	1,800 cans
Apple mousse	600 cans
Rice	3,100 cans
Macaroni	5,953
Lard	3,748
Sugar	7,717 *
Milk, evaporated	50 crates
Cocoa	441 *
Coffee II (second grade)	3,969 *
Tea	154 *
Salt	4,410 *
Mixed fruits	1,984
Cabbage, red, canned	2,646
Noodles	1,543
Beets	1,984
Cucumbers	200 cans
Mustard	1,102
Fruit juice	992
Celery	1,984
Strawberries	1,764
Coconut oil	1,764 *
Potato meal	661
Semolina	882
Sago	882
Tomato Puree	661
Canned cauliflower	661
Pot-herbs	661
Wheaten flour 70%	42,000
Rye, flour 80%	42,000
Hard tack	4,410
Dried potatoes	5,512
Malt coffee	551



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FOOD ALLOWANCES FOR 1200 MEN FOR 12 WEEKS (Continued)

Extra coffee	551
Bread fresh	5,600 loaves
Pepper, white	110
Pepper, Jamaica	33
Vinegar essence	30 bottles
Spice and seasoning	1,323
Rum	528 *
Citric Acid	110
Jellied crabs	360 cans
Canned butter	6,615
Fresh butter (bottled)	6,615
<u>Obtain from Potato Contractor</u>	
Potatoes	50,000
<u>Obtain from Contract Butcher</u>	
Beef, quartered	3,969
Beef, roasting, carcass & bones	4,815
Pork, boiling	1,543
Pork, roasting, carcass & bones	3,307
Cutlets, smoked pork	1,587
Veal, roasting, carcass & bones	1,587
Veal, halved	1,587
Ham, rolled	992
Mutton, roasting	1,587
Sausage, liver	1,587
Sausage, Thuringer liver	1,587
Sausage, tea	1,587
Sausage, luncheon	1,587
Sausage, German	793
Sausage, ham	2,579
Sausage, white	1,190
Sausage, tongue	1,587
<u>Obtain in Open Market</u>	
Herrings, jellied	1,455
Sea eels, jellied	1,587
Eggs	75 crates of 360
Honey in kegs	3,307
Salmon, sea, canned	3,175
Meat salad	1,587
Herring salad	793
Cabbage, pickled, canned	3,969
Herrings, salted	7,938
Herrings, grilled	7,938
Rote Grutze (Raspberries and Farina)	441
Pudding powder	1,102
Coloring	330
Nutmeg, etc.	88
Cheese, Tilsiter	3,307
Cheese, Emmenthaler	1,764
Pork, shoulder of	793
Cheese, Camembert	7,200 portions (lead cans)
Vegetables (cabbage, etc.)	8,000
Fruits, preserved	83
Milk, dried	882
Pickles	882
Yeast	110
Margarine (canned 2200kg. in package)	9,481
Onions	882

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WEEKLY FOOD ALLOWANCE PER MAN

FOR BREAKFAST

	Butter oz.	Margarine oz.	Jelly oz.	Cold Cuts oz.	Coffee (unroasted) oz.
Sunday	1 3/4	-	3 1/2	1 3/4	1/2
Monday	-	1 3/4	3 1/2	-	1/2
Tuesday	1 3/4	-	-	1 3/4	1/2
Wednesday	-	1 3/4	3 1/2	-	1/2
Thursday	1 3/4	-	-	1 3/4	1/2
Friday	-	1 3/4	3 1/2	-	1/2
Saturday	1 3/4	-	-	1 3/4	1/2
Total	7	5 1/2	14	7	3 1/2

FOR DINNER

FOR DINNER											
Meat						Vegetables					
	Beef	Pork	Mutton	Veal	Canned	Rice	Peas or Beans	Cereals	Canned Veg.	Fresh Veg.	Pota- toes
	OZ.	OZ.	OZ.	OZ.	OZ.	OZ.	OZ.	OZ.	OZ.	OZ.	
Sunday	12½	-	-	-	-	-	-	-	7	-	35
Monday	-	-	-	11	-	5½	-	-	-	-	18
Tuesday	-	8 ¾	-	-	-	-	5½	-	-	18	35
Wednesday	-	-	11	-	-	-	-	-	-	18	35
Thursday	12½	-	-	-	-	-	-	5½	-	-	18
Friday	-	-	-	-	7	-	-	-	-	18	35
Saturday	-	8 ¾	-	-	-	-	-	-	7	-	35
Total	25	17½	11	11	7	5½	5½	5½	14	54	212

FOR SUPPER

	Cold Cuts oz.	Cheese oz.	Egg oz.	Smoked Fish oz.	Butter oz.	Margarine oz.	Lard oz.	Tee. oz.
Sunday	2 1/2	-	-	-	1 3/4	-	-	1/12
Monday	2 1/2	-	2	-	-	1 3/4	-	1/12
Tuesday	-	1 3/4	-	-	1 3/4	-	-	1/12
Wednesday	2 1/2	-	-	-	-	-	1 3/4	1/12
Thursday	-	-	-	4 1/2	-	1 3/4	-	1/12
Friday	2 1/2	-	-	-	1 3/4	-	-	1/12
Saturday	-	1 3/4	2	-	-	1 3/4	-	1/12
Total	10	3 1/2	4	4 1/2	5 1/2	5 1/2	1 3/4	7/12

DAILY ALLOWANCE FOR SUBSISTENCE & PREPARATION OF MEALS PER MAN

	Flour oz.	Bread oz.	Sugar oz.	Fats oz.	Milk oz.	Fresh Fruit Reichsmark	Spices
Sunday	-	21	1 1/2	3/4	-	-	-
Monday	-	21	1 1/2	3/4	-	-	-
Tuesday	for	21	1 1/2	3/4	for	for	4 pf.
Wednesday	the	21	1 1/2	3/4	the	the	worth
Thursday	week	21	1 1/2	3/4	week	week	per
Friday	-	21	1 1/2	3/4	-	-	day
Saturday	-	21	1 1/2	3/4	-	-	-
Total	8 3/4	147	10 1/2	5 1/2	8 1/2	14 pf.	28 pf.

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General Mess Funds

General mess funds were accountable funds; independent mess funds were not. General mess funds were augmented by collections for food served to persons not entitled to be subsisted on the mess, such as persons on leave desiring to take their meals at a station or on board a ship in a navy yard, persons on detached duty and in receipt of per diem allowances, persons receiving retirement benefits or salaries from a government agency and ordered to training duty. General mess funds also received the assessed value of returned barrels, bags, containers, bottles and other packaging equipment, and money for sales of food to other naval units or distressed merchant vessels.

Food was issued on a strict component allowance of so many pounds and ounces per day per man. When the Supply Officer drew food from naval food stores, the Navy's food distributive agencies, he signed a receipt for it. This receipt in turn was forwarded each quarter to the Intendantur, who recapitulated the amount of foodstuffs allowed to the ship and the amount drawn from store. Both recapitulations were priced. The difference between that allowed and that drawn was then paid in cash to the Supply Officer of the ship. This fund was then used to purchase items of food not otherwise allowed to the general mess or for special occasions, such as holiday picnics, ships parties, etc. These funds did not revert to the Navy, but remained the property of the mess and could be used during the succeeding year.

Upon decommissioning, the balance of such funds were transferred to the command which furnished the crew to the ship, i.e., North Sea Station (Wilhelmshaven) or Baltic Station (Kiel). If the crew originated from both stations, the funds were distributed according to the percentage of men obtained from the two stations. If the entire crew was transferred to another ship, the balance was transferred to that ship. If the crew was split up and transferred to several ships, it was distributed in accordance with the number of men transferred to each ship.

When a ship was departing on a cruise or wartime mission the Intendantur advanced to the supply officer funds, eventually accounted for in

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the same manner, to cover the purchase of supplementary food abroad. The amount of the advance depended upon the length of the cruise. If the ship was to be away for a period of less than six months, only one month's food allowance was advanced; between six months and a year, three month's allowance; over a year, six months' allowance was advanced.

When a small ship was ordered on detached duty, its food allowance for the period during which the ship was to be absent from its base was turned over to the captain. A petty officer acting under the orders of the commanding officer was responsible for the cash and for the procurement of food.

Menus

Menus for a general mess were prepared by the supply member of the mess committee. They covered a period of four weeks. Normally, the supply member had taken a course in dietetics before his assignment to a ship or station. The captain or commandant approved all menus. Menus were duplicated for three successive periods, or three months. In this way, it was believed that all seasonal foods on the market would have been procured for the crew, and monotonous duplication of meals would be eliminated. On small ships the commanding officer, the cook and a committee appointed by the crew made a weekly menu.

According to Amtsrat Pfeiffer, the great attention paid to menus was occasioned by the Navy's experience in 1915 when the cruiser CROWN PRINCE WILHELM, through failure to feed a balanced ration, was forced to put into Newport News Virginia for internment, with the whole crew ill with beri beri. A raider, the WOLF, had a similar experience, he said, with its crew suffering from scurvy. Supply officers were taught at the dietetic school to introduce rose hip, tomato puree, black currants (high vitamin B content), lemons (citric acid), oranges and extract of yeast into the various foods to increase the vitamin content and reduce the possibilities of such diseases to a minimum.

Independent Messes

Independent messes, including the GPO mess, had a civilian caterer. The money allowed for the subsistence of the independent mess members was

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SAMPLE MENU SERVED IN PEACETIME

<u>First Week</u>	
<u>Monday</u>	Breakfast: Margarine, one egg, coffee Dinner: Bacon and peas, canned plums Supper: Butter, sausage, sardines in oil, tea.
<u>Tuesday</u>	Breakfast: Margarine, canned liver sausage, coffee Dinner: Noodle soup, roast pork, potatoes, gravy, beans Supper: Butter, ham sausage, Tilsiter (yellow) cheese, coffee.
<u>Wednesday</u>	Breakfast: Margarine, jelly, coffee Dinner: Leipzig Hotpot (vegetable stew) with fresh pork, apples Supper: Butter, liver sausage, cinnamon rice pudding, coffee.
<u>Thursday</u>	Breakfast: Margarine, canned meat sausage, coffee Dinner: Semolina soup, beef goulash, macaroni, pears Supper: Butter, luncheon sausage, herrings in sauce, coffee.
<u>Friday</u>	Breakfast: Margarine, honey, coffee Dinner: Asparagus soup, fricassee of veal with eggs and rice, pudding, fruit. Supper: Butter, tongue sausage, meat salad, tea.
<u>Saturday</u>	Breakfast: Margarine, white sausage, coffee Dinner: Canned baked beans and pork, canned green plums Supper: Butter, German sausage, cucumbers, cheese, coffee.
<u>Sunday</u>	Breakfast: Butter, one egg, coffee Dinner: Milk soup, roast veal, potatoes, gravy, peas and carrots Supper: Butter, preserved sausage, sea salmon, bacon, cakes.
<u>Second Week</u>	
<u>Monday</u>	Breakfast: Margarine, jelly, coffee Dinner: Bacon and lentils, bockwurst Supper: Butter, liver sausage, jellied crab, tea.
<u>Tuesday</u>	Breakfast: Bread and drippings, coffee Dinner: Soup, roast beef, macaroni, gravy, bean salad Supper: Butter, tongue, cheese, coffee.
<u>Wednesday</u>	Breakfast: Margarine, meat sausage, coffee Dinner: Canned beef, noodles, cherries Supper: Butter, ham, jellied eels, tea.
<u>Thursday</u>	Breakfast: Margarine, honey, coffee Dinner: Soup, pork outlet, potatoes, gravy, red cabbage Supper: Butter, ham sausage, herring salad, coffee
<u>Friday</u>	Breakfast: Margarine, canned pork, coffee Dinner: Soup, meat loaf, coffee, gravy, rice, and canned strawberries Supper: Butter, cheese, potato soup with bockwurst, coffee.
<u>Saturday</u>	Breakfast: Margarine, canned liver sausage, coffee Dinner: Plums and noodles Supper: Butter, bacon, cucumbers, ham and eggs, tea.
<u>Sunday</u>	Breakfast: Butter, one egg, coffee Dinner: Soup, pickled pork, potatoes, gravy, apple mousse Supper: Butter, preserved sausage, cakes, coffee with milk.

Rye bread furnished with all meals.

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SAMPLE MENU SERVED IN PEACETIME (Continued)

<u>Third Week</u>		
<u>Monday</u>	Breakfast:	Margarine, canned black sausage, coffee
	Dinner:	Cinnamon rice pudding, frankfurter sausages
	Supper:	Butter, white sausage, edam cheese, tea
<u>Tuesday</u>	Breakfast:	Bread and drippings, coffee
	Dinner:	Soup, pickled cabbage, puree of peas, smoked pork cutlet
	Supper:	Butter, luncheon sausage, one egg, coffee
<u>Wednesday</u>	Breakfast:	Margarine, jelly, coffee
	Dinner:	Bacon, macaroni, baked fruit
	Supper:	Butter, hot frankfurter sausages, preserved sausage, tea.
<u>Thursday</u>	Breakfast:	Margarine, canned pork, coffee
	Dinner:	Soup, roast pork gravy, rice, canned cherries
	Supper:	Butter, Tilsiter (yellow) cheese, canned ham, coffee
<u>Friday</u>	Breakfast:	Margarine, honey, coffee
	Dinner:	Soup, fried meat balls, potatoes, pudding and fruit juice
	Supper:	Butter, thuringer liver sausage, jellied crab, coffee
<u>Saturday</u>	Breakfast:	Margarine, jelly, coffee
	Dinner:	Bacon and peas, canned plums
	Supper:	Butter, sardines in oil, bacon, cucumbers, coffee
<u>Sunday</u>	Breakfast:	Butter, ham and eggs, coffee
	Dinner:	Soup, pork cutlets, potatoes, gravy, mushrooms
	Supper:	Butter, bologna sausage, cheese, cakes, bacon.
<u>Fourth Week</u>		
<u>Monday</u>	Breakfast:	Margarine, canned meat sausage, coffee
	Dinner:	Vegetable stew with pork, groats cooked with preserved juice of fruits and eaten with milk or cream
	Supper:	Butter, tea sausage, sea salmon, coffee
<u>Tuesday</u>	Breakfast:	Margarine, canned beef, coffee
	Dinner:	Beef steak, macaroni, gravy, pears
	Supper:	Butter, ham sausage, grilled herrings, tea
<u>Wednesday</u>	Breakfast:	Bread and drippings, coffee
	Dinner:	Ragout of mutton and beans, canned beef, cherries
	Supper:	Butter, liver sausage, sardines in oil, coffee
<u>Thursday</u>	Breakfast:	Margarine, jelly, coffee
	Dinner:	Soup, stewed meat, rice, gravy, celery salad
	Supper:	Butter, meat salad, Tilsiter cheese, tea
<u>Friday</u>	Breakfast:	Margarine, canned blood sausage, coffee
	Dinner:	Soup, boiled beef, potatoes, gravy, boiled beets
	Supper:	Butter, bacon, cucumbers, cold pork cutlets, coffee
<u>Saturday</u>	Breakfast:	Margarine, honey, coffee
	Dinner:	Lentils, bacon and bockwurst
	Supper:	Butter, shoulder of pork, potatoes in jackets, gravy, herrings
<u>Sunday</u>	Breakfast:	Butter, one egg, coffee
	Dinner:	Soup, roast mutton, potatoes, gravy, mixed vegetables
	Supper:	Butter, bologna sausage, sprate (similar to sardines) in oil, cakes, cocoa.

Rye bread furnished with all meals.

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TABLE OF VITAMIN CONTENT OF FOODS

Showing Number of Milligrams in 100 Grams of Food

Item	Vitamin B-1	Vitamin C
Sardines	60	
Egg Yolk (cooked)	275	
Wheaten Bread		
94% milled (wholemeal)	220	
82% "	170	
60% "	40	
Lentils	420	
Canned Beans	240	
Dried Beans	240	
Potatoes, raw	80	10
Potatoes, cooked	50	5
Horse-radish, raw		100
Horse-radish, cooked		25
Radish	120	25
Asparagus		25
Rhubarb (stem)		15
Cauliflower, raw	220	50
Cauliflower, cooked	60	8
Spinach, raw		8
Lettuce, raw		8
Parsley		100
Greens, raw		75
Greens, cooked		16
Brussels Sprouts, raw		50
Brussels Sprouts, cooked		50
White Cabbage, raw		40
White Cabbage, cooked		2
Red Cabbage, raw		50
Red Cabbage, cooked	80	15
Cucumbers, raw	60	9
Mushrooms, raw	100	
Dried Yeast, raw	1200-4500	
Genovis, raw	7000	
Vitox, raw	Little	
Walnuts, raw	300	
Hazel Nuts, raw	400	
Almonds, raw	155	
Apples, raw	80	2-15
Pears, raw	60	1-3
Cherries, yellow, raw		15
Cherries, black, raw		15
Apricots		12
Plums	80	6-12
Plums, dried	180	8
Strawberries		50
Raspberries, Gooseberries		25
Redcurrants		16
Blackcurrants		100
Raisins	150	
Rose-Tips		500
Figs, dried	200	
Lemons, Oranges	80	50-100
Tomato, Chutney	80	15

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turned over to the caterer by the supply officer. He had to feed the officers with it. He also had to get his salary out of these funds. He had his own storeroom. He purchased the food required for the mess from merchants ashore prior to 1934 or from the naval food stores after that, paying cash at the time he got it. At the end of the month he would turn over the charges for guests, drinks, etc., to the mess treasurer. The mess treasurer would in turn issue mess bills to the officers and collect them.

All food and beverages served to officers, other than at regular meal times, were signed for and charged to the individual. Each Saturday, the caterer would submit to the mess treasurer and first lieutenant of the ship a menu for the succeeding week. It showed the anticipated cost. Three-sixths of the amount of money furnished to him was to be used for lunch, one-sixth for breakfast and two-sixths for supper.

A civilian cook and two civilian waiters were furnished by the caterer in most wardroom messes. They were paid by the Navy, but agreed in their contracts to a deduction from their salaries for their meals. This deduction was the same as the food allowance for men subsisted on the general mess. They went to sea in the ship on all cruises.

Pantrymen were sailors, known as "stewards". They were paid a small amount of extra-compensation for their duties but it was mostly tips from officers and the better food served that made the job attractive. The length of such details was limited to six months.

The same system was employed in the cabin mess, except that the captain had no separate galley, and his food, as well as that for the flag mess, was prepared by the caterer. A sailor messman served him.

In the admiral's mess, two sailor messmen, one civilian messman and one cook, who served as a caterer as well, were assigned. The admiral's staff also took their meals in this mess.

The CPO mess had its own galley, caterer and civilian messmen.

The same system of purchasing food, bills, etc., was employed in all independent messes. All equipment, laundering of linen, upkeep of



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silver and china and cleaning materials was financed by the appropriation "Maintenance".

The independent mess system was discontinued when the Navy mobilized for war. Civilian employees were inducted into the Navy. All food for officers, chief petty officers, stewards and messmen was issued gratuitously. However, the flag, cabin, wardroom and chief petty officer messes continued to receive one-half of the allowances granted for supplemental food.

Procurement of Provisions  
and Distribution

The system used in obtaining raw and processed foods for the Navy has been described sketchily in Chapter VI.

Prior to 1939, the Intendantur Offices at Kiel and Wilhelmshaven purchased all Navy food. All tinned and bagged staples were procured through contracts made with leading food processing firms, and sent to store at the Navy's provision supply depots at Swinemünde, Wesermünde, Heligoland or Cuxhaven. These supply depots furnished the requirements of naval food stores and retained a stock of these items sufficient to meet the mobilization requirements for naval vessels. A list of these items appears on the schedule of allowances for 1200 men for 12 weeks.

In addition to such provisions, the Intendantur offices also made contracts with reliable slaughter houses and vegetable produce firms for fresh and preserved meats and potatoes, under which naval food stores could make purchases. These items are listed under Potato Contractors and Contract Butchers on the same schedule.

Special items such as jellied herrings, eggs, spices, cheese, margarine and other fresh vegetables were purchased by the food stores in the open market on an as needed basis. Telephone bids were obtained when the demand arose. These items are also listed on the schedule.

In addition to the Intendantur Offices and provision supply depots, the Navy had food stores, through which it distributed its food to ships and stations, at each main, second and third class naval base. These distributive agencies obtained their food from:

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- (a) Provision supply depots
- (b) Contracts made with butchers and potato suppliers
- (c) In the open market.

When a ship or station required provisions, it submitted a requisition for such items to a food store. Staple and special tinned or bagged items were issued direct to the ship or station by the food store. In the case of provisions purchased in the open market, an order on the contractor or successful bidder was given to the ship's representative. He made his own arrangements with the firm for delivery direct to the ship or station. Based on the current contract price or bids received, invoices for the weights ordered were issued by the naval food store at the time the order was given to the ship's representative. Adjustments between weights received and weights ordered were effected by credit or debit invoices at the end of the month.

Naval food stores had no refrigerating facilities. Contractors were required to maintain a two weeks' supply of items furnished by them. Representatives of the naval food stores and Intendantur offices made frequent inspections to ensure that this requirement was carried out. In this way, the food stores were able to maintain a 14 day supply of perishables without incurring the cost of refrigerating installations.

Quarterly contracts for meats and potatoes were negotiated by the Intendantur offices and a schedule thereof sent to the ships, stations and naval food stores. Schedules of fresh vegetables, fruits, etc., available in the local market were also included. Tinned and bagged staple items were standard stock. Where the cost of meats, etc. fluctuated, new schedules were furnished. In this way, mess committees and independent mess treasurers were able to plan menus and control the cost of food served.

Vendors making delivery to ships and stations on orders sent to them by naval food stores submitted bills, supported by receipted delivery slips, to the naval food store for payment monthly.

Each supply officer of a ship or flotilla had an account at the national bank and cash in his safe for making purchases. (See chapter IX

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for details about payment of bills.) If his ship required food at a port at which there was no food store, and this was especially true on foreign cruises, he obtained bids or, if necessary, negotiated a contract and procured his own provisions.

When the armed forces were mobilized for World War II in 1939, however, a system of food rationing was immediately introduced. This was not a sign of scarcity. It was a precautionary measure by means of which all would be assured of undiminished rations until the end of the war. As stated, the policy of the German armed forces was to ruthlessly and systematically clean out vanquished territories. Everything that was likely to increase the war potential, including foodstuffs, was taken to Germany. As a result of this policy, Germany was able to maintain its food rationing at its original level during the first two years of war. This seizure of food continued throughout the war.

In 1942, the Norwegians complained that they were being deprived of their high value meat foods, as their cattle were transported to Germany in exchange for supplies of potatoes. In June 1943, the doctors of Holland protested to Seiss-Inguart, the Nazi ruler of the Netherlands, that the standard of health of the Dutch had greatly deteriorated because of such practices.

The system of allocating other raw materials and plant production facilities of Germany and the occupied countries to the armed forces explained in Chapter VI was applied to the procurement and production of food when Germany mobilized for war in 1939.

Under this system, the Navy's food requirements were lumped with those of the other armed services and submitted to OKW/Ruo W1 for presentation to the Ministry of Food and Agriculture. That ministry assessed the needs of the civil populace and the productive potential of Germany and the vanquished countries, after which it allocated to OKW/Ruo W1 what it considered to be the armed forces' share. OKW/Ruo W1 reallocated this amount of raw and processed food among the various services. Where raw materials other than foodstuffs were required, such as tin, they too were allocated to the services.

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Under the rationing system introduced, all food within Germany was brought under the control of the Ministry of Food and Agriculture and the Intendantur offices and naval food offices were not permitted to make purchases except as authorized by that ministry, its field offices and OEW/RueWi. In making its allocations of raw and processed food to the various military services, OEW/Rue Wi issued a type of ration coupon which was surrendered to the food wholesaler at the time the Navy purchased its food. MarWehr/C received these coupons from OEW/Rue Wi and distributed them among the Intendantur offices and the senior administrative staffs that were organized later. The latter offices and/or staffs redistributed them among the naval food stores and provision supply depots.

In addition to the supply depots at Swinemünde, Wesermünde, Heligoland and Cuxhaven, the Navy established two provision supply centers in 1940. These centers were located at Magdeburg and Breslau. When the clothing center at Vienna was established, a provision supply center was also set up.

These supply centers were in fact clothing/food supply centers. However, inasmuch as clothing and food were carried in separate accounting systems, they were referred to as separate centers. The responsibilities of support were the same for both. Magdeburg, Wesermünde, Heligoland, Cuxhaven and Wilhelmshaven supported the naval food stores in the North Sea area, Holland, Belgium and France. Breslau, Kiel and Swinemünde supported the food stores in the Baltic area and in Norway. Vienna supported food stores in the Balkans and in the Black and Aegean Seas. Later in the war, other food supply depots were established in Paris, to support the food stores in France, and at Sofia, as an advanced food supply depot for the one at Vienna to support the stores in the Black and Aegean Sea areas.

Under this system of procurement and distribution, the Navy retained its independence from the Army and Air Force until the last stages of the war, when it was forced to combine its procurement with the other services in basic foods, such as flour, potatoes, etc. However, it retained independence with respect to special provisions for submarines all through the war.

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In occupied countries, representatives of the Ministry of Food procured as much food as possible to reduce shipments out of Germany to a minimum. At the same time, every precaution was taken to avoid arousing the antipathy of conquered nationals. Food was in very short supply in the Balkan countries. Most of the food required by naval personnel in the Black Sea area had to be shipped there by rail from Germany. The situation was much better in France and in the Lowland countries. In Norway, fish was the only food in abundance, otherwise the same situation obtaining in the Balkans existed there.

The Ministry of Food, through its field agencies, made allocations in occupied countries direct to the military services. Navy allocations in occupied countries were turned over to the senior administrative staffs of the group commands, which in turn reallocated the supplies to the senior administrative staffs of the lesser commands. The latter determined what portions the naval food stores within their areas would receive and what naval activities would be supported by them.

An interesting document relating to food and its production came to light during this study. It was written in 1944. Its author is unknown but excerpts are quoted because it bears out the statements of naval officers and officials that the Navy suffered no real food shortages during the war, that the quality remained about the same as that served in peacetime and that the quantity only was reduced. This document states, among other things:

"The grain situation is highly favorable. Grain imports to Germany from the occupied territories and from treaty countries have exceeded expectations. In this respect, the occupied territories of the East take first place, then follow France, the General Government (Poland), Hungary, the Protectorate (Bohemia-Moravia), and Roumania. We will have succeeded in doing something this year that we were unable to do in the two preceding years, that is, create a reserve of 1,000,000 tons of grain at the beginning of the new grain year on 1 August, 1944. The grain situation in the sixth year of the war will not be as satisfactory as it is now. The harvest prospects for this year are not as good as last year. The Ukraine is now gone. In addition, we are feeling the loss of the surplus supply areas of Roumania and parts of Galicia, and of about 600,000 hectares of valuable arable land in the west, because of flooding, mining, earthworks, and air raid damage.

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"The meat situation was already causing concern in the autumn of 1943, but there is now more meat on the market than had been anticipated. This is because the domestic supply was larger than had been statistically estimated. The occupied countries have also supplied more meat than had been designated in the meat quota. Denmark supplied almost 100% more than was expected. Italy also was able to supply 46,000 tons of meat. Because the troops re-treating in Russia satisfied their requirements by confiscating the cattle reserves of the country, the situation in Germany became more favorable. During the winter there was even a persistent demand for the removal of the restrictions on meat. The refrigerating plants are bursting with meat, and the maintenance of the present rationing policy can, therefore, be assured and, furthermore, extra rations can be expected in areas exposed to air raids.

"The fat situation, however, appears worse than it did last year. The loss of sunflower oil and oil cake from the Ukraine is making itself felt. In fact many details are contributing to the fat shortage, such as an increased demand for cattle feed, aid to occupied territories, heavy losses from aircraft damage and increased rations for the armed forces. To avoid a reduction in the fat ration, the rationing of animal fats proper was introduced and this can be expected to continue; otherwise, the weekly fat ration would have to be reduced by about 40 grams. However, we can get along until next year's production is available. Some relief may be obtained from the production of rape seed, since the area under cultivation has been increased by 25% as compared to last year.

"The only food for which reduced rations are contemplated is sugar. Large stocks of sugar have been destroyed by enemy action. The industrial sugar requirement (for the production of glycerine and Buna) is increasing to a greater extent than formerly. Sugar beets are being distilled to produce alcohol and are being used more and more as a feed for stock.

"A curtailment of the sugar ration would improve the fat supply, since sugar beets are highly satisfactory as feed.

"The potato crop cannot be predicted at the present time. In any case, the situation is more favorable than at the same time last year. The present potato scarcity will become worse because the spring potato crop was two weeks late.

"We were able to surmount the failure of last year's vegetable crop and we can get along until this year's crop of field vegetables is available. Some shortage is likely to occur in July until the fall crop is in.

"The 4,000,000 producing farms with 760,000 deferred agricultural workers have had to release 90,000 of them to the armed forces. Further demands of this nature cannot be met by agriculture because positions of responsibility should not be entrusted to foreign workers.

"The further curtailment of power fuels also constitutes a serious hazard. The yoking of cattle is a decidedly unsatisfactory substitute since an ox requires  $1\frac{1}{2}$  times as much feed as a cow. Yet the use of oxen is already 100% greater than before the war.

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"In conclusion, it can be said that food production is still one of the most favorable aspects in the German economy. The confidence of the civilian population in the food rationing card has been justified and the regularity of deliveries to the large cities even after the heaviest air raids has been one of the most gratifying achievements during the past winter."

Caloric Content of Menus  
During the War

The Navy abolished the component ration system of feeding at the outbreak of war and instituted instead a caloric unit food allocation system whereby a battleship, cruiser, destroyer, submarine, etc., received so much food per capita. The amount of calories allowed varied by types of ships and stations. Ministerialrat (Gdr) Rolf Hesse stated that the number of calories furnished was between 2-4000 per person per day for units ashore, that U-boat personnel received about 6000 per day, that there were no complaints and that the personnel looked robust and in good fighting trim.

By comparison, it is interesting to note that the average daily ration of personnel in the general service of the American Navy today contains 3500 calories and that the ration for submarine crews averages 3700 calories.

Food development

Several substitute foods were developed, the most interesting of which were coffee from roasted rye and malt grain, into which had been introduced figs to give it strength and color, and butter from coal. Schoka-cola was developed as a beverage. Flavor essences and compressed tablet foods, such as destro-pure, dextro-sugar, and concentrated meat were also developed. Frozen vegetables and fruits and many new methods of canning meats were introduced in the Navy for the first time during the war. Monthly tests of the nutritive values of food served were made by doctors and analytical chemists. Special attention was paid to the caloric content of all food, and tablets to supplement vitamin deficiencies were issued when medical officers deemed it expedient.

Special emergency rations were developed for small craft, such as motor torpedo boats and small battle units in order to get high quality

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food for these units which operated away from their bases for only about six or seven hours at a time.

Vegetables and butter were usually tinned. Some powdered eggs were available for baking. Margarine was used extensively. Fish paste was served as a substitute for jelly and jam spreads. Hard tack biscuit replaced bread on small ships at sea. Dehydrated potatoes came into their own but were not popular, since fried potatoes are the staple diet of Germans and dehydrated ones could only be served as a mash.

Food Conservation

In discussing food conservation, Ministerialrat Pfeiffer stated that in peacetime leftovers aboard ship were thrown overboard. Leftovers at shore stations were fed to pigs maintained by the general mess. In wartime, however, because of strict rationing there were no leftovers. This was true on all ships and stations.

Ministerialrat Hesse stated that each supply officer was charged with indoctrinating the crew of his ship or station in food conservation, that everyone knew that there was a food shortage and, as a result, there was no waste.

Provision Accounting  
before the war.

Before 1939, a general mess report was submitted by the mess committee to the commanding officer of large ships and stations each month. This report consisted of:

- (a) A schedule of receipts broken into:
  - (1) Food
  - (2) Beverages
  - (3) Containers and packaging materials
- (b) Issues to general mess
- (c) Schedule of shortages
- (d) Transfers to other vessels or sales to independent messes
- (e) Rations allowed for men assigned to the general mess
- (f) Priced schedule of issues
- (g) Shortage (survey) reports, receipt and expenditure invoices covering food, beverages, containers and packaging materials and other vouchers reflecting receipts and expenditures
- (h) Priced inventory as shown by provision ledgers
- (i) A statement of general mess funds



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A physical inventory was taken by the supply officer quarterly. At that time the provision ledgers and stock cards were reconciled with the actual stock on hand. A return incorporating the vouchers and information shown in the two monthly reports previously submitted was also prepared and sent to the Intendantur office, via the fleet supply officer. On small ships this inventory was taken by the food petty officer. The return was prepared by the captain and submitted to the flotilla supply officer, who sent it to the Intendantur office.

After preaudit by the Intendantur office or senior administrative staff, provision returns were forwarded to MarWehr/C, thence to the Supreme Court of Accounts for final audit.

When the Intendantur office had completed its preaudit, the difference between the amount of cash allowed and advanced was paid to or collected from the supply officer of the ship or station or, in the case of small vessels, the commanding officer.

Two officers, not members of the mess committee, were appointed semi-annually by executive officers of large ships and stations to make an official inventory of the provisions on hand in general messes, and to render a report of the quantities and conditions found to the commanding officer. On small vessels, this inventory was taken by the commanding officer himself.

On small ships acting singly, the commanding officer also conducted the annual inventory of provisions and verified the balances shown in the provision records. When operating with flotillas, the flotilla commander appointed inventory boards to take all semi-annual inventories in the flotilla. Flotilla supply officers held surprise inspections of provision stocks and records.

Accounting in naval food supply depots and food stores consisted of a monthly report to the appropriate Intendantur office of:

- (a) Report of stocks on hand
- (b) Schedule of invoices issued (arranged by naval food stores, ships and stations)
- (c) Schedule of disbursements made to dealers for provisions delivered to depot, food store, ships and stations.

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The Intendantur office recapitulated all such reports and submitted a combined provision return to MarWehr/C. A separate financial return covering collections and disbursements was made to the Supreme Court of Accounts, copy to MarWehr/C and OKM/E.

Provision accounting in wartime

All accounting for provisions was discontinued afloat when the caloric system of feeding was introduced in 1939. Aside from strict supervision to avoid overissues, waste and thefts, or other conversion to personal use (liberty parties were searched by the officers and senior petty officers, also occasionally by customs officials), no special attention was paid to provisions.

Aside from stock cards in storerooms, the only records required afloat were two provision record books. In one was recorded all food received by the ship. The other contained a record of all issues to the mess. The difference between the balances shown in the two books represented the inventory of provisions on hand.

Verification of this balance was effected through the inventories made by the supply officer of large ships, commanding officer of small vessels, and the semi-annual inventory board.

The first book was kept by the supply officer or commanding officer and was presented to the food store each time provisions were drawn. The second one was maintained by the commissary steward on large ships and by the food petty officer on small vessels. Amtsrat Pfeiffer stated that the entries in the record book submitted to food stores were often altered in order to get more food for ships, but that if such practice was detected the commanding officers were held responsible and disciplined.

Peacetime provision accounting procedures were continued throughout the war at naval food supply depots, food stores and commissary departments of shore stations.

The U-boat and small battle unit services were independent commands and, during the latter phases of the war the only ones actually participating in operations. Many reports had been received of the special privileges granted to their personnel and, as a result, Capt. Roessing was

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closely interrogated about food distribution and other feeding problems in the U-boats service. He was very cooperative. His replies follow:

"I don't know exactly the number of submarines supported by the various U-boat bases but a certain amount of food was given them. This was broken down into daily portions. The food was then put together for one type of U-boat going south and for another type going north, according to winter or summer food. There were several hundreds of these types and they had to be kept separated in the food supply depots.

"We helped in developing new food stuffs. I remember, for instance, during the first year of the war, the bread was very poor. Experiments were made with bread, practically all during the war, experiments with canned bread, bread in cellophane bags and bread baked from all sides. We made certain progress in that field. But after six weeks, submarine personnel had to eat hard tack. As long as we could we tried to avoid this since the German sailor was accustomed to black bread. He needed it. Then the canned bread often bulged and deteriorated inside the cans and we had to be very careful and avoid food poisoning. At this time, I do not remember a single case of food poisoning, however.

"The lack of fresh food was our greatest problem. The bigger U-boats had refrigerators later on, particularly for tropical waters, and this proved excellent. We gave the men as much citrus fruit as we could, but it did not last too long. We also gave them such fruit juices as we had. We had to give them 'Hage butten' (rose tips). It is a high vitamin carrier and we made jam and juice out of it. The men liked it. There was always a certain lack of citrus fruit.

"You must understand of course that the submarines got all that was available in Germany. It was particularly difficult during the latter part of the war to get exactly what we wanted for them. We had canned fruits but they lost their vitamins when cooked.

"Another typical problem was that of potatoes, a proper food for Germans. A sailor has not had a meal unless he has had potatoes. There were of course dehydrated potatoes but the flavor was not good and you could only mash them. Then they had fresh potatoes stored in nets, swinging free, but the air in the submarines was not good and they spoiled.

"We placed a skin of cellophane over the meat. This proved excellent. It was sprayed plastic, I think, and hermetically sealed the meat. The type of food carried depended on the cruise of the submarine, as I stated before, winter food on northern trips, summer food on southern ones.

"We found that we needed a lot of fats in Arctic waters. I personally reacted to them. Ashore I did not eat lard or bacon, but on a submarine in winter time I wanted to eat lard by the spoonful. We also gave the men cod liver oil in Arctic waters, where

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it was damp and cold. In tropical waters, they needed juices, light food and fruit.

"There was also another problem when we used the schnorchel. We got air into the submarine with it. The night was changed into day and the day into night. The schnorchel was hard on the people though, since they were submerged up to 70 days and the men became very nervous. We had to be very careful about their food and how we prepared it. I always warned the captains about this.

"Our personnel, of course, got chocolate; also beer and liquor. The latter was kept under lock and key by the commanding officer. It was issued as a reward after a battle to the most important people on the submarine or for medicinal purposes. I tried to check the beer drinking, since beer makes you tired, and I always suggested apple juice which, by my own experience on war missions, I found to be much better, but these were areas in which we did not wish to restrict the people too much.

"The cooks were regular Navy men. We trained them at the regular submarine cook's school at Neustadt Holstein. We did not have a rating of cook or baker in our Navy. Able seamen and seamen cooked and baked. In submarines they were supervised by the radiomen.

"We did not use the mess committee system on submarines in wartime. Anyone complaining went to the cook inquiring why he did not get this or that. The cook's explanation soon spread to the crew; however, all decisions about complaints were made by the captain. Depending on whether or not he was close to his crew, this system was effective or ineffective. It normally was one of the petty officers who acted as liaison between the captain and the crew.

"Sometimes the food ran short on long trips. Then the captain had to subdivide the food duly, since it was as vital for the submarines as torpedoes. The man in charge of the food was one of the watch officers, usually the oldest watch officer aboard. Under him was a radio mater, who acted as the commissary steward and was responsible for accounting and issuing directions to the cook.

"We used the magazine principle of outfitting submarines with food, i.e., gave them a lot of food when they started on a cruise. When they came back, what they did not use was returned and roughly accounted for. We had some trouble with this system since luxuries had to be returned too and the crew pinched them. This included coffee, cocoa, chocolate, sugar, etc. About 60% of all disciplinary cases that came to me for review concerned pilfering of taxable items and others scarce food. The men would smuggle it ashore for use by relatives and friends who could not otherwise get such items. We couldn't be generous in such matters, even though we would have liked to be.

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The careful economic controls established and maintained by the Ministry of Food and the armed forces made it possible for the German people as a whole to eat much better during the World War II than in World War I. Example: The average Berlin citizen received 2600 calories per day in 1943-44 as opposed to 1600 in 1918. While there was a shortage of fats and oils, careful planning permitted extensive distribution of at least minimum requirements. While there was limited variety in wartime menus, a fairly well balanced diet was maintained through the use of substitutes and vitamin tablets.

Ships' Store Activities

All large vessels and all shore stations had a ship store, a soda fountain, laundry, cobbler and tailor shop. They were administered by paymasters afloat, by Intendantur Officials ashore.

Small vessels were afforded these facilities through flotilla ship store activities. The flotilla supply officer was responsible for their administration.

Ships Stores, barber shops and laundries were operated on a concession basis under the supervision of the supply officer. A percentage of their profits was also paid to the welfare fund.

Cobbler and tailor shops were operated by civilians employed by the supply officer. Material used by them was furnished from the clothing account and, before the war, charged against the men's clothing maintenance allowance. During the war, it was charged against the clothing appropriation.

A supply officer's responsibility for these activities consisted of ensuring that service rendered was satisfactory, keeping a record of concession supplies received on board ship or at the station, auditing the monthly statements of sales and profit or loss to ensure that the ship or station received its proper share of the profit made by the activities and, in general, acting as the commanding officers' representative in such matters. Therefore, no official records or returns were maintained by him.

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Tobacco products and beer were furnished as a part of a man's ration and carried in the provision account. Because of the great shortage of fats and oils, soap was heavily rationed and was also issued gratis to naval personnel during the war through the Central Procurement Office supply system.

Each officer and man was given either six cigarettes, two cigars, two fifths of an ounce of tobacco or seven tenths of an ounce of chewing tobacco per day.

Other items, such as dentifrices and other toilet articles, chocolate, cakes, writing materials and soft drinks, as available, were carried in the ship store. These stores were run, under the supervision of the supply officer, by a civilian concessionnaire, who purchased his own stock. A separate storeroom was provided for the concessionnaire. Price lists were approved by the commanding officer. The store was open early and late, except where sales might interfere with ship or station work.

A four percent merchandise tax was levied on all items sold in ship store, and paid by the concessionnaire to the Government Finance Office.

When ships put to sea on long cruises, a petty officer, appointed by the commanding officer, operated the ships store and soda fountain for the concessionnaire.

## CHAPTER X - THE SECRET SUPPLY SERVICE

During the first four years of the war, the Secret Supply Service of the Navy was responsible for equipping German merchant vessels interned in foreign countries, and for chartering neutral ships where necessary and dispatching them to sea to meet and supply various surface raiding vessels and submarines with fuel and other supplies. It was also responsible for procuring badly needed raw materials from the Far East, Spain and Argentina and shipping them to Germany in blockade runners, which in most instances it had initially equipped.

This service was known as the Etappendienst. It was composed of German nationals and pro-German foreigners employed by German steamship lines, oil companies and other firms engaged in business in foreign countries. Personnel of this organization were divided into two groups. The first group consisted of intelligence men. The second was composed of supply men. This report is concerned chiefly with the work of the second group.

The documents studied do not indicate whether the personnel which made up this organization was a part of the regular naval establishment. It is believed that the agents were all civilians and were never inducted into the Navy. The leaders of the larger groups were naval officers who were naval attaches. The whole organization was headed by a naval officer attached to the Foreign Intelligence Division of the High Command of the Armed Forces (OKW/AuslAbw). Several naval officers held this post, but the ones assigned during the period just preceding and during World War II were Capt Werner H. T. Stoephasius (1937-1943) and Capt Dietrich

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Niebuhr (1943-1945). Etappendienst was most active between 1939 and 1943. Cognizance over its activities was transferred in 1943 from OKW/AuslAbwehr to Adm Qu III and 3 SKL.

Capt Stoephasius was interviewed at Hamburg on 27 August 1951. RAdm Max Adam, Chief of Adm Qu III, was also interviewed at Hamburg on 29 August 1951.

The Secret Supply Service was organized into three main area groups, each subdivided into the Greater Etappen with their subordinate Etappen, and the Individual Etappen. Three main Etappen groups were:

1. Near Etappen, which included the countries in the Baltic, Scandinavian and North Sea areas
2. Far Etappen, which included all other countries in Europe, in the Near and Middle East and in Africa
3. Overseas Etappen, which included all other countries in the world.

Each Great Etappe had several subordinate Etappen. For example, the Great Etappe, South America had Etappe organizations in Brazil, Argentina and the countries along the west coast of South America which were subject to the orders of the Naval Attache in charge of the Great Etappe, South America.

Individual Etappen were organized into areas which had their own particular advantages and were more easily controlled directly by OKW/AuslAbwehr than through a Great Etappe headquarters. The Individual Etappe, China, for example, was responsible for China, Hongkong and the Philippines. Great Etappe, East Asia, however, controlled only Japan and Manchukuo.

The development and use of this secret supply service illustrates methods by which in time of peace there can be established, under the safe cover of shipping and export interests, a secret logistic agency which is capable of penetrating into foreign trade, shipping and naval operations.

The Etappendienst, as planned and established during 1930-1933 by SKL and OKW/Abwehr, was to be an instrument of naval warfare. Its mission was two fold: it was to gather intelligence in neutral ports on merchant



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shipping and naval movements and, in time of war, it was secretly to supply from neutral bases German naval forces - particularly blockade runners, armed merchant cruisers and submarines.

The value of such an organization for any naval power lacking overseas bases, colonies or allies on foreign shores is evident. Modern methods of economic warfare and the increasing importance of air bases far from the borders of the homeland give a secret supply service potentialities extending far beyond the mission assigned the Etappendienst during World War II.

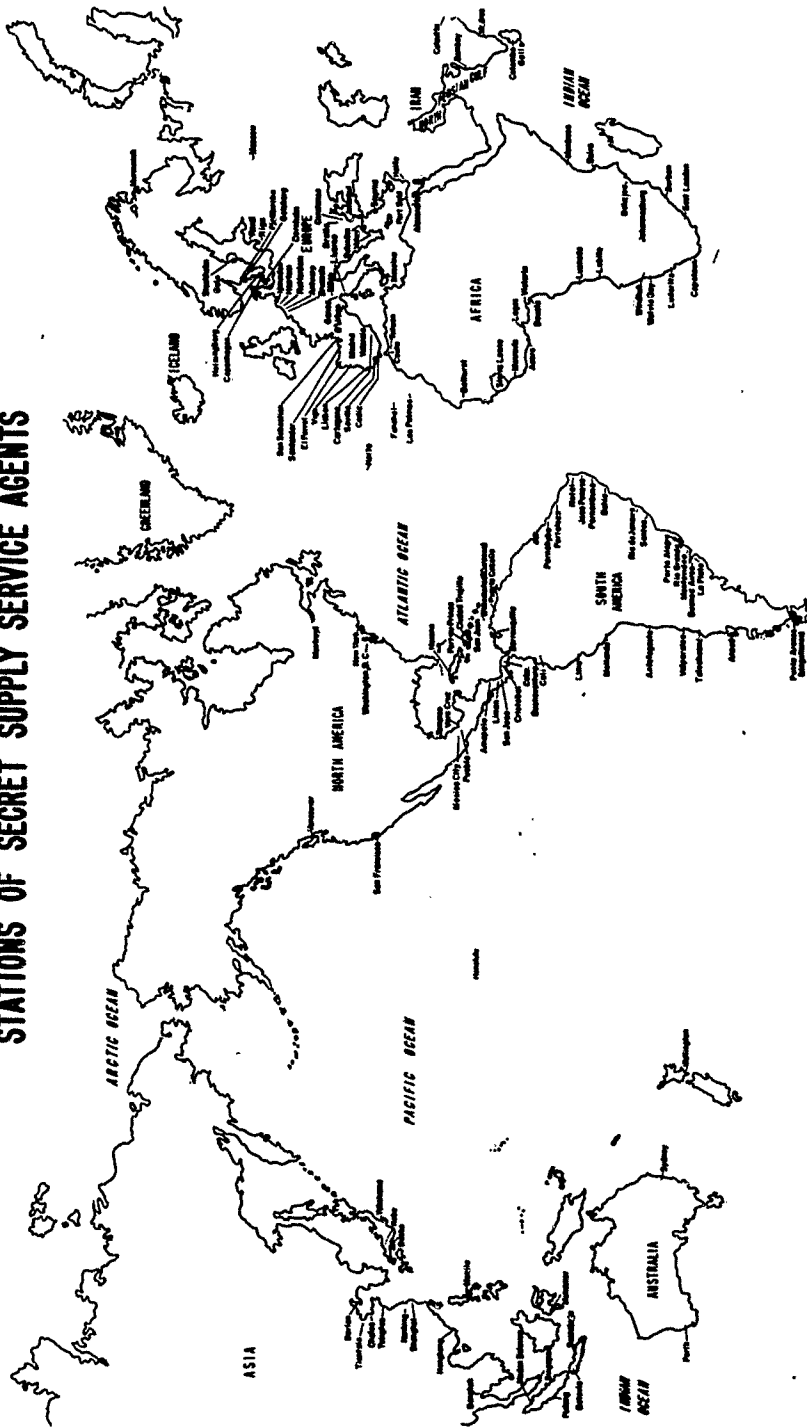
The first part of this chapter deals with the development of the organization from its origin in World War I through the gradual crystallization of the plans for the World War II organization to the final establishment of the Secret Supply Service. The purpose of furnishing this background information is to show how such an agency, which in time of war may be a highly important instrument for logistic operations, can be built up in a secret but perfectly lawful manner. In addition, it is desired to show the potentialities of such an organization in time of peace as well as in time of war.

The high degree of secrecy that was achieved and maintained by this organization is an additional reason for studying the methods used in setting it up.

The Secret Supply Service was first organized in 1911 and, according to German accounts, operated successfully and without compromise from 1914-1918. After World War I, it was mentioned in several German books. The official German naval history CRUISER WARFARE, written by Grand Admiral Raeder, contains accounts of its activities. LESSONS OF NAVAL WARFARE, written by VAdm Gross, also mentions the organization and its functions. It was not until these books were published, however, that the secrecy maintained during the First World War was broken.

In 1927, SKL made its first move to re-establish contact with former members of the Etappendienst. This consisted of asking the Foreign Intelligence Division of the Supreme Army Staff (OKW/Abwehr) to locate

STATIONS OF SECRET SUPPLY SERVICE AGENTS



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them. The chief of OKW/Abwehr at that time was Wilhelm Canaris, who had been chief of the Etappendienst during World War I. This initial move and SKL's future actions in the matter were all handled very secretly. Financing these initial efforts was also done secretly. Security consciousness about Etappendienst was so acute that according to an official German account the Defense Minister himself was not informed of the plans of the Navy and OKW/Abwehr. It was not until 1930 that the Navy's efforts to reestablish the Secret Supply Service were made an official but secret part of the activities of OKW/Abwehr.

Between 1931 and 1939 Etappe stations were set up in a great number of places, and agents were enlisted in almost every part of the world. As neutral countries became belligerents, or appeared likely to align themselves with England or other potential enemies of Germany, or when an agent was compromised, Etappe stations in those countries were disestablished. An example of the Navy's policy in such matters is the incident in Denmark in 1938, where, through the carelessness of an Etappe agent, a police investigation was launched. The station immediately closed. This also occurred on several occasions in the United States prior to its entry into the war.

A chart showing the location of these stations at the outbreak of war appears on page 412a. Stations in French and British possessions were closed when those countries declared war on Germany. However, when German troops marched into Poland in 1939, Etappe agents were stationed at the points indicated in those possessions. They had been thoroughly indoctrinated and were ready to procure supplies needed by any German naval units which might operate in their areas.

In the course of World War II, activities of this organization were carried out on a relatively large scale in Spain, Argentina and Japan, as well as to a lesser extent in numerous other countries. Information obtained on this subject indicates that until the end of the war this organization and its function were not fully recognized.

The war diaries of the Secret Supply Service have been checked by members of the American and British naval intelligence services. However, no general conclusion was reached by them regarding any shortcomings of

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the organization. Capt Stoephasius stated that it functioned smoothly, that there were difficulties in getting the necessary ships and material with which to equip them, but that these difficulties were never so great that a ship could not be commissioned. He added:

"If I said that there were no difficulties, that would draw a picture too rosy. A lot of nations were no longer neutral, and the areas from which we could get material for our ships grew progressively smaller. Only the South American countries and Japan remained with us. At the end of the war, only Japan remained.

It appears that success depended to a large extent on the manner in which the facilities of the Etappendienst could be used for naval operations. As German naval forces were driven from the seas, its usefulness decreased proportionately. On the other hand, it effectively supported the vital work of the blockade runners. The details of the work of these ships are contained in the chapter on Mobile Support, Chapter V. Details of the co-operation obtained from shipping companies are contained in the section on Sea Transportation in Chapter VIII. That these arrangements were made on such an elaborate scale with no loss of security was in itself a great achievement. The information which follows shows the potentialities of naval policy which enlists the aid of the other government agencies (Ministry of Finance and Supreme Court of Accounts - Details are contained in Chapter IX) and of private business for the support of naval operations and the conduct of economic warfare.

The First Etappendienst

As stated, the Secret Supply Service was first conceived in 1911. It was to function in wartime as a supply organization for German warships in foreign waters, with these additional duties: to collect and transmit intelligence of importance to the conduct of the war to other Etappen, to the warships and to the German Admiralty; to interfere with and mislead the enemy intelligence service as opportunity offered; and to organize sabotage. Agents were German businessmen in neutral ports, whose duty it was to purchase the supplies, particularly fuel, and arrange their delivery to the warships at secret rendezvous on the high seas. As has been said, secrecy regarding these operations was very well maintained until 1945 except in two instances.

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The Revival of the Etappendienst

Following Germany's defeat in the First World War, contact with former secret supply agents was almost completely lost. It was only in exceptional cases, when these agents visited Germany, that a loose relationship with them was reestablished. Therefore, when the Navy began to plan its rearmament program, it was inevitable that it should consider how the new pocket battleships and other forces would be supported abroad. It must not be forgotten that Germany had been stripped of its colonies and that its only naval bases were in Germany.

Therefore, some means had to be devised of logistically supporting naval vessels on foreign cruises and naval operations against enemy merchant shipping. The Navy had learned in World War I that submarine losses were heaviest when U-boats tried to break through the British blockade on their homeward voyages. If they could be supported abroad and relieved of the necessity of returning to Germany for supplies and fuel, these hazards would be greatly alleviated. Thus, the revival of the Etappendienst was conceived.

There had been several obstructions to the Navy's plans. Before and during World War I, it had had complete control over the Etappendienst. In the post-war military organization, however, its independence had been considerably curtailed, especially in the fields of military and economic intelligence regarding foreign countries. Responsibility for all foreign intelligence had been centralized in the Foreign Intelligence Division of the Supreme Army General Staff (OKW/AuslAbwehr), which came under the immediate cognizance of the Minister of Defense. During 1927-1930, the Navy opposed the attempts of OKW/AuslAbwehr to absorb Etappendienst, since its entire structure had been intended purely to carry out mobilization preparations and had nothing to do with intelligence or espionage. However, because OKW/AuslAbwehr was better equipped to maintain contacts abroad and because a naval officer was the head of OKW/AuslAbwehr, it finally acceded to the repeated demands of the Ministry of Defense and transferred control of Etappendienst to Canaris, with the understanding

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that such control would revert to the Navy should any person other than a naval officer be appointed head of OKW/AuslAbwehr.

As a result of this agreement, an Etappe section was established in OKW/AuslAbwehr in 1930. It was known as OKW/AuslAbwehr III. On 19 August of that year, Lt Frisius, a naval assistant to Canaris was appointed head of the new section. As explained in Chapter IX, the finances of the Navy during this period were critical. Crisis after crisis arose. The Navy used black or secret budgets to finance operations which it thought the Reichstag, the Supreme Court of Accounts or the Minister of Finance would not countenance. As a result, expenses in this new venture had to be kept down. Conflicting spheres of interest of the Navy, the Army and the Foreign Intelligence Division of OKW also had to be avoided. The work prescribed for Etappendienst had to serve purely naval purposes.

After Frisius had been in office about a year, he sent a secret memorandum to the Naval War Staff. In this memorandum he described his efforts to reestablish the organization and the initial steps taken by him. It stated in part:

"Abwehr sees less difficulty in meeting the Navy's requests for organization of supplies for returning cruisers than in establishing an intelligence service. Communications frequently have to be transmitted via roundabout routes. Thus, a close net of communication points will be required all over the globe. For the time being, this appears out of the question. Thus, Abwehr considers it best to investigate first the actual supply sources of our potential enemies, Poland and France, and next to ascertain the channels through which these supplies are routed. Similar investigations had been conducted by the Admiralty prior to World War I.

"These sources and their channels constitute the main target for intelligence activities and they are also to be covered from other places and foreign countries. So far, the results of this investigation are of a preliminary nature; the work is being continued by Dr. Bloch, Economic Assistant to Abwehr.

"We have come to the conclusion that far-reaching use should be made of the facilities of big business, commercial and press enterprises having connections abroad. It is also highly important that an agreement be reached with the German Foreign Office. Representatives of syndicates, trusts and export firms resent requests in matters which in their opinion should be handled by official German representation in foreign countries, and they become even more impatient if they are told that in this particular matter cooperation with official German representatives abroad should be avoided.

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"We can expect to find a somewhat better understanding for our problems in the ports of Hamburg and Bremen; several directors of German steamship lines with whom the Admiralty concluded secret agreements at an earlier date are still active. The regional district offices of the Navy have been assigned to handle the contacts with big business in these cities.

"The officer in charge of the Bremen Naval Office, Capt Baeumker, has recently made considerable progress. He succeeded in convincing Glaessel, the general manager of the North German Lloyd Steamship Line, of the importance of the Etappendienst. Glaessel has issued instructions providing for a clear-cut cooperation with our enterprise. The branch offices, which in his opinion are most suitable, have been informed that they are to comply with any request that might be submitted by OKW and that the general management has full knowledge of these requests and is backing them wholeheartedly. The general management has also expressed its readiness to transmit our mail in a safe manner.

"Capt Baeumker explained to Glaessel and his secretary, Dr. Eggers, the advantages that would accrue to the North German Lloyd by co-operation with the Etappendienst in the event of a war, even if Germany remained neutral. Most effective was our statement that the North German Lloyd Steamship Line presumably would then be unable to transmit to its vessels any messages in secret code, but that the Etappendienst would in all probability be able to offer such facilities.

"These large shipping companies and other export-import firms having agencies abroad have:

- 1) Recommended suitable Germans and other German firms in and outside Germany for membership in the Secret Supply Service
- 2) Assisted the Etappendienst in finding suitable commercial employment for its agents abroad; or transferred to the company's branches outside Germany employees who were considered by us to be especially suitable for the Etappendienst
- 3) Put their business addresses, postal and telegraphic, at our disposal as cover addresses for the Etappendienst.
- 4) Allowed the use of their business note paper and envelopes for correspondence sent to agents abroad
- 5) Allowed the use of their teleprinter communications with branches in countries such as Holland on Germany's frontiers
- 6) Allowed the use of their bank accounts to cover the transfer of funds to Etappendienst agents abroad; or allowed the use of the company's money abroad for Etappendienst purposes. An agreement was reached with Herr

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Kaumann, representing the director of the financial department of the Hamburg American Line, that an agent in Batavia should not transmit freight money paid to him for the steamship line to Germany, but should collect it and use it in case of need for secret supply work

- 7) Covered the Navy in commercial transactions leading to the control of oil supplies and tankers
- 8) Advised Abwehr of sailings and recommended reliable ships' captains for liaison with agents and courier work."

It should be pointed out in connection with the above that the contact in these steamship and other companies was generally an official or director, in a sufficiently high position to be able to ensure the co-operation described, and that great secrecy about the firm's connection with the Navy was maintained. For example: The agreement concerning the use of a company's address by the Etappendienst was to be known at the most only to two members of a firm. The wording of the cover address used by an agent ensured delivery of the mail or telegram to the contact in these German firms. The contact was personally held responsible for their transmission to OKW. During the war German censors intercepted correspondence from agents to cover addresses and forwarded it direct to OKW/AuslAbwehr. The Frisius memorandum continued:

"I am certain that the success of the Bremen office will have far-reaching effects. It shows how important it is for us to gain the assistance of big business. We must always be on the lookout for such contacts. Once the persons who count are on our side, previous methods of recruiting agents, such as cruiser visits, travels by naval officers for the purpose of study and casual acquaintanceships, will be of considerably less importance, and our work will become easier.

"The Etappendienst is only in the first stage of its development. It undoubtedly has vast possibilities; however, these cannot be fully exploited until the Foreign Office takes more interest in it.

"At present the organization operates practically without funds; later certain expenditures will be unavoidable. We shall have to employ retired naval officers at least in those countries that are most important to us. The officers will be responsible for promoting and conducting Etappendienst operations in the various countries in accordance with the instructions of OKW."

Marginal notes on this memorandum indicate that it was studied with much interest by the Naval War Staff. One of them, presumably written by



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the Chief of the Fleet Division, Capt Boehm showed that SKL was more desirous than OKW/Auslabwehr of having secret supply activities carried out under the complete cover of private business:

"The organization is to be headed everywhere by prominent businessmen. A retired naval officer could render valuable service as chief of staff, aide or secretary. He would have to do the actual work while the nominal chief of the organization would utilize his assistance for setting up, promoting, and controlling the organization. But the chief himself will issue the directives required and make use of the facilities of his own business organization, its financial resources and his many valuable contacts."

SKL prepared an answer to the memorandum. It was signed by Capt Boehm and forwarded to OKW on 13 November 1931. In this correspondence, the Navy fully endorsed the principles established by the memorandum. However, it apparently suspected that Abwehr, as an armed forces intelligence agency would try to shift the emphasis of Etappendienst work to the gathering of intelligence.

In this connection, SKL stated:

"The Fleet Division shares your view that the development of the intelligence service of the Etappendienst should take first place. However, this service must be primarily a means to an end; it must serve only as a medium to stimulate the agents' ability for critical observation and to train them in collecting and forwarding clear reports and information. The agents' main task must always remain the supply and support of our ships in foreign waters. Therefore, the Fleet Division attaches great importance to the request that the agents be trained and instructed at an early date for this mission, which will be their most important function in time of war.

"The Fleet Division is in full agreement with the policy to give due consideration to economic factors in the expansion of the network. SKL also fully approves the concept that all possible use should be made of existing facilities and that commerce and industry should therefore be enlisted."

When the training ships were sent abroad in the early 1930s, the Navy was afforded its first real opportunity to recontact former members of the organization and to re-interest them in the Secret Supply Service without giving them any specific tasks. Germany had embarked on its new naval construction program. One of the new pocket battleships had appeared, and interest was easily sparked among German citizens abroad. The Navy,

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along with the other branches of the armed forces, was beginning to talk about the new Germany's destiny in world politics and the unfairness of the clauses of the Versailles Treaty. Even the most peaceful of German groups living abroad were likely to rally to a cause designed to heighten respect for German ingenuity and science among foreigners. The Navy decided that this was the most favorable time to send its ships on foreign cruises. The communication officers of these ships were charged with contacting the businessmen recommended as potential agents by the shipping, oil and export-import firms in Germany. Before sailing, they were given detailed information at OKW/AuslAbwehr concerning the purposes and objectives of the Secret Supply Service. This method of instructing agents had been selected because of the risk of compromise involved in attempting to instruct agents by mail and the delay of waiting for them to come to Germany on regular leave every two or three years.

Codes were distributed either by the training cruisers or in person when agents returned to Germany. Instruction in the use of these codes was also given by the communication officer of the training ship or at OKW/AuslAbwehr.

In 1933, when Hitler became Chancellor, the shortage of funds that had hampered OKW/AuslAbwehr in its activities disappeared. As described in Chapter IX, control over all Navy funds was vested in CinC Navy soon after Hitler took over the reins of government. This permitted the development of Etappe codes and ciphers, special radio sets and deposits of sums of money to their accounts for use in case of war and other essential expenses. A rapid expansion of the organization started at this time. Lt Frisius had left OKW and returned to duty with the Fleet in 1932. He had been relieved in OKW/AuslAbwehr by Lt Otto Schulz, who, in October 1933, prior to his relief by Lt Gottfried Krueger also made a report to the Naval War Staff on Etappendienst affairs as they existed at the end of September 1933.

Among other things, Schulz said:

"We are combining individual agents into an Etappe headed by an Etappe chief. The person chosen has to

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be especially suited for this task or he must reside in the most convenient place. The agents in his area are selected according to his wishes.

"If possible, every Etappe chief is provided not only with a mail and telegraph address in Germany but also with a code address for telegrams in neutral countries neighboring on Germany.

"In addition to supplying the cruisers with fuel, provisions and equipment, transmission of information on movements of enemy warships will be expected, as well as the gathering of data on enemy merchant shipping, in some cases with cargo details.

"The agents are furthermore to report by wire if the enemy purchases in their area substantial quantities of material essential for the conduct of war or for the war economy. They are also to state on which vessels and by which route this cargo is to be shipped.

"It has not yet been decided whether the agent should attempt to prevent or obstruct the above-mentioned supply operations of the enemy in their area by means of sabotage. Up to now, active sabotage has been deliberately omitted and the agents are merely instructed to attempt to hinder enemy supply operations by influencing the local authorities, firms and press.

"In the Mediterranean, the tasks of the Etappendienst differ from those overseas. Here the mission is to ensure complete coverage of all movements of French warships, troop transports, and merchant vessels, when such movements appear abnormal; also to gather information of military importance regarding France and her colonies via the channel of neutral shipping.

"In addition to the Suez Canal, which is already covered by Etappe Egypt, the Western Mediterranean is of particular interest in this respect.

"As proposed, steps have been taken to place agents in the Balearic Islands and the important harbors on the Spanish coast of the Mediterranean, including Spanish Morocco. Such persons will be closely connected by profession with shipping and harbor authorities and thus in a position to intercept at their place of residence all information brought in by vessels entering port.

"In the British Isles and Holland the task of the Etappendienst is likewise to collect information for naval warfare. The objective is to post suitable agents with shipping experience at all harbors to watch for any supplies being shipped to Poland and to pick up all information concerning movements of French naval forces in the North Sea.

"Progress made by Abwehr in this area has been slow. Attempts to gain a foothold in British ports with the aid of fishery protection vessels have not proved successful. However, OKW has increased its efforts to develop the Etappendienst in this area and hopes to make headway through the future cooperation of the naval attaches, particularly in the British Isles.

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"Two missions are to be carried out in Scandinavia and Denmark.

1. Gathering information concerning movements of French naval forces in the Kattegat, Skagerrak, the northern part of the North Sea and in the North Atlantic.
2. Observation of all harbors and important rail lines, especially the trans-Scandinavian lines, for shipments or transit of war material and other essential supplies to Poland, in order to intercept these transports in the Baltic Sea if possible.

"At the present time, investigations are being made as to what extent German consuls are suited for working with the Etappendienst - in most cases they are honorary consuls of Danish nationality - and in which places new consulates should be established for this mission. Abwehr tries to have all newly established or vacated consular posts filled with personnel who can assure far-reaching co-operation in this matter.

"It is planned to establish an outpost for the collection of information in Norway. The outpost is either to be actually incorporated in the Embassy or remain in closest collaboration with it.

"Establishment of an Etappendienst in Soviet Russia has not been considered, since in view of the previous friendly military and naval relations, no German intelligence service was maintained in that country. Furthermore, I suggest the following:

"The organization was set up as an expedient on a voluntary basis. Personnel engaged carry on simultaneously private and professional activities. Thus the capacity of the organization has by now been stretched to the limit of what can be accomplished under present conditions. The further development of the organization will require the employment of Etappendienst Chiefs in full-time paid positions, particularly in areas of special interest.

"The agents should be of German origin. German citizenship is not an indispensable requirement. They should be patriots with influential positions and economically well situated.

"Even in peacetime it is the duty of every agent to establish contact with all those agencies which may be valuable at a later date; that is, with the press, with cable, telegraph and radio companies, official agencies, particularly harbor authorities, shipping and air transport companies, etc. He must also inform himself about general shipping conditions, import and export and trade relations at his place of residence, as well as of communication facilities, particularly radio, marine cable and telegraph links. He must know exactly by which channels or roundabout routes he will be able to get his messages either to Germany or to the German warships, should any restrictions be placed on using the commercial telegraph system in time of political unrest.

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"The establishment of an adequate network of cover addresses is an absolute prerequisite for the above mission. It is therefore the duty of every agent to prepare the work by informing us of suitable cover addresses.

"In addition to this preparatory work, the agent will correspond regularly with OKW/AuslAbwehr to maintain contact and exchange ideas. In this correspondence, reports can also be made on any special event of economic, political or military character. Of special interest are reports on foreign warships entering port, their reception, and the attitude of the authorities, press and population toward such visits, as well as the impression gained of the crew.

"Among the political questions, one of paramount interest is the political attitude toward Germany in the respective area.

"Furthermore, material for influencing the press according to German plans can be sent from Germany if the agent expects success from this procedure and believes that he is able to carry it out in an unobtrusive manner.

"It is emphatically stated that no agent is expected to act against the country in which he resides and that in no circumstance will he be involved in illegal activity in time of peace."

In 1934, a four year plan was drawn up for the expansion of the Secret Supply Service to full strength by the end of 1938. Abwehr budgeted 20,000 reichsmarks for tours of inspection and yearly reports on the progress of the organization to be submitted to the Chief of Intelligence. The training of agents was to be undertaken seriously. Special attention was to be directed towards the building up of Etappe England, which was proving a very difficult task.

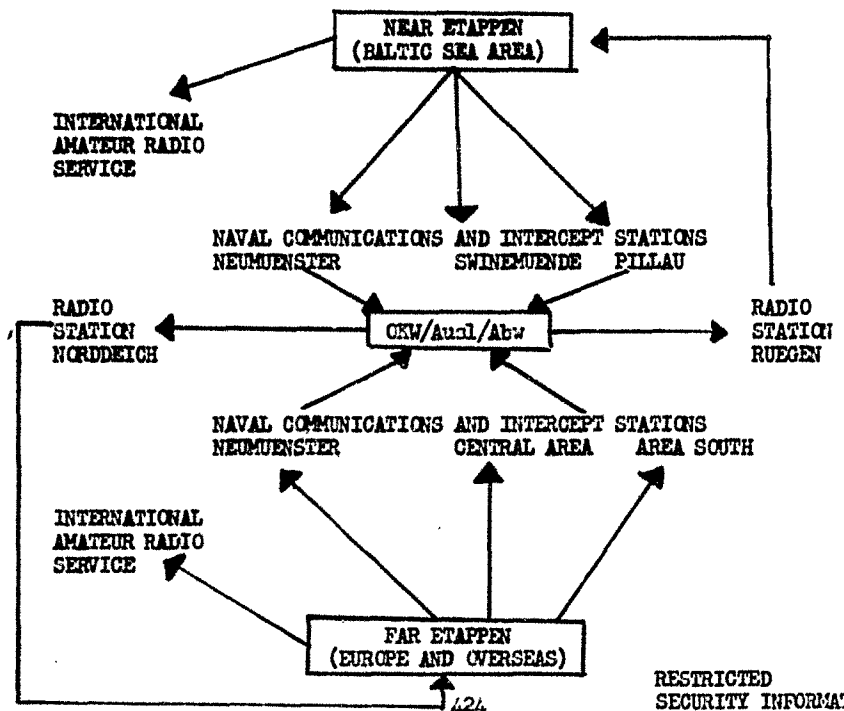
According to Adm Patzig, chief of OKW/AuslAbwehr from 1932-1934, up to the beginning of World War II the Etappendienst was originally a distinct and separate entity and had nothing to do with intelligence and had carried on no direct espionage activity. This prohibition, he said, served the purpose of the organization, i. e., it was merely to furnish logistics service to German warships abroad and to supply the homeland with needed materials through the use of blockade runners. The successful mission of the Etappendienst, he maintained, depended on its being unburdened with espionage tasks. It was for this reason, he added, that during his service as head of AuslAbwehr, the Etappendienst was not active in any country which was considered as being a possible enemy of Germany

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in war, such as England, France and Russia. This possibly explains why the Etappen post in England was dissolved in the spring of 1939, when it became evident that Germany would become involved in war with that country; further, the conclusion of the German/Russo friendship pact of August 1939 may explain the subsequent establishment of an Etappen post in Russia, for Russia was then to be regarded as not being a possible enemy of Germany in time of war.

In May 1935 a special agreement was signed between OKW/AuslAbwehr and the Foreign Office concerning the assistance to be given to Secret Supply agents by diplomatic representatives abroad. This included regulations governing the safekeeping of agents' secret equipment, the handing over of this equipment on the outbreak of war and the recruiting of new agents for the organization by diplomatic representatives abroad.

Among the shortcomings of the organization developed in 1934 and 1935 was the fact that agents were being only very slowly equipped with radio sets, and that they were not being trained as radio operators. To alleviate this situation, in February 1937, Cinc Navy appointed LCDR Otto Schmolinke as communications officer of Etappen dienst. Schmolinke established a system of radio communication with agents abroad. It was based on the following links.



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On 1 June 1937, Cdr (later Capt) Werner H. T. Stoephasius was appointed chief of the Etappen dienst. On 16 February 1938, at the Naval Academy, Muerwik, he gave a lecture about the Secret Supply Service. Its Four Year Plan had just been concluded and Etappen dienst was ready to operate should Germany engage in war. The organization was divided territorially into Near Etappen (nearby supply areas), Far Etappen (distant supply areas) and Overseas Etappen (supply areas overseas) which were subdivided into Great Etappen (comprising several subordinate Etappen) and Individual Etappen (independent supply areas covering smaller territorial divisions), as follows:

	( <u>Great Etappen</u>	
	( Finland.....1) Finland	2) Estonia
		3) Lithuania 4) Latvia
<u>Near Etappen</u>	( Scandinavia.....1) Norway	2) Sweden
	( England.....1) England	2) Holland
	( <u>Individual Etappen</u>	
	( Belgium	
	( Denmark	
	( <u>Great Etappen</u>	
	( Spain.....1) Spain	
		2) Spanish possessions
		3) Portugal
		4) Azores Islands
<u>Far Etappen</u>	( Italy.....1) Italy	
		2) Italian North Africa
	( <u>Individual Etappen</u>	
	( Greece.....	Portuguese West Africa
	( Black Sea and Asia Minor.....	Gulf of Guinea
	( Persian Gulf.....	Southwest Africa
	( Eastern Mediterranean.....	Portuguese East Africa
	( West Africa.....	British East Africa
	( <u>Great Etappen</u>	
	( North America.....1) North America (West Coast)	
		2) North America (East Coast)
<u>Overseas Etappen</u>	( South America.....1) Brazil	
		2) La Plata, Argentina
		3) South America (West Coast)
	( East Asia.....1) Japan	
		2) Manchukuo

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( Individual Etappen  
( Greater Antilles  
( Mexico  
( Panama (Central America and Lesser Antilles)  
Overseas ( Netherlands East Indies  
Etappen ( China (including Hongkong and Philippines)  
( Colombo, Madras and Calcutta, India  
( Bangkok, Thailand  
( Sidney and Perth, Australia  
( Wellington, New Zealand

In his lecture, Stepphusius gave an account of the plans on which the Etappenendienst operation was to be based. In part, he stated:

"The mission of the Etappenendienst is:

- (a) To provide an efficient source of information in any part of the world which appears of interest to us. This source must be able to report via safe and speedy channels on the military and naval situation in the respective countries, and it must also be able to answer any specific inquiry concerning matters of general interest for naval operations, such as shipping movements and supply possibilities.
- (b) To organize supply facilities which permit the dispatch on short notice of an auxiliary vessel carrying fuel or other provisions to replenish supplies of German naval forces at a previously designated point, should this be requested by a cruiser or SKL.

"The Secret Supply Service of the Navy represents a world-wide net of contacts which have been established to support naval operations in remote waters. Cruiser and possibly also submarine warfare depends, as you know, largely on a continuous supply of fuel. It also requires the speediest information on the enemy's naval, military and economic moves.

"It is thus one of the functions of the Etappenendienst to enable cruisers, auxiliary cruisers and auxiliary vessels to replenish their fuel, food, and other supplies, if the supply line to their home base is covered.

"The second function is to collect information on naval, military, economic and political topics and to transmit this intelligence to SKL and possibly also to German warships or merchant vessels in the vicinity.

"Finally, the Etappe is to support our war economy and to disrupt the supply lines of the enemy as far as possible by exercising influence on foreign government agencies, business firms and the press.

"The question may be raised why these functions cannot be carried out by official Reich representatives. In reply, the following can be said:

- (a) Official Reich representatives abroad act under the authority of the Foreign Office and cannot receive direct orders from the Naval War Staff.



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- (b) International diplomatic custom restricts the amount of official support which Reich representatives abroad can give to the German armed forces.
- (c) Reich representatives are not usually in a position to carry out transactions with the secrecy essential for the success of our plans. They are assigned to relatively few places and often lack ability for the dealings involved. Practical business experience is necessary to charter secretly a merchant ship for the supply of our cruisers or auxiliary cruisers. A respected businessman, on the other hand, who has been enlisted as an agent is in a more favorable position to conduct such transactions without arousing suspicion. If this agent should encounter difficulties with local authorities in carrying out his supply operations, the official Reich representative can proceed to act. Outwardly at least, he will appear disinterested in the particular transaction, but can lend the full weight of his position to the steps required to eliminate the obstacles.

"The Reich Foreign Office in conferences with OKW/Anal-Abwehr has agreed to support in principle the functioning of the Etappe organization.

"The Etappendienst is organized as follows:

"The respective naval attacks direct the activities of Great Etappen. Only those countries to which attacks are accredited are combined in a Great Etappe.

"A carefully chosen German national acts as chief of each Etappe. He must reside in the country in question; preferably he should be a naval reserve officer. The various Etappen districts coincide with the borders of the respective countries.

"A number of agents operate under each chief. They are either correspondents or supply agents. Correspondents and supply agents can enlist auxiliary correspondents or suitable contact men according to their own discretion.

"Service as a correspondent necessitates extensive training in time of peace to avoid failures during wartime operations. The subjects on which the correspondent is to report are defined in the 'Etappe Regulations'. Among others they include information covering mobilization preparations; presence of warships and their activities; concentration of rations, military personnel or cargo; preparation for troop transports; type, cargo and destination of cargo vessels and convoys; rerouting of enemy shipping.

"Supply is the most important task of the supply agent. He will receive special assignments calling for oil, coal and other supplies, or for the dispatch of auxiliary vessels. His ability to carry out these assignments

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will depend largely upon the experience he has gained in peacetime and upon the contacts made and knowledge acquired in his country of residence.

"Maintenance of communication with agents is a highly complicated phase of this secret logistics organization.

"Information transmitted by mail is camouflaged as business correspondence. When such camouflage is not possible, the mail is transmitted either via steamer-courier service, or by the courier service of the Foreign Office. Steamer-courier service is the transmittal of letters by a reliable captain of a German merchant steamer who acts under special instructions.

"Telegraph and wireless communications are transmitted either in cipher or in a code using business phrases with an underlying secret meaning. It is assumed that in time of war every neutral country will issue regulations requiring that messages sent by non-military agencies be written in a standard commercial code. Thus the message must appear to be in regular commercial codes such as those of the Hamburg American and North German Lloyd Steamship Lines.

"A last resort is offered by the Etappendienst radio service. During the past months various governments, among them the German, have considerably increased supervision over amateur radio traffic. We are making efforts to overcome this obstacle and are trying to persuade the German shipping lines to install short-wave transmitter receivers on small vessels engaged regularly in coastal traffic overseas, as well as on their large steamers. It is understandable that the shipping lines do not like this idea, the present long-wave equipment being quite sufficient for their purpose; however, the proposed solution offers the great advantage that we would be provided with floating radio stations in various foreign waters.

"Primarily German business firms and a limited number of private persons have been selected as cover-addresses for Etappendienst communications. In selecting cable cover addresses in countries adjacent to Germany, we prefer firms having a teletype line to their main office in Germany.

"In time of war, the operation of the Etappendienst requires money. We distinguish between two different funds: the War Operating Fund and the War Supply Fund. From the War Operating Fund each Etappendienst chief is provided with an amount sufficient to cover approximately three months' operating expenses in his area. The War Supply Fund is reserved for the acquisition of fuel and other provisions. At the request of OKW, the Reichsbank has deposited with a foreign bank currency to the value of ten million marks for the latter purpose.

"With the exception of naval attaches, all secret supply personnel works on the basis of a voluntary, mutual agreement and is motivated by idealistic and patriotic feelings. In time of peace this service is not remunerated, and no agent is to act against the interests

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of the country in which he resides. Expenses incurred are reimbursed. In time of war the agent will carry out his work as full-time duty and will receive a regular salary from OKW. Etappen chiefs will receive 500 marks per month, others 300 marks.

The Alert for the War in Spain

In the fall of 1933, the Secret Supply Service had its first full-scale alert since the First World War. Stoeckhusius described the events in connection with it in his lecture, when he said:

"On 3 September 1933 the Naval War Staff notified OKW/-Ausl&u00f6bwehr that the pocket battleship DEUTSCHLAND was to be sent to southern Spain on 20 September to operate in foreign waters in the event of a crisis. It requested that the DEUTSCHLAND be given the latest information regarding the Etappendienst to assure her fuel and provisions. On 8 September a preliminary conference was held at 1 SKL regarding these matters. An agreement was reached the next day.

"The motor ship SAMLAND was assigned to the DEUTSCHLAND as supply vessel and was to proceed to Spain. On 16 September, the SAMLAND was furnished with necessary information regarding Etappendienst. On 17 September 1933, the pocket battleship GRAF SPREE was also supplied with such information.

"Following a conference with the Luftkzns (German passenger airline which was government-sponsored and had a close working arrangement with OKW), on 20 September, the motor ship SCHWABENLAND received orders from the Etappendienst to take on oil immediately so as to be able to provide warships in the Atlantic with fuel. On 27 September, the Admiralty advised German shipping companies to instruct their ships to leave or avoid British, French and Russian ports. If possible, they were to return to Germany; failing this, to await developments in the nearest neutral harbor.

"On 23 September 1933, at 1300, OKW/Ausl&u00f6bwehr received telephone instructions from the Admiralty to alert the Etappendienst. Camouflaged as a commercial telegram, this order was sent from Hamburg and Bremen to the various Etappen chiefs.

"Upon receipt of the alert order, the agents were supplied with secret instructions, codes, etc., held at German diplomatic missions. As this took several days (in some cases as much as ten days to two weeks for agents residing far from the missions), not all agents had received their equipment by the date scheduled for mobilization. This would have delayed the start of reporting and of eventual supply activities.

"It is suggested, therefore, that orders be issued to the Etappen about two weeks before an expected mobilization day. In order to avoid any misunderstandings, the text should read: 'Alert ordered for the Etappendienst only'.

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"The alert for the Etappen was cancelled by the Admiralty at 1500, 30 September, after about two days operation. Corresponding orders were passed on.

"From the reports of naval attaches, independent Etappen chiefs and single agents, it can be concluded that, apart from Etappe England where special conditions prevailed, proper operation of the Etappendienst could have been expected with regard to the reporting and supply service as long as the respective countries remained neutral. No outright failures occurred. A few mistakes resulted from the use of a wrong code or through oversight of certain recent changes, but the Etappendienst proved its operational readiness even if its performance could not be tested.

"Only the Etappe base at Istanbul was fully tested, having been assigned at the beginning of the Spanish Civil War to observe and report shipping movements from the Black Sea to Red Spain. It has been carrying on since then without difficulty and with good results. Shipping movements are reported in code via the Foreign Office and immediately relayed to 3 SKL and OKW/Abwehr I, the Armed Forces Espionage Section.

"This crisis demonstrated how dangerous it is to the interests of Germany if foreign individuals are employed in leading positions with German firms abroad. A speedy and thorough change should be made. In the interests of national defense, the Foreign Countries Organization of the National Socialist Party must see to it that more nationals move to foreign countries as representatives of German firms.

"In general it has been shown that the agents who got off to a good start and are working most zealously were recruited while on business or pleasure trips to Germany, were contacted by captains of German warships visiting foreign ports or recruited by officers of Etappendienst headquarters visiting their respective territories.

"Through its intermediaries abroad, the Admiralty chartered tankers sailing under a neutral flag. The fuel cargo for these tankers was purchased by a foreign branch office controlled by an Etappendienst agent. Thus a Norwegian tanker was chartered by a Swedish firm and carried a cargo of fuel nominally owned by the Swedish firm. Orders from the Admiralty were transmitted to the tanker in the name of the firm by an Etappendienst agent working within the Swedish firm.

"By special agreement with an Etappendienst agent, who is a member of the Waried Tanker Company, the Etappendienst could have had the use of at least some of the 27 tankers owned by this company in case of mobilization. Although this company has American capital and sails under the Panamanian flag, the Hamburg office is German and the crews are 100 percent German. Some of the skippers are naval reserve officers. The ships carry gasoline, diesel oil, fuel oil and crude oil. To insure that orders from 1 SKL are relayed to these ships in case of mobilization, the captains received a special code from 3 SKL. Certain

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claims for compensation could be raised by the Standard Oil Company if we were to take over control of these vessels, but in our opinion no international complications will occur, since officially the captains would receive their orders from the Hamburg branch of the Waried Tanker Company.

"Agents have started negotiations with the Spanish oil refinery CEPSA for a long-term oil delivery contract. Through the contacts of a Swedish and a Danish agent, the Admiralty was able to contact for building or leasing of oil storage space abroad in Sweden and Danzig. The Navy will thus be able to assure further deliveries of oil, even in wartime, through the friendly services of these foreign firms."

Personnel Strength

There were 178 officers attached to the Etappendienst on 15 November 1938. They were classified as follows:

8 Great Etappen Chiefs (Naval Attaches)  
30 Individual Etappen Chiefs  
49 Combined Agents and Supply Officers  
91 Harbor Observers and Intelligence Officers

In addition, 70 German cover addresses (maildrops) and 36 foreign ones had been established.

Security and Communications

Both the cover provided by business contacts and the safekeeping of the highly compromising secret material in German embassies and consulates went a long way towards ensuring the security of the organization in the years before the war, but the lecture of Cdr Stoephasius indicated that OKW/AuslAbwehr was fully aware of the possibility that other nations had knowledge of its existence, because of references to it in the books by Raeder and Gross.

His reference to three incidents which occurred before the war show the importance attached to the maintenance of Etappendienst as a secret organization, the anxiety caused when a part of it was endangered or exposed, and the almost ruthless measures taken to cut out and replace that part:

- (1) Early in 1937 at Philadelphia, the steamer GOSLAR was burgled by someone who was thought to be after money and valuables. Papers were stolen from the captain's cabin. These included a letter in transit to the Foreign Office which probably mentioned the name of the agent at New Orleans, a man named Harzog, for shortly afterwards Harzog was removed from his position in the Secret Supply Service.

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- (2) A special agreement signed by the agent at San Francisco, Robert Blatt, which was entrusted to Captain Vogt of the North German Lloyd steamer ELBE was lost in July 1937. This was serious, because this agreement showed the full lay-out of the organization in an agent's district. Therefore, it was decided that Great Etappe, North America must be reconstructed. Blatt himself was of course removed. In neither of these cases did the investigation discover that the papers had got into the hands of anyone who might have exploited them.
- (3) In the autumn of 1938, Horst von Pflug-Hartung, the Naval Attache to Denmark was arrested with other Etappe agents by the Danish secret police. Cover addresses were compromised and the whole organization there capsized. Etappe Denmark was never reorganized owing to the dissolution of the Near Etappe in July 1939.

The successful functioning of the service in wartime depended on the security of its communications. This was planned and practised before the war. Etappen headed by German naval attaches communicated through Foreign Office channels. Other Etappen corresponded by post or telegraph. This method was made secure by the use of secret variations of agents' codes, the development of cover names for the agents and for OKW/Auslabwehr and by the use of business cover addresses. These were chosen because in 1935 OKW/Auslabwehr found by examining the mail in a train that only 15 percent was private correspondence and the remainder was almost entirely business communications. Therefore, it was considered that the latter was much more secure from surveillance. In open letters to cover addresses, agents were instructed to word the texts in a language suitable to correspondence used in that kind of business. During the early years of the war, as stated, censors intercepted mail addressed to cover firms. The codes used were subjected to periodic examination by experts to test their continued effectiveness. Such alterations as were deemed necessary were ordered.

The difficulties encountered in setting up a widespread wireless communication network seems to have prevented the completion of the original plans in this respect and to have forced OKW to concentrate on those places where post and telegraphic communication was unlikely to be interrupted by the outbreak of war. Early in the war it was stressed that as long as other means of communication were still available, radio transmitters should be used as little as possible in order to avoid detection.

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By the end of 1938, the organization had seven wireless stations of its own in the following places:

Panama	Lisbon
Horta	Copenhagen
Santa Cruz de Teneriffe	Istanbul
Las Palmas	

The organization was planning to set up others in:

Mexico	Rio de Janeiro	Helsinki
Cristobal	London	Rome
Valparaiso	Madrid	Port Said
New York	Rotterdam	Walvis Bay
Buenos Aires	Antwerp	Monrovia
Stockholm	Oalo	Durham
Mombasa	Batavia	Shanghai
		Tokyo

In addition, the motor ships QUITO and BOGOTA, later employed in the Far East as collection vessels for blockade runners, had been fitted out as floating radio stations and were in Central American waters.

In March 1939 it was decided to abandon the plan to install transmitters in the Near Etappe. During the early years of the war additional sets were sent out to Japan, to Spain and to small vessels acting as collection vessels and blockade runners.

The three receiving stations in Germany with which the Etappen communicated were at Swinemunde, Pillau and Neumuenster. Transmitting stations were at Norddeich and Ruegen. Some agents' transmitters, which were installed abroad before the war, such as that at Horta were large sets; others were small enough to be concealed in a room.

Financing the Etappen Dienst

In May 1935 the Reichsbank had promised to supply ten million reichsmarks in foreign exchange for Etappe purposes when the money was needed. It was not to be sent to the Etappen until war was clearly imminent. The original intention was that the proposed sums should be secretly transferred through the International Bank and its correspondent banks abroad, which were very often British banks. These accounts had to show a normal volume of business large enough to render the transaction inconspicuous. When war with England came to be regarded as a possibility, new arrangements were made. In September 1938, the funds were dispatched in the

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form of gold, notes (chiefly dollar notes) and credits direct through these channels:

- (1) The German Overseas Bank
- (2) The German South American Bank
- (3) The Hamburg-American Line to Central and South America
- (4) The Japanese military attache to Tokyo
- (5) The Etappen agent Rempis in Holland to Batavia
- (6) By steamer to Santa Cruz de Teneriffe and Lourenco Marques
- (7) By air to Lisbon

On 10 December 1938, OKW/AuslAbwehr notified SKL that the funds had been deposited with the diplomatic missions abroad. When Great Etappe Spain had been reinforced in the summer of 1939, the money required by the agent at Madrid was sent to him by courier.

The relative importance of the Etappen areas at the outbreak of war is shown by the distribution of funds on 26 June 1939.

Buenos Aires	-	RM	1,619,214.21
Mexico	-	"	2,245,448.10
Teneriffe	-	"	1,002,540.00
Panama	-	"	499,600.00
Lourenco Marques	-	"	245,520.00
Den Haag (Netherlands)	-	"	245,520.00
Batavia	-	"	49,941.71
Valparaiso	-	"	249,750.00
Tokyo	-	"	51,150.00
Lisbon	-	"	102,300.00
		RM	6,310,984.02

Note: 1 reichsmark was worth US \$.40.

Etappendienst Spain was given 3.7 million reichsmarks in 1939. By the end of February 1940, a further 5,116,117 RM's had been provided from foreign currency holdings abroad for the various Etappen.

In this connection, translation of a German document reporting the minutes of a meeting between members of OKW/AuslAbwehr and a director of the Dresden Bank, a Dr. Pilder, discloses the reasoning of the group with regard to the deposit of these funds:

"In his introduction, Cdr Vermehren declared the purpose of the conference to be the discussion of the various possibilities that existed for establishing a regular pattern for the use of foreign deposited



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funds in case of war. The current method of handling deposits was outlined. The question was raised as to whether the use of gold for making deposits should be discontinued and whether any large-scale transfers of funds would create attention. It was decided that it would, and that payments could no longer be made in gold.

"Dr. Pilder stated that to the best of his knowledge there were no countries who used gold and still retained obscurity. Some kind of changeover had to be made. The question arose as to which presented the least amount of risk.

"The point was made that in case of war, gold would disappear from the market.

"Vermehren wanted to know what medium of exchange would be preferred. Pilder thought either the American dollar or the British pound would be all right.

"It was emphasized that their only interest in funds was to get enough for the purchase of materials. A medium of exchange for such expenditures had to be decided then not when war came.

"The point was made that with the outbreak of war all currencies would fluctuate, and no German firms would continue to make payments in gold. It was also pointed out that no German firms overseas were so strong and solvent that they had their reserves in gold.

"LCdr Jack was of the opinion that gold would be hoarded in Holland and Mexico and questioned therefore whether any later exchanges of German gold in those countries would attract attention. Pilder thought it would.

"It was brought up by Pilder that there was a definite risk involved in dealing in the currency of Mexico.

"The question of whether or not there were credits available in other countries was answered affirmatively by Pilder. Vermehren wanted to know how such credits could be obtained, and stated that he thought there was a greater risk of attracting attention by opening new accounts than there was in the continued use of gold. Pilder was of the opposite opinion. A foreign inactive account in the USA would quickly go unnoticed among the great numbers of accounts based on fleeing capital.

"Vermehren expressed some thoughts about the reappearance of blocked accounts which would again be taken up where those of 1918 had left off.

"Pilder brought out that gold deposits made by German foreign representatives had the protection of extra-territoriality and that transactions with other nations could take place behind this protection. Particularly in Central and South America, German ambassadors with the help of friendly foreign diplomats could reduce gold deposits without much trouble.

"In summation Pilder stated that he was in favor of the reduction of gold deposits even when it applied to gold

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that was protected by the laws of extraterritoriality. In closing he stated that those who held gold deposits at the outbreak of war could easily fall into difficulty. The time for reckoning, after the reduction of gold deposits was a long way off. Payment of gold directly to the seller was impossible."

Others present at this conference were LCdr Zimmer and Regierungs-  
oberinspektor Feldman of 1 SKL.

The secrecy of supply work from neutral countries had to be very strictly maintained both for military and legal reasons, such as the American neutrality law of 1935 and the Hague Convention regarding the sale of supplies to belligerent powers and the use of neutral bases by belligerents.

Activities in World War II

The Secret Supply Service was alerted about 10 August 1939. The exact date is not known.

It has been stated that the Navy considered that a secret supply service agent could work effectively only in neutral countries, where he was free to carry on his duties under the guise of regular business. Because of this policy, the Individual Etappe, Eastern Mediterranean, was dissolved in June 1939. Great Etappe, Italy was also dissolved about this time, because of the mutual assistance agreement made between the two countries. Etappe stations in all British and French possessions were closed at the outbreak of war.

The work of preparing an organization in Spain was held in abeyance to a certain extent during the Spanish Civil War, but from the summer of 1939 plans were pressed forward for an Etappe in Spain, which should primarily be concerned with the naval supply operations.

In September 1939 it was decided to set up a station in Russia. By the end of 1939 a base had been made available to Germany by Russia and was established at Polyarni near Murmansk. It was closed in 1940, however, when Germany acquired bases in northern Norway.

The Etappe in the Netherlands East Indies was dissolved after Holland was occupied.

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A station was established at Bordeaux in the spring of 1941 to supervise blockade runners that were based there.

Thus, it will be seen that when war actually broke out the organization that could be used had shrunk to:

<u>Great Etapron</u>	<u>Responsible For</u>
Spain	1) Spain 2) Spanish possessions 3) Portugal 4) Azores Islands
North America	1) East Coast of North America 2) West Coast of North America
South America	1) Brazil 2) Argentina and La Plata district 3) West Coast of South America
East Asia	1) Japan 2) Manchukuo
<u>Individual Etapron</u>	<u>Also Responsible For</u>
Greece	Portuguese West Africa
Black Sea and Asia Minor	Gulf of Guinea
Persian Gulf	Southwest Africa (exclusive of Union of South Africa)
West Africa	
Greater Antilles	
Mexico	
Panama	Central America and Lesser Antilles
Dutch East Indies	
China	
Bangkok, Thailand	
Russia (Polyarni, near Murmansk)	

The Organization in the Americas

The North American continent was divided into two large supply areas and three independent areas, namely:

(1) Great Etapron, North America

The military director was VAdm Robert Wittchcoft-Endou, the German naval attache at Washington.

This large supply area included the two areas:

- (a) North America East Coast
- (b) North America West Coast

These included the eastern and western coasts of Canada and the United States as far south as the Mexican border.

The development of this area never reached more than its first stages. The death, or the return to Germany, of agents already employed or about to be employed prevented its development.

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The following places either had agents or it was planned to place agents in them:

New York

Temporarily under Heinrich Kempf, a captain with the North German Lloyd Steamship Line. After the outbreak of war, he returned to Germany.

Montreal

A shipping agent named Mueller-Hickler was assigned to this post. He returned to Germany after war broke out.

Boston

Remained unmanned.

Philadelphia

Remained unmanned.

Galveston

A shipping representative named Carl Biehl who was with the firm Wilckens & Biehl had this post. He died about 1936.

New Orleans

It was planned to employ shipping agent R. G. Harzog at New Orleans. His equipment was found broken into after a cabin robbery at Philadelphia aboard a North German Lloyd Line ship which was carrying this equipment as courier material in 1937. Harzog was therefore considered as compromised. Connections with him were broken off immediately.

San Francisco

Robert Blatt, a shipping agent, was planned for this post. Certain secret papers signed by him which were being transported to Germany aboard the vessel ELBE disappeared without trace. Blatt was therefore considered compromised. Connections with him were immediately broken off.

Vancouver

In charge of Allevoigt, formerly an active naval officer, who returned to Germany about 1937 to reenter the Navy.

Seattle

Remained unmanned.

Portland

Remained unmanned.

Los Angeles

Remained unmanned.

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At the outbreak of war in 1939, all German ships except a tanker of the Bremer Reederei Friderich Company which lay in Boston Harbor and was not suitable for supply work had left the harbors of the USA. The large supply area North America therefore was not used for supply work.

**(2) The Greater Antilles Area (Independent)**

The main office for this area was at Havana, Cuba. It was impossible to use this area for supply purposes throughout the whole war.

**(3) The Mexico Area (Independent)**

Its main office was at Mexico City. This area was entrusted with the task of supply and of equipping the supply ships WESER and HAVELLAND. It also purchased oil and took part in dispatching German merchant ships to Germany.

**(4) The Panama Area (Independent)**

The main office for this area was at Cristobal. This area included the countries of Central America, the Lesser Antilles and the northern countries of South America.

No supply tasks were carried out from here. It only helped the WESER and the HAVELLAND from Punta Arenas, Costa Rica to Manzanillo, Mexico.

**(5) Great Etappe, South America**

The Etappe chief for this area was Captain Dietrich Niebuhr, the German naval attaché at Buenos Aires. He relieved Stoephasius as Chief of Etappen dienst in 1943.

This large supply area included:

- (a) Brazil
- (b) Argentina and Uruguay
- (c) Chile and Peru

A comparatively large number of supply ships and other auxiliaries were equipped and sent to sea from this supply area to support the **AMIRAL GRAF SPEE** and the **AMIRAL GUNTER**. When supply from South America was no longer necessary, the supply ships reported to Great Etappe, East Asia. This area also played a major role in sending German merchant ships to Germany immediately after the outbreak of war and in dispatching blockade runners from Brazil.

**The Base at Murmansk**

The base at Murmansk was established in the fall of 1939 after the treaty with Russia had been effected. It was abandoned after the occupation

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of Norway in the fall of 1940.

The Etappe headquarters were in Murmansk. At first the base itself was at Polyarni on a bay just west of the city. Later on, it was moved further east to Teriberka Bay on the Kola Peninsula. The transfer was made because Finnish ski patrols had reached the first bay and had seen ships there flying the German flag. In order to avoid investigation, the Russians asked for the transfer of these ships to the east.

The base was established as a harbor for German ships running the gauntlet in the North Atlantic when war broke out. It also served as a base for supplies for the raider vessel KOMET and for limited repair work for warships and auxiliary warships outside the probable line of the British blockade.

Activities at first consisted of harboring and dispatching a considerable number of German merchant vessels and fishing boats. They were released for return to Germany, sailing along the Norwegian coast at opportune moments. Later its activities included dispatching supplies for temporarily cut off German units at Narvik by the JAN WELLEN, a converted whaling vessel fitted out as a tanker and supply ship. Shortly before its decommission the base was used as a rendezvous point for a number of German fishing vessels returning to Germany with their catch.

There were two Etappendienst agents in Murmansk. One of them specialized in the field work of liaison with ships in the bay, while the other was occupied with liaison with the naval attache and the Russian liaison officer. This Russian officer, the documents state, had to be informed about all measures. He arranged for all conferences with Russian authorities and, if possible, went with the agents when they visited the German ships.

The agents worked under the immediate supervision of the German naval attache at Moscow, who in turn received his orders concerning Etappe matters from OKW/AuslAbwehr. Messages and reports from the base were sent to OKW/AuslAbwehr via the naval attache.

Co-operation with the Russians was extremely difficult. While at times, they met the Germans half-way, they occasionally sabotaged their

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efforts. Nothing was ever certain. The Russian liaison officer could never decide anything or permit any action directly. He always had to obtain authority from various sources, often from Moscow. Because of this, and the fact that only Russian vehicles could be used in connection with the ships, success or failure of the base depended on the Russians. The departure of the JAN WILLEM, whose mission was unknown to the Russians was delayed 48 hours because the Russian liaison officer had received no answer from his superiors. After the base had been moved to the east, the Germans proposed that its supplies should be routed via the Arctic Ocean Canal, but this was refused on the grounds that the canal was unserviceable at that time. That later turned out to be untrue. Ships bound for the base, which had to be picked up at a certain place by Russian patrol boats and pilots, often had to wait a long while before the promised vessels appeared. The Russians always had plausible explanations for any of their disturbing and delaying tactics. When Raider Ship 45 (KOMET) was piloted through the Arctic Ocean, the same observation was made by its officers.

In spite of the agreement between the two countries, the Russians wished to protect themselves as much as possible and not to become too deeply involved in Etappe matters. The plan to use the route north of Siberia for blockade runners proceeding to the Pacific and Indian Oceans was abandoned because of these and other difficulties.

In addition to their main mission, that of supplying warships, raiders and submarines, secret supply agents constantly watched the political situation of the countries in which they were stationed for:

- (1) The possibility of sailing permits being refused by neutral countries, a danger which became acute in Peru and Brazil in January 1941 when the neutrality conference was held
- (2) The possibility of German money being frozen. Money was transferred from gold into currency and from one Etappendienst to another as appeared advisable
- (3) Periods when protection of a friendly neutral from British representations made suspension of the supply work desirable, as in Japan in 1941
- (4) British action endangering the operations of the Etappendienst (such as the institution of the air line to

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Bathurst via the Canary Islands in December 1940) which called for German representations to a neutral country.

Coincident with the mobilization order, OKW/AuslAbwehr directed all German shipping companies to order such of their vessels as were in foreign waters to proceed to neutral ports in which Secret Supply Service agents were stationed and report to them for further orders. Some passenger liners and merchant vessels for which the Navy had special plans, such as the EUROPA, were ordered to report to the Etappe agent at Polyarni (Murmansk). All vessels in the Pacific including those on the west coast of South America were ordered to report to Great Etappe, East Asia. Those in the South Atlantic were sent to ports in South America, those in the Caribbean to Mexico, Panama and so on. In some instances it appears as though tankers were deliberately sent on routes which would place them in the vicinity of Etappe stations which it was thought could render important service to naval units during a war. For example: In the ports of Spain, where submarine fuelling was carried out with great success during the early war years, there were a number of interned tankers. There were also several tankers in the South Atlantic at the time this order was issued. The CHARLOTTE SCHLIEMANN happened to be in the Far East. There is little doubt that some of these tankers were intended to be in specified areas in September 1939.

Secret Supply Service agents equipped these vessels for their new work as far as local resources and secrecy permitted. Naturally, they did not attain the standard of the regular naval supply ships and tankers in equipment and crew, but they had sufficient equipment to enable them to fulfill their tasks of sailing from the neutral ports to rendezvous on the high seas, of transferring supplies, fuel oil and provisions to naval forces, and later, of taking from the warships and raiders prisoners of war, survivors, etc. They could also fuel submarines which, particularly in Spain, secretly visited them by night for this purpose.

These ships although subordinated to the Etappe and sailing in the service of the German Navy retained the outward appearance of regular merchant vessels and sailed under whatever flag gave them the best cover in



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those waters. Their captains had been ordered to avoid seizure by the enemy at all costs, and often had to scuttle their ships. As an additional safeguard, two logbooks were kept, one false and one showing the true record of their journey.

The German Admiralty informed OKW/AuslAbwehr of its requirements from these ships. The latter communicated these requirements to the appropriate Etappe through its organized channels, i. e., via the Foreign Office, by cable or by wireless, whichever was most expedient, and the Secret Supply Service then proceeded to make the necessary local arrangements to equip the ships for the operation. Because of the great success attained by the various Etappen in arranging the sailing of their supply ships to rendezvous with naval units on the high seas, in September 1940 the Etappendienst was entrusted with the organization and administration of the blockade running service between Japan and Western France. This operation was undoubtedly Etappendienst's greatest contribution during World War II. In an operational report made by OKW/AuslAbwehr on 10 July 1942, it was stated:

"Since the outbreak of war, 65 ships have been operated by the Etappendienst. 11 of these ships were lost in action and 15 were transferred to other commands. There are 39 available at present.

"In accordance with security orders received from SKL or requests received from the Ministry of Transportation the following German merchant ships were transferred with the assistance of Etappendienst agents from neutral harbors to German harbors, or to harbors of friendly or allied countries. A list follows\* containing the names of 28 German merchant and passenger ships, nine of which were lost by naval action in the course of transfer.

"Twenty-nine operations of other ships outfitted by the Secret Supply Service were listed, of which 23 involved supply of auxiliary cruisers, three the supply of the ADMIRAL SCHEER and three were listed as performing special tasks. For these missions, Etappe supply ships operated from Mexico, Chile, Spain, Russia, Brazil, Canary Islands, Japan, Chisimaio and Western France.

"On 3 February 1941, Etappendienst took over full control of the East Asia blockade runner service, which up to then had been partially conducted by the Ministry of Transportation. This step was taken because of the experience gained by that service in such matters.

\*List omitted in translation.

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"In conjunction with orders from SKL, blockade runners also supplied auxiliary cruisers or submarines operating in foreign waters during their voyages.

"Five voyages have been made from friendly territory to Japan. Total cargo carried amounted to 32,540 tons. During two voyages vessels carried a special shipment for the Ordnance Division of the Army.

"Eleven voyages have been made from Japan to Germany. Total cargo carried amounted to 74,960 tons, including 32,000 tons of raw rubber, 30,000 tons of nutritive and industrial oil and oil seeds, and 26,500 tires. In addition, 2,500 tons of cargo were transported for Italy.

"Total losses in blockade running has amounted to three out of nineteen ships. Loss of cargo amounted to 20.6 percent.

"For the second blockade-running season, from the fall of 1942 to the spring of 1943, 24 trips to Japan and 22 return trips are scheduled.

"It has been possible to carry out the operations in accordance with the orders of SKL because the over-all organization of the Etappendienst regarding personnel, material and communications was completed before the outbreak of hostilities. Special attention should be given to the activities of Etappen, South America, Spain, and East Asia."

Capt Stoephasius, Chief of the Secret Supply Service from 1 June 1937 to 30 May 1943, when interviewed at Hamburg on 27 August 1951, stated:

"We succeeded in getting all the money, gold, American dollars and British pounds we wanted to our agents, and all phases of the Etappendienst work ran quite well.

"During the war, the neutrality of certain nations became stricter as other nations who had been neutral did not remain so and, even if not in the war, leaned toward the other side. That was the reason for the first losses of our supply ships near Dakar. As a result, surveillance became more and more effective.

"Etappendienst personnel were divided into supply personnel and intelligence personnel. In the Admiralty, they were all in one group but did not know about each others' affairs. The reason for this was that supply people would not attract unfavorable attention to themselves in peacetime, while intelligence people might. Therefore, they were so divided that they did not know each other. The organization was established in the OKW for two reasons. One was that in World War I, Admiral Canaris was chief of Etappendienst and had proved to be a very able man for this job. When the Secret Supply Service was being reactivated, he was chief of Abwehr, so he also became chief of Etappendienst. The other reason was that the OKW had more foreign currency than the Navy. It was easier for OKW to obtain foreign currency and it also was easier to get money from OKW. Although the Etappendienst came under OKW, it nevertheless was subordinated directly to the Admiralty, because it was comprised mainly of naval personnel.

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"Theoretically, the agents, especially the attaches had to make a report of what they did with the money advanced to them, but in practice it was written off and not accounted for.

"Our greatest successes with this work were in South America, especially in Buenos Aires, during the first year. There was a change of presidents in 1940 and with this things did not work so well. A part of our success may be attributed to the great German colony in Argentina. They did a lot, but Argentina as a whole was always very friendly towards Germany, since many ships were always going down to the La Plata.

"Our second most successful areas were in Spain and Japan. The Etappe leader of the agents in Japan, the naval attache, often had difficulties, especially since there were a lot of authorities in Japan to deal with, but he went to the higher levels to clear it up - I think to the diplomatic level.

"We had an agent in Singapore, but he could do little after England went to war. We loaded some blockade runners, as well as furnishing other ships with supplies in the Far East, from that port.

"I don't think our agent in New York was very successful. American neutrality was not very friendly from the beginning, so we were not able to do very much. As far as I remember, just before the war he had trouble with American intelligence agents, so we did not pursue anything there.

"When we took our agents out of England, the Hamburg-American Line was suspected of being involved, which was the way we had planned it to look. This, coming right on top of the New York incident, made the whole situation in England and America a hot potato. We could do nothing in New York because of it.

"The Russians must know about our Etappendienst, because we had a station near Murmansk and they helped us to get the EUROPA out. However, they won't know as well as you how it worked. Any nation can establish a secret supply service, provided its merchant ships are scattered all over the world and the necessary men are available. We generally worked only with Germans born in Germany or Germans born of German parents abroad. That is the kind of people you select. They must be reliable. We had a lot of German firms throughout the world and in them were a lot of reliable men.

"I would like to point out that it is necessary that the ships that you expect to use for secret supply service duties in wartime should also run on these routes in peacetime, so as not to attract attention if they go on the route in wartime. Another thing: the firms as a whole never know about the Etappendienst. Only one or two men in them were in the know. If possible we took the second man, or a man who was especially concerned with ships. In this selection you did all you could to avoid attracting notice.

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"A most important point is that you should not use tankers, since they are bound to certain routes and if they turn up on other routes everybody becomes suspicious. Therefore, it is important to take merchant ships. Their loadings should be normal. We had certain loadings, e.g., a cruiser loading consisted of so much fuel, ammunition, food, clothing, etc. We had only to order 'This ship will take two cruiser loadings' and the agents knew what we wanted. Only the fuel had to be ordered specifically.

"I would not make any change in a future Etappendienst. I would do it the same way if the same conditions existed. The Secret Supply Service had experience in the First World War and we were therefore able to improve it greatly. I think it did very well. It will work, especially if the war is not too long. But when the war lasts on and on, surveillance and other difficulties from outside - not from within the organization - will come. It worked at first without any losses. Then the losses grew to about ten percent, and by 1943 to about 75 percent. When Raeder left the CinC post, the organization was finished and we decided to dissolve it.

"Our main difficulty was that the Etappendienst came under the OKW. The reasons for this were special and cannot be evaluated by another navy. If you did your job theoretically or bureaucratically you would have to go through the OKW to the Admiralty, but it did not work that way in practice. I received my orders direct from the Naval War Staff. I was in on all conferences with them. Therefore, the OKW did not hinder my work. When GrAdm Raeder resigned, what remained of the Secret Supply Service was placed under Adm Qu III and 3 SKL. Some of the very secret things, such as the procurement of Etappe coding machines were handled by 1 SKL.

"Great security was maintained in all matters regarding the Secret Supply Service. For instance, SKL told me to fit out a ship. It was my task to do it, but I did not know for what purpose, although perhaps I could imagine whether it was a battleship or cruiser load that was ordered. When the ship was ready, I reported it to SKL. Then the ship remained in the harbor until it received orders by mail or by telegram or radio through the supply agent. These orders would tell the ship's captain where to go. Generally he was told to meet a ship, not at a certain point enroute but in a prearranged grid area. I don't think that the enemy's intelligence service figured out our system, because no ship was captured when leaving the harbor or when coming in, except towards the end of the war when submarines were operating just outside the harbors. As a rule, the supply ships were captured on the high seas. Our supply ships always officially left a port for another one, e.g. Buenos Aires for Japan, and did not come back to it until sufficient time had elapsed for them to have made the trip."

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Air Force Etappen dienst

In October 1936, a suggestion was made that an air Etappen dienst be established to supply the needs of the German Air Force in neutral countries. The subject was under discussion for quite some time, but it appears that the plan was never put into effect.

Etappen dienst as an Intelligence Service

It is not absolutely clear from the captured documents to what extent the Etappen dienst was used during the war for the collection of naval intelligence. It seems that the original intention of OKW that it should be a world wide intelligence organization was modified by two factors: (a) the activities of Abwehr I (strictly an intelligence division of OKW having nothing whatsoever to do with Etappen dienst), especially in the area of the Near Etappe and in Spain and Portugal immediately before the war and (b) the necessity to close down all Etappe stations in British and French possession when war broke out.

The intelligence work of agents in the Near Etappe was to have included the running of a ship and air intelligence service and the employment of subsidiary agents for this purpose. The agents were to consider suitable employees of shipping and air line companies for this work, and to maintain inconspicuous and casual contact with them before the war. They were to be instructed in their work. The extent to which this should be done before war actually broke out was left to the discretion of the agent but subsidiary agents were not to be given any information about the Etappe organization, its purpose or its contacts. The reports received from these subsidiary agents were to be sent to the chief of the local Etappe and forwarded by that person to OKW with an assessment of their accuracy, reliability, etc. On the dissolution of the Near Etappe and Etappe England in the spring and summer of 1939, these agents were taken over by Abwehr I.

Overseas Ship Intelligence Service

There is no direct indication that the agents primarily concerned with naval supply work were also to have established an intelligence service in their area. However, the papers covering the years from the

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outbreak of war to the end of 1941 do show that a constant flow of intelligence reports was received from the supply agents of the Etappen dienst who were still operating. From the contents of some of the reports mentioned here, it appears that they generally give information about Allied ship movements, information which may well have been derived from a ship intelligence service. However, in a report dated 7 June 1940 from the chief Etappe agent at Shanghai, special mention was made of Japan's growing interest in the Dutch and French colonies in Southeast Asia. Nevertheless, it seems probable that the intelligence activities of the agents were chiefly concerned with collecting information about shipping and such other information as might affect the operation of the supply ships of the Secret Supply Service. These duties were laid down in instructions for the agents of Etappe Spain to prevent duplication of the work by Abwehr I.

Summary

The Secret Supply Service was responsible for the logistic support of pocket battleships in the South Atlantic and armed merchant cruisers in the Atlantic, Indian and Pacific Oceans, and for procurement, loading and shipment of critically needed supplies from South America and the Far East. It has also been shown that it supported U-boats operating in areas through which its blockade runners passed.

It was responsible for the import and export of a great many critically needed raw materials from and to the Orient. It assisted in repatriating a great number of merchant vessels which might otherwise have been immobilized through internment in neutral countries. These were all important contributions to the Navy's war effort.

There has been no indication that the system of dispatching ships for rendezvous with naval units failed, except when the SS GYNNIA ESSO failed to destroy her codes when captured by a British warship, a negligence which led to the destruction of several tankers employed in the support of raiders and pocket battleships. No Etappe ships were captured when preparing to sail for rendezvous with ships they were to supply, and there is no evidence that any agent was apprehended in the prosecution of

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his duties. There also is no evidence that the security measures employed by the Secret Supply Service failed in any respect.

It must therefore be concluded that the Etappendienst program was successful during the first three years of the war and that because of the effectiveness of the Allied blockade and aerial reconnaissance in the fourth year of the war, it was only 25 percent effective.

CONCLUSIONS

1. The Navy was a small, effective branch of the German armed forces, and its mission at the outbreak of World War II was limited to the protection of Germany's coastlines and the entrance to the Baltic Sea.
2. Although many contingencies had been provided for in the Navy mobilization plan of 1938 and the development of the naval Secret Supply Service, World War II was launched by the National Socialist Party before the Navy was ready for it. No plans had been made to extend its supply system because the Navy had not foreseen how quickly the Army and Air Force would occupy the countries of Europe.

National Agencies of the Government

3. The organization of that part of the national government which affected supply to the armed forces was effective, although it contained many overlapping agencies. Controls imposed by these ministries on the use of raw materials, plant production facilities and prices were necessary in time of war. The Ministry of Economics and the Speer Ministry gave the armed forces as great a share of the economy of Germany and the German occupied countries as those economies could afford.
4. The criticisms of the Speer Ministry quoted herein are unwarranted. While many of the day to day transactions were aggravating and may have retarded naval plans, it appears that the officers and officials making these criticisms lost sight of the over-all war effort in their attempts to obtain material and equipment for the logistic support of naval operations. Until Dr. Albert Speer reorganized industry and took over the allocation of raw materials, plant facilities and end items of industrial production, the procurement/production program of the armed forces was bogged down.



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5. Before Hitler's rise to power, the Ministry of Finance and the Supreme Court of Accounts were correct in their attitude towards military fiscal affairs, when judged by democratic standards of government. The Nazis' assumption of the prerogatives of the Reichstag, the Reichsrat and the Ministry of Finance, with regard to decisions on expenditure, examination of budgets, and their delegation of final authority over naval budgets to CinC Navy were steps contrary to the democratic concept of fiscal management. Although this was an expedient of the moment, designed to expedite the rearmament of Germany and ensure sufficient funds to conduct World War II, it resulted in accounting difficulties.

6. The Ministry of Agriculture and Food functioned smoothly. Rationing imposed by this agency was well administered and no ill effects resulted in naval morale or health.

7. The Ministry of Transportation and the Speer Ministry administered the railroads and inland waterways in a manner that caused no noticeable disruption in transportation of naval supplies.

8. Administration of sea transportation by the Commissioner of Maritime Shipping, despite the chagrin of the Navy at the loss of part of its traditional control over Germany's merchant marine in wartime, likewise had no adverse effect on logistic support of naval forces, inasmuch as the vessels assigned to such duties were controlled exclusively by the Navy.

The High Command of the Armed Forces

9. The High Command of the Armed Forces did not function like the American Department of Defense. It was merely an agency for giving effect to the orders of the Supreme Commander of the Armed Forces who, after 1940 was also CinC Army. There were no Joint Chiefs of Staff. Except on rare occasions, each commander-in-chief conferred separately with the Supreme Commander on military matters of policy.

This command did, however, exercise great control over the procurement/production program of the Navy during 1939-1943, when its Military Economy and Armament Division (OKM/Rue W1) distributed among the various armed

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services such raw materials, plant facilities and end items of industrial production as were made available to it by the appropriate ministries. This distribution was made on a percentage basis with no regard for requirement. Because it was the smallest service, the Navy found that the allocation of raw materials, plant facilities and finished products were often inadequate to meet its requirements. This resulted in great inter-service strife and dissension, how far justified it is difficult to assess. The record of the chasm between the services that resulted from the methods employed by OKW/Rue W1 serves, however, as a warning of the dangers of a centralized procurement/production agency in which all branches of the armed forces are not given equal voice.

The Medical Division of the High Command of the Armed Forces (OKW/MA) played a relatively unimportant part in distributing medical supplies and equipment among the various armed services, especially the Navy. There was no shortage of medicine and medical supplies in Germany and the occupied countries until Allied bombing became effective. Therefore, each service was able to procure its own requirements independently and to establish enough reserve stock to last them throughout the war. There is no evidence that the power of OKW/MA's control over armed forces medical supplies was ever tested.

The Admiralty

10. The organization of the Admiralty was designed to centralize control over the planning, procurement, production, storage and distribution of ships, personnel, weapons, equipage and supplies and services in a Naval War Staff (SKL), its Admiral Quartermaster Division (Adm Qu) and three technical bureaus.

The Naval War Staff performed all operational planning. Its Admiral Quartermaster Division determined the personnel and material requirements for those operations.

The three technical bureaus and the Fuel and Transportation Section of the Admiral Quartermaster Division (AdmQu III), through their training, storage and distribution systems delivered the ships, personnel, weapons, equipment and services to the point of requirement.

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The Navy Budget Office (OHM/E) obtained and distributed the money needed to finance naval projects and to pay personnel and bills.

One technical bureau, MarRuezt provided the essentials of warfare, the bases and ships and the equipment and consumables required to fight, defend and maintain them.

Another bureau, MarPers provided the officers to command and supervise their operation.

A third bureau, MarWehr provided the non-commissioned personnel and all essentials to their welfare, comfort and contentment.

AdmQu III furnished the fuel necessary to propel the ships and the transportation required to deliver the personnel, weapons, etc., to the tactical commander where and when he wanted them.

This organization was simple and effective. It withstood the tests of a global war and, with but a few minor additions and deletions in the names of sections and divisions, required no substantial change.

The Fleet

11. The Fleet organization was divided into commands which had control over:

- (a) Battleships and pocket battleships.
- (b) Cruisers.
- (c) Destroyers and Torpedo Boats.
- (d) E and S (PT) Boats.
- (e) Minesweepers.

The Navy had no fleet amphibious command, fleet marine force, fleet air arm or service force before the war. Its mission did not require them. Landing craft flotillas used to ferry troops and equipment in the Mediterranean and Black Sea were the closest approach to an amphibious command that the Navy had. The Navy Emergency Battalions and Naval Shock Troops developed during and after the Normandy invasion provided an organization similar to a fleet marine force. The Air Force provided such reconnaissance and air support as it considered necessary in fleet operations and for the protection of U-boats and other naval units arriving and departing from North Sea and Atlantic bases. This reconnaissance and support was said to be inadequate.

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The Logistic Support Departments of the main naval bases developed in April 1940 provided an organization similar to a service force, in that it provided supply ships and tankers to support units operating on the high seas and at overseas bases.

Independent Commands

12. The U-boat Command and the U-boat Administrative Command were subordinated directly to CinC Navy after 1942. The Small Battle Units Command and the Naval Command Italy were subordinated directly to the Naval War Staff.

During 1943, the major units of the fleet were immobilized in Norwegian fjords by lack of fuel and superior opposing forces. The U-boats were fighting the major part of the Navy's war during that period.

The Small Battle Units Command was organized in late 1943 as a possible desperate means of stemming the tide of reverses that had beset the Navy. U-boat successes had waned. New types of submarines were being developed and were in construction. This command, like the U-boat Command could only be operated independently of the immobilized Fleet Command.

Such an organizational arrangement, although diametrically opposite to the American concept of naval command appears justified under conditions obtaining in the German Navy during 1943-1945. No logistic failures resulted from it.

The Shore Establishment

13. The shore establishment in Germany and in the occupied countries was administered for the Admiralty by three logistic/operational commands: Group North, Group West and Group South and an independent Naval Command, Italy.

The logistic/operational commands were given wide powers over all bases and shore activities and all fleet surface units operating within their geographical limits. They did not control submarine or small battle unit operations, but were responsible for their logistic support. Fleet surface units other than small battle units, however, were at all times under the operational, as well as the administrative and logistic control

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of the group commands in whose area they were operating, except when actually engaging an enemy. This control was administered by group commanders through their regional commands.

Group commanders were senior to fleet and task force commanders.

The group commander, with his bases and facilities for repairs, reconnaissance, intelligence and logistic support and his knowledge of the general situation in his own command, was considered by the Navy to be better qualified to direct the operations of surface forces than CinC Fleet or other commanders of units involved. This resulted in a loss of operational control of surface units by parent commands and the possibility of diversion of forces required by them in emergency.

In the U.S. Navy logistic and administrative command is exercised by sea frontier commanders through district commandants, but fleet commanders do not relinquish operational control over task forces or individual units, except by transfer to other fleet commands.

It is not within the purview of this study to evaluate the merit of a logistic/operational command organization in a modern navy. However, it appears advantageous to repair and replenishment establishments that they can detach a unit of the fleet only after they are satisfied that every detail of the work has been satisfactorily completed, and not necessarily when ordered by a task force or fleet commander.

Supply Personnel

14. The supply officials of the Navy, including those Intendantur officials temporarily appointed Special Service Supply Officers during the latter part of the war, controlled all disbursing and accounting and the procurement, storage and distribution systems of the Intendantur, Central and Technical Procurement Offices. These officials only served ashore. However, because they were in charge of budgets, the distribution of funds, the audit of fiscal and stores vouchers and the storage and distribution of food, clothing and administrative supplies, they were able to delegate members of the Supply Officers Corps, who performed these

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duties afloat, to an inferior position of authority in the over-all supply personnel structure of the Navy.

The development of the superiority of the supply official over the supply officer, it was said, had come about because of the latter's lack of vision and his inability to comprehend and adapt himself to the new techniques and administrative changes that were taking place in the new Navy. The supply officers resented their inferior position. Friction between the two corps developed to a point where it could no longer be ignored by either the line and other officers of the Navy or by the supply officers and supply officials themselves.

Despite this intercorps struggle, the storage and distributive systems controlled by these officials functioned efficiently, and the logistic support of naval forces was not impaired. It is an inescapable conclusion, however, that such perfection could not have been achieved if the German Navy had used democratic rather than totalitarian methods of controlling its personnel.

In some ways, this attitude of the officials is understandable. The over-all competence of the Supply Corps was involved. The Navy needed the best supply service it could develop and the official, because of his educational background was better qualified to undertake the revolutionary changes planned.

On the other hand, the concept of naval organization in the U.S. Navy has included regularly commissioned staff officers, not officials to implement the fiscal, storage and distribution policies of its operational planning agencies and technical bureaus at every level below that of the Secretary of the Navy. Any radical departure from this concept would undoubtedly create in the Supply Corps of the U.S. Navy a situation similar to that developed in the German Navy.

15. The maximum use of non-rated supply and commissary personnel, and the promotion of only supervisory personnel to petty officer grade resulted in substantial savings. Because a man had to serve six years in the Navy before becoming eligible for promotion to petty officer and because he

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was a member of a select group after he was promoted, the efficiency of the petty officers was undoubtedly raised.

16. The German Navy did not require its supply officers and supply officials to furnish bond. This policy resulted in little, if any financial loss to the government.

17. Assignments to duty were made on the basis of ability rather than rank. There is no indication that this practice resulted in supply failures or that it caused embarrassment among junior supply officials or officers or their immediate superiors.

Mobilization Planning

18. The Naval Mobilization Plan of 1938 was a simple order which placed the Navy on a war footing. No code plans for operations after mobilization were located during this study. VAdm Machens and RAdm Schubert stated that the Navy had no plans to expand its shore establishment or logistic system when Germany went to war. One officer stated that there was no stockpiling program before 1939. It is concluded that we can learn nothing from the German Navy in this field.

Logistics Planning

19. Adm Qu was charged with the logistic planning and the determination of the feasibility of the operation plans of SKL. Between 30 and 50 percent of all work performed by this division was devoted to logistic planning. During the Norwegian campaign, which was the only major overseas movement of personnel, equipment and supplies undertaken by the Navy during the war, this work was stepped up to 70 percent.

Daily conferences were held between SKL and Adm Qu, at which the intentions and decisions of SKL and the general situation of the Navy, Army and Air Force were disclosed. The Admiral Quartermaster also attended CinC Navy conferences with SKL. It is therefore concluded that Adm Qu was sufficiently in the confidence of SKL to permit him to determine through the technical bureaus and AdmQu III the feasibility of the operational and strategical plans of SKL, insofar as support, production, distribution and timing were concerned.

Aside from its U-boat operations, the Navy played a relatively small role in the war. However, in such operations as it did conduct, naval

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logistic planning was sound, thoroughly organized and competently followed through by the distributive agencies.

Mobile Support of Surface Forces

20. The use of a supply ship for each battleship or pocket battleship, while an extravagant use of supply ship tonnage, developed a highly mobile striking force of one or several major fleet units which were not dependent upon shore bases in an operating area. Task forces which included cruisers and other fleet surface units could similarly be supported by the same supply ships, with the single disadvantage of a shorter operational period.

Prize tankers and other vessels carrying desirable stores and provisions were invariably impressed into service as supply ships for armed merchant cruisers and other raiding vessels. Prize crews were ordered to rendezvous with the ships to be supplied in designated grid areas at specific times.

These mobile support techniques proved effective. While many of the tankers that were taken over during the war and employed on such operations were lost through capture or sinking while sailing to or from rendezvous with heavy units or armed merchant cruisers, no regular Navy fleet or auxiliary supply ships were lost in such operations.

Mobile Support of Submarines

21. Undersea supply of U-boats was a method of mobile support born of necessity. The system proved effective until 1943, when the Allied blockade and air patrols made penetration by the large, clumsy undersea supply ships and tankers impossible. Blockade runners also supported submarines operating in areas through which they were routed to East Asia. After 1943, these methods were unsuccessful.

Despite the Navy's experience in undersea supply in 1944-1945, many 1600 ton submarines designed for duty as supply ships, blockade runners and undersea tankers were under construction at the end of the war.

Submersible Supply Trailers and Tanks

22. The development of an undersea trailer for use in mobile support and of submersible barges for use in harbors and lagoons particularly susceptible to air attacks appears worthy of attention. During World War II,



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the U.S. Navy developed an IX barge that could be towed from port to port to reduce semi-permanent shore construction of supply facilities in forward areas to a minimum. These barges were surface craft and vulnerable to air attack.

23. The development of a collapsible submerged fuel tank made of rubber or other pliable material for use in isolated operating areas also appears worthy of consideration.

Such barges and tanks could conceivably replace or partly replace the many oil lighters, water barges and other service craft that would probably be destroyed at fleet anchorages or other operating bases in an atomic attack.

Ship to Ship Transfers

24. We can learn nothing from the German Navy in transfers of fuel or stores at sea. The methods employed were old fashioned, and demonstrate complete lack of ingenuity. The same is true in the methods employed by the German Navy in handling cargo where methods which are old by American standards were the only ones employed.

Procurement and Production

25. The system of centralizing control over all service procurement and production at the Department of Defense level in OKW/Rue Wi was complicated and fraught with interservice and political maneuvers to gain influence with industry and control of the economies of Germany and the occupied countries.

Allocations of raw material and plant capacities to the services were made by OKW/Rue Wi on a percentage basis of their stated requirements. This resulted in inflated statements of requirements, and other abuses. The Air Force and Army also used their influence to obtain over-riding priorities without due regard to their effect on the Navy.

Such irresponsible actions and thoughtless demands on the part of the armed forces and the lack of teamwork between them proved to be a fatal defect in the over-all military procurement/production program. As a result, control and allocation of raw materials and plant production

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facilities were taken away from them and given to the Speer Ministry, an organization somewhat similar to our National Defense Production Authority.

26. To reduce the drain on German resources procurement of finished items was effected, wherever possible, in the occupied countries.
27. The manufacture of spare parts by firms other than those constructing the equipment to which they pertained was used to good advantage, and may be worth trial as a method of expediting production of critical spares and improving design of the equipment itself.
28. Procurement of equipment, material and supplies from firms nearest the point of requirement, and shipments of not less than a carload assisted in reducing transportation needs.

Storage

29. Dispersed storage was widely used. Underground storage was used wherever possible. Most of the Navy's fuel -- 81.6 percent, was stored underground. Where the Navy constructed new supply facilities, such as those at the submarine bases in France, most of the storage space was sheltered.

Floating storage was also used in Germany and Norway wherever practical.

Mechanical handling equipment or accessories were not provided, except at Kiel and Wilhelmshaven. At other places supplies were handled and stacked by the time-consuming and antiquated system of beef and brawn.

We have nothing to learn from the Germans in the field of storage, handling of materials, packaging or preservation of material.

30. The utilization of space in manufacturers' plants as "special storehouses" and the benefits derived by both the Navy and the manufacturers appears worthy of consideration as a method of acquiring cheap extra storage space for reserve equipment.
31. The method of determining by electrical accounting machines the life expectancy of a moveable part for high pressure hot steam auxiliary engines is unique, and may be the basis of a system devised by the U. S. Navy to

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reduce the number of such spares required to be carried in its supply system. Some work has been done in this field by Code 819, BuShips, where vacuum tube failure reports are analyzed with electric business machines. Attempts have also been made by the Aviation, Electronics and Ordnance Stores Offices to determine issue rates of spare parts in this manner. It is understood, however, that the results obtained so far have not been entirely satisfactory. Further information regarding the methods employed by the German Navy can be obtained from VAdm Stiegel through the Naval Intelligence Officer, Berlin.

Distribution

32. Distribution of general stores and spare parts during 1939-1943 was inefficient. There was a lot of unnecessary shuttling of material between dead storage and inland supply depots to Kiel and Wilhelmshaven for shipment to naval activities, many of which were closer to the inland depots than the tidewater shipping activities. In January 1944, a reorganization was effected in which the Central Procurement Office and the Technical Procurement Office was established.

The distribution system employed after 1 January 1944 was similar to that employed by the U.S. Navy under the Integrated Naval Supply System. Supply demand control points (Inspectorates, Adm Qu III, Intendantur Offices, Central and Technical Procurement Offices) assessed the Navy's needs for the various types of stock by items and quantity, procured or produced them and placed them in the various supply systems. They directed the flow of such material from inland storage points to issuing activities, or direct to the consumer. The system functioned efficiently as long as control over the stock could be maintained.

33. The segregation and dispersal of spare parts and boxed spares by ship types is a feature of the system which might merit attention. The U.S. Navy follows this system in principle in that the primary distribution points at Clearfield and Mechanicsburg supply the navy yards with spares for the types of ships usually overhauled by them, e.g. Portsmouth for submarines, Philadelphia for destroyers and Bremerton for battleships.

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However, the emphasis placed on wide dispersal of spare parts and electronics material, as shown by the chart appearing on page 234a indicates that the German experience in bombing raids showed the necessity for a very wide dispersal. U-boat spares were stored in 30 different places, large ships' spares in 10 places, minesweeper spares in 5 places, etc. The same pattern of wide dispersal was followed with general stores, as shown on the chart on page 230a.

34. The German policy of issuing spare parts on a turn-in replaceable basis was designed to conserve not only the spare parts themselves but also the critical metal used in their manufacture. While the adoption of such a policy by the U.S. Navy would cause additional problems in accounting, storage and reissue, further study of the benefits to be derived from the adoption of such a system during a war, when spare parts are always scarce, appears desirable.

35. The Germans claimed that their method of investigating excessive consumption by activities saved a lot of money and conserved much material. Inspection parties sent on such missions were composed of engineering as well as supply personnel. Material consumption in the U.S. Navy is policed through allowance lists prepared by the technical bureaus concerned, allotments, screening by Requisition Control Offices and quarterly stock status reports rendered to supply demand control points. There appears to be little improvement possible in this area.

36. During 1939-1944, control of stock in the general supply and the spare parts supply systems was frequently lost. This resulted in procurement errors, duplication of stock and general confusion. In January 1944, mechanized stock control was introduced in the Central Procurement Office headquarters at Hildesheim. Control over stock in that supply system was soon regained. At Hildesheim, however, too much reliance was placed on centralized mechanized stock control, and on 22 March 1945 Allied bombers destroyed the buildings which housed this machinery. The result - complete loss of stock control is a valuable lesson in over-centralization.

Stock control in the Technical Procurement Office supply system was maintained by a card system. Once control was regained in January 1944

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it was not again lost. Inasmuch as the headquarters of this system at Hohenwestedt was not bombed, no comparison can be made between the merits of the use of mechanized or manual stock control systems in target areas in wartime.

Issues, Stores Accounting and Inventories

37. Allowance lists were prepared in peacetime for all articles of equipment. These lists were assembled according to types of ships by the technical bureaus. Replacement of items was effected on the basis of an approved survey report.

Consumable stores were issued on an "as needed" basis in keeping with the annual budget. Ship allotments were established. They had some point in peacetime. In wartime, they were not strictly adhered to.

Wartime issues to ships and overseas bases were unpriced. Final accounting was performed ashore. A system was followed which was similar to that employed by the U.S. Navy in finally expending material consigned to these forces, excluding provisions and clothing.

The German theory on stores accounting was that if it could be kept simple, it was necessary ashore to prevent waste and black marketing.

Only important classes of general stores were completely inventoried during the war. Sample inventories were taken in some classes. Others were not inventoried.

There is nothing we can learn from the German Navy in this field of supply technique.

Salvage and Maintenance

38. Each branch of the armed forces organized its own scrap drive. Worn out or obsolete equipment was certified as such by survey boards before it was declared unusable. Where practicable, such equipment or material was reduced to a manufacturing state.

Metal items in store were dipped in grease or oil. The method of protecting stock through the use of plastic sprays and dehumidifying materials were unknown to officers and officials interviewed.

The only discovery worth mentioning in the field of maintenance is that the Navy kept its stocks of shoes in rooms in which constant tempera-

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tures were maintained. American military forces do not follow this practice, but if they would, quite a lot of money could be saved through the prevention of hydrolysis in shoes and other leather products. The dangerous temperatures are between 100 and 110°. The critical temperatures are between 110 and 120°. Research on this subject is recommended.

Fuel

39. A valuable suggestion was made that instead of shipping refined products from America for use by American forces operating in Europe, German refineries should be used for cracking gasoline and otherwise refining crude fuel or for producing pitch fuel oil by hydrogenation in these plants if fuel supply from America is ever interrupted. By these methods, part of the requirements of the armed forces could be made available for other purposes.

Transportation

40. Air transportation was not used extensively by the Navy. This was due firstly to the fact that other transportation means were usually available, and secondly to the fact that the Navy had no air transport service of its own and was forced to request air space from the Air Force. Thirdly, only submarines and raiding vessels were operating at any great distance from European bases, and logistic support by sea, inland waterways and rail had proved satisfactory.

Occupation Currency

41. The use of Treasury credit notes as means of avoiding disruption of the economy of German occupied countries and reducing the amount of German currency in circulation is worthy of attention.

The indigenous currency of the occupied countries was obtained in exchange for these certificates. This elimination of the use of military payment certificates avoided dangers of counterfeiting and misuse by allies, which in the past have been a matter of some concern and expense to the U.S. Treasury.

The German experience in obtaining local currency from the Greek Treasury should also be noted. There was no systematic control by the Navy over receipts by its disbursing officers and this made it impossible

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to determine Germany's liability to Greece.

Disbursing

42. The overcentralization of disbursing activities at Hildesheim and Nordhausen and the subsequent destruction of such activities by bombing points to the necessity for dispersal of such activities or the production and dispersal of duplicate pay records, records of bills paid and bills in line for payment.

43. The payment of all bills and of pay checks to officers and officials and other military or militarized personnel by transfer of funds through the Reichsbank and post office eliminated the use of Treasury checks, public vouchers, schedules of disbursement and lists of checks drawn, and reduced the amount of funds required to be carried to the credit of disbursing officers. The development of such a system for use within the United States would reduce the work load of disbursing activities considerably.

Payment of Salaries

44. The payment of pocket money alone, instead of full salaries due, as a means of reducing the influence of a great number of occupying troops on the economy of a country is a sound practice. The American policy of paying to military personnel overseas sums greatly exceeding those drawn by allied personnel or earned by citizens of communities occupied by them invariably causes dissension abroad. Recent complaints have been received by the U.S. Army from allied troops in Korea. The effect of surplus cash in the pockets of military personnel in foreign countries is obvious. The German policy of paying troops three times rather than twice a month further reduces the amount of money in circulation in military groups.

The adoption of the German policy for the payment of forces of the United States overseas would do much toward cementing friendly relations with our allies and the citizens of the countries in which our troops are stationed.

Insurance Premiums

45. Payment of premiums to insurance companies annually, with a guarantee of such premiums is a practice that appears sensible. If such arrange-

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ments were possible, considerable work at the Field Branch, BuSanda could be eliminated. Moreover, if such payments to insurance companies could be made upon receipt and verification of the second half-year's pay records at Cleveland, the work load could be further reduced.

Mutual Assistance

46. Despite recriminations by German officers, the German-Italo Mutual Assistance Pact worked smoothly, insofar as the exchange of equipment, material and services were concerned. The accounting system employed by the Germans in this program was inefficient in that it did not permit the Admiralty to determine what transactions were being or had been made.

The practice of employing civilian accounting firms to collect and recapitulate all vouchers covering mutual aid transfers is interesting. During and after World War II, the U.S. Navy experienced great difficulty in determining the value of issues and receipts to and from allies, especially England. Some advantage may accrue from further study of this practice.

Clothing and Small Stores

47. The Navy developed no synthetics used in the manufacture of clothing that the Research and Development Division, BuSanda does not already know about.

Clothing was issued on a turn-in replacement basis. All articles had been assigned a life expectancy and were required to be turned in when they had been in service for that time. Clothing thus surrendered was renovated and reissued. A man was allowed to have only permitted items of clothing, no more and no less. During peacetime, he was allowed to purchase non-regulation clothing. This practice was discontinued during the war.

The system of furnishing articles of uniform clothing free to military personnel is not new to the American Armed Forces. Our Army Quartermaster Corps and Marine Corps have long employed a system somewhat similar to that established by the German Navy. The pre-war system of the U.S. Marine Corps was identical, except that men did not surrender their clothing upon discharge. Prior to the Army's adoption of the Navy plan of cash



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sales of clothing, the Quartermaster Corps also employed a somewhat similar system. These services abolished the method, however, as a means of reducing accounting steps and entries in clothing books. It is recognized that cash credits on a pay roll of initial outfit and maintenance allowances, which allow each man to keep his bag of clothing up to standard out of the funds given him, should create an incentive for him to take care of his clothing.

Under this system, however, personnel can be as profligate as they wish in the use of their clothing. There is little if any supervision over the number of garments a man purchases. He may have twenty undershirts if he wishes, as long as he has the number required for a full bag. Such laxity engenders waste and creates a greater demand on our naval clothing system and on the textile industry and resources of America.

48. Clothing exchanged was renovated and reissued. Items which did not meet reissue standards but which were usable were set aside for mobilization purposes. Unusable clothing was reduced to a manufacturing state. This is a system that could be used in the United States only if there were critical shortages of the material used in the manufacture of clothing.

49. Stocks of clothing aboard ship were reduced in wartime to absolute essentials in order to minimize losses through torpedo hits, etc. This policy seems worthy of consideration.

50. The adoption in wartime of four standard sizes of clothing and a minimum of standard shoe widths was one method employed to conserve textiles and leather. While it is recognized that the adoption of such measures in peacetime would engender political repercussions, it is suggested as a practical method of reducing the great amount of stock required to furnish a wartime Navy's personnel. During World War II, over 3½ million enlisted men served in the Navy. Furnishing those men with the exact size jumper, trouser, shoe, etc., they had been accustomed to necessitated carrying in stock a wide range of sizes and widths. The clothing carried in the Navy Stock Fund at this time represents about 20 percent of the total investment of stock in the Navy. Combat clothing issued to our

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troops during World War II was stocked in but four sizes. The British Army now has but three standard shoe sizes. Supplemental sizes, of course, are carried for special requirements but are not regularly stocked at issuing activities.

Subsistence

51. Officers, chief petty officers and men were subsisted in the general messes of German ships and stations during the war. This eliminated duplication of effort and waste in food preparation. It is realized that this method was conceived in a Socialistic State and would not generate favorable response from persons now being subsisted in independent messes. However, should food be strictly rationed in a future war, such a system of subsisting personnel would undoubtedly assist in reducing naval demands for rationed items of food.

The Secret Supply Service

52. The Etappendienst contributed much in the logistic support of raiders and submarines during the early years of World War II. It is not believed, however, that such a system of supporting U.S. naval vessels will ever be necessary.

Finance and Fiscal Accounting System

53. The finance and fiscal accounting system of the Navy was simple, yet it provided the funds required and ensured that their expenditure was for the purposes intended.

Distribution of funds was effected by the Navy Budget Office. They were disbursed by the naval pay offices ashore and afloat. A centralized system of disbursing was employed at many points ashore, wherein associate disbursing officials made daily reports to central disbursing officers. At other points, independent disbursing offices paid local bills. Central disbursing offices were also established for the sole purpose of distributing pay roll and family allowance deposits.

Initial audits of expenditures were made for the Navy by its pre-audit offices, where errors and omissions were detected. The Supreme Court of Accounts made the final audit of all fiscal and stores accounting vouchers.

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Because the head of the state was also the Supreme Commander of the Armed Forces, there was no shortage of funds. Authority over all fiscal matters was delegated to CinC Navy. Because totalitarian methods of control were used, there was no diversion of funds to unauthorized purposes, no defalcation, no loss. Because the Supreme Court of Accounts was limited in its examination of accounting vouchers to determining that funds were spent for their intended purposes, there were no accounting difficulties.

Naval Supply System

54. The integration of the Navy's eleven separate procurement/production and distributive agencies into a naval supply system was complete and effective. While in some respects the techniques employed by them were old by American Standards, they nevertheless produced the desired results.

The value of any supply system can be measured only by whether or not it provides what is required in the quantity required at the time and place required. With the exception of petroleum products and some critical metals and elements required in production, the German naval supply system met this test and provided all of the many items of equipment and consumables that were necessary for the logistic support of its shore establishment and forces afloat.

55. The supply officers, special service supply officers, Intendantur officials, engineer officers and technical officers who operated the Navy's supply system were highly respected by the line and other officers of the German Navy.

Those interviewed were very friendly, co-operative and genuinely interested in U.S. naval supply techniques.

These officers and officials determined the raw materials, plant facilities, lead times and end items of production necessary to maintain the stock levels required in their respective supply systems. Their efficiency in distribution techniques is attested to by the abundance of equipment and consumable supplies available to the Navy throughout the war.

56. Although at the outset of this project it was proposed that its second phase should be devoted to a study of the supply system of the

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Japanese Navy, it has since become evident that various factors detract from the value of such a study. These are:

- (a) The Japanese Navy, like the German Navy, is an extinct organization
- (b) Its supply system has not functioned for over six years
- (c) Former Japanese naval personnel have in most instances lost contact with naval affairs and professional naval subjects
- (d) Japanese records have been seized and impounded. This would necessitate relying, as in the German phase, on the memory of former naval personnel for some details of the systems and techniques employed.

Therefore, it is suggested that instead of making a study of another defunct navy, it would be more valuable to study the supply system of an active European or South American navy now aligned with the U.S. Navy in its international mission, and which is or may be considered an ally in a future war.

"ALLOWANCES FOR DEPENDENTS OF MOBILIZED MEN IN GERMANY"  
WRITTEN BY HEDWIG WACHENHEIM AND PUBLISHED IN THE  
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Profiting by the experience of the war of 1914-1918, when Germans morale at the front was affected by complaints from soldiers' families that their allowances were inadequate, the present German Government has made liberal provision for the dependants of all men in the armed services below the rank of sergeant (Unteroffizier), men of higher rank being expected to support their families out of their pay. Moreover, as an incentive to work, it has excluded from the means test a large part of any earnings from employment.

The main principles of the scheme now in operation were briefly outlined in the Review soon after the outbreak of war.<sup>1</sup> The following article, besides bringing the description up to date, shows how the scheme is administered in practice.

The German legislation on maintenance allowances for service men's dependants in force during the last war became obsolete when the Weimar Republic, in conformity with the requirements of the Treaty of Versailles, established a long-term professional army, but with the reintroduction of conscription in 1935, the National-Socialist Government initiated legislation establishing allowances for service men's dependants. Following some preliminary Decrees, the basic measure, an Act concerning the maintenance of the families of men called up for military service, was passed on 30 March 1936, together with rules of the same date for its administration.<sup>2</sup> It was easy to adapt these peacetime regulations to war time needs; various changes were made by an Administrative Order of 11 June 1939<sup>3</sup>, and the legislation was consolidated in a Family Maintenance Act of 26 June 1940, supplemented by an Administrative Order of the same date.<sup>4</sup> These measures contain general regulations; the rates of the allowances granted to dependants are fixed by Joint Decrees of the Ministers of the Interior and Finance.<sup>5</sup>

Under the basic Act the maintenance of service men's dependants is a Government obligation, and the assistance given is quite distinct from poor relief or other forms of social assistance. The assistance deemed necessary for the maintenance of a dependant varies to some extent with his former standard of living. It consists of a basic allowances together with a number of supplementary payments and allowances.

#### Beneficiaries

The persons whose families are entitled to maintenance are defined in the basic Order of 26 June 1940 and subsequent amendments.<sup>6</sup> They include, besides men who have enlisted or been called up for service with any branch of the armed forces, the men in the following services; the Compulsory Labour Service (during the regular six months of such service), the Air Raid Precautions service, the Army Transport Corps (including non-military members), the Emergency Service, the Armed S.S.; also men attending Red Cross Training courses preparatory to service with the Army Sanitation Service or Red Cross Service during states of emergency, S.A. leadership courses, courses organized by the motor transport schools of the National-Socialist Air Pilots Corps, or courses given by the Hitler Youth in camps for boys fit for defense duty.

<sup>1</sup>Cf. International Labour Review, Vol. XL, No. 5, Nov. 1939: "Allowances for Families of Mobilized Men", pp. 680-683.

<sup>2</sup>Reichsgesetzblatt, 1936, Part I, pp. 327 and 329.

<sup>3</sup>Idem, 1939, Part I, p. 1225.

<sup>4</sup>Idem, 1940, Part I, pp. 911 and 912.

<sup>5</sup>The most important are the Joint Decrees of 26 May 1937 (Reichsministerialblatt für die innere Verwaltung, 1937, p. 809.)

11 July 1939 (idem, 1939, p. 1447), Oct 2, 1939 (idem, 1939, p. 2079), and 5 July 1940 (idem, 1940, p. 1363).

<sup>6</sup>Decrees of 25 Oct. 1940 (Reichsgesetzblatt, 1940, Part I, p. 1397), 16 June 1941 (idem, 1941, Part I, p. 320), and 27 Apr. 1942 (idem, 1942, Part I, p. 248). Cf. Dr. Loberski: "Bedeutsame Verbesserungen in Einsatz-Familienunterhalt," in Reichsarbeitsblatt, 1941, No. 20, Part V, pp. 345-349.

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After the outbreak of the war, girls performing their regular six months of compulsory labour service were added to the list.<sup>7</sup>

The dependants of the following are also entitled to maintenance allowances; the crews of merchant ships detained abroad by enemy action, missing men, prisoners of war, civilian internees, German nationals under supervision in enemy countries or unable to leave neutral countries owing to enemy action, and German nationals serving with the Italian army.

Sick or wounded service men on leave at home, or those who have been discharged but are still with their military units or in a military hospital for treatment, are deemed to be in service for the purposes of family maintenance. Provision is also made for the dependants of men killed or incapacitated in action, who receive maintenance allowances until the pensions due under other legislation are paid.

Definition of Dependants

The dependants entitled to maintenance are defined in the basic law of 26 June 1940 and a Joint Decree of 20 June 1941.<sup>8</sup> They are divided into two groups. Those in the first group receive the allowance even if the service man did not support them before entering military service. They include:

- (1) The service man's wife, even if they married after he was called up;
- (2) His adopted children, if he adopted them before the beginning of his service;
- (3) His legitimate and legitimised children, even if born after he entered the service;
- (4) His stepchildren, if they live with his wife;
- (5) His illegitimate children, if he is under legal obligation to support them.

Allowances are granted to the second group of dependants only if the service man had provided for their livelihood wholly or in part before entering the service. This group includes:

- (1) The service man's wife, if she has been divorced from him, or if their marriage was annulled or dissolved;
- (2) His grandchildren and foster-children, and his stepchildren if they do not live with his wife;
- (3) His ascendants;
- (4) His parents by adoption, step-parents, and foster-parents;
- (5) His brothers and sisters;
- (6) His parents-in-law.

A service man is considered to have provided partial support for his dependants if, during the six months prior to his service, he gave them an amount equal to one-third of the local rate for the maintenance allowance. Special provision is made for service men who were engaged in seasonal occupations. Provision is also made for the care of dependants who did not become needy, or whom the service man did not have to assist until after the beginning of the six months' period prior to his entering the service. Parents may even be given an allowance if their son was not yet able to assist them, but could be expected to have given them financial aid had he been able to do so. They are also granted an allowance if several sons on service gave them assistance amounting to at least one-third of the maintenance rate for the family, during the six months prior to service.

<sup>7</sup>Decree of 10 Nov. 1939 (Reichsministerialblatt f.d.i.v., p. 2329).

<sup>8</sup>Idem, 1941, p. 1116 (cf. Boberski, loc. cit.).

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Maintenance is granted only in cases of special need to brothers and sisters who still have one or both parents living or have not shared the service man's household, and to parents-in-law.

Dependants entitled to maintenance who were in receipt of relief or unemployment insurance benefit at the time the service man was called up are entitled to receive family maintenance instead of such relief or benefit.

Allowances

The Basic Allowance

Before October 1939 the rate of the basic allowance, or maintenance rate, was fixed with reference to the standard of living in the locality concerned, but did not vary with the beneficiary's individual standard of living. The Joint Decree of 2 October 1939 introduced an "index rate" in certain cases to provide for such variation.

The Family Maintenance Rate

The 1936 regulations established a family maintenance rate, which fixed the basic monthly allowance to be granted to the dependants of former wage and salary earners. As is still the case, this rate was based on the relief rate for assistance given to destitute persons, which is determined by the local relief authorities and varies with the cost of living and financial resources of the locality. As the relief rates have not been changed since 1932, they also reflect the pre-Nazi attitude of each district towards the welfare of the poor.

In practically all districts the relief rates differ for single persons, for married couples, and for children. Under the Weimar Republic legislation was passed requiring the local authorities to increase their rates by 25 percent. For certain categories of needy persons, such as victims of the 1914-1918 war and subsequent inflation and social insurance pensioners, it was this increased relief rate which was used as the basis for computing family maintenance allowances under the 1936 legislation, and thus the allowances, too, vary with the local cost of living. The family maintenance rate was fixed at 125 percent of the ordinary relief rate excluding any rent allowance (which forms part of the relief rate in some districts). A rent allowance of 75 percent of the family's expenditure on rent was added to the maintenance rate.

The relief rates, reduced late in 1931 owing to the economic depression, were not raised again in spite of the rising cost of living. Relief assistance was intentionally kept at a low level in order to increase the difference between the standard of living of persons on relief and that of employed workers, so as to make gainful employment more attractive. By 1937 the relief rolls included only semi-employables and unemployables. The Government, however, was prepared to give greater assistance to the dependants of service men so as to avoid discontent following the reintroduction of conscription. It therefore authorized the local authorities responsible for administering the Family Maintenance Act to grant a supplementary allowance to service men's dependants, adjusted to their individual needs and former standard of living. The Joint Decree of 26 May 1937 replaced the individual discretion of the local authorities in this respect by fixing a general supplementary allowance, which was later merged with the family maintenance rate by the Joint Decree of 11 July 1939. The new maintenance rate was fixed at 175 percent of the local relief rate for a single person. And this is the rate currently in force for a large part if not the majority of service men's dependants.

Since the maintenance rate is based on the relief rate for a single person, it is given in full only to the service man's wife who shared his household before his departure and to dependants over sixteen years

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are granted only "about" 50 percent of the maintenance rate. Since October 1939 children under the age of sixteen who live with the service man's wife or with other ascendants are granted 30-40 percent of the maintenance rate, subject to a minimum of 15 marks.<sup>9</sup> Children in other households receive about 60 percent of the maintenance rate.

What is the real value of these rates, and how do the dependants' allowances compare with income from wages?

The relief rate, the basis for determining the family maintenance rate, is about 32 to 40 marks a month in towns, being highest in large cities, where living is expensive; in rural areas the rate is lower. The family maintenance rate, therefore, for a service man's wife with two children is approximately 95 to 119 marks in towns. Furthermore, under wartime regulations, a dependent wife receives an allowance covering the full cost of her rent, instead of 75 percent,<sup>10</sup> which adds at least 35 to 45 marks to her monthly allowance, making a total of 130 to 165 marks. This allowance is exempt from income tax.

A skilled worker's gross monthly income has been estimated at 175 to 225 marks.<sup>9</sup> The net income after deductions for income tax and social insurance contributions<sup>10</sup> is approximately 150 to 195 marks. Since wages, as well as relief rates, tend to be higher in large than in small towns, it may be assumed that the wife of a skilled worker earning the lowest wage in his category would receive the lowest urban maintenance allowance, or 130 marks, if she has two children, as compared with her husband's net pre-service wage income of 150 marks. The difference of only 20 marks is an amount which he certainly would have needed for his own food, clothing, and incidental expenses. To make another comparison, if it is assumed that a worker receiving the highest net income paid in his category, 195 marks a month, had lived in a big city, his dependent wife and two children would probably receive an allowance of about 165 marks a month. In that case the difference between the pre-service income and the maintenance allowance is greater; but is still not more than the husband would have needed for his own expenses.

The figures show that the allowance in fact enables the average skilled worker's family to continue its old standard of living while he is in service. This obviously holds true for lower paid unskilled workers, since the maintenance rate is the same throughout the particular district; and it holds equally true with respect to workers in rural areas, where wages as well as maintenance rates are lower. The smaller allowance given to wife who has one child or none - about 78 to 98 marks or 56 to 70 marks respectively, not including rent - is presumably balanced by the fact that she is in a much better position to earn supplementary income.

The income from the maintenance allowance must not exceed pre-service income. In the case of a service man's children and parents who shared his household, the maximum allowance is fixed at the family's net income in the month preceding his calling up, less 15 percent of his earned net income. The 15 percent deduction, made to allow for his own expenses while he was still living at home, seems to have been dropped in 1940.<sup>11</sup>

The fixing of a maximum limit is not unfavourable to large families, since the family rate is increased by at least 15 marks for each child. Their income tax is lower, thus raising the ceiling set by their net pre-service income. Moreover, the Government grant to all families with three or more children, of 10 marks a month for the third and each additional child, is not included in calculating the pre-service income.

<sup>9</sup>Cf. Rene Livchen: "Wartime Developments in German Wage Policy," in International Labour Review, Vol. XLVI, No. 2, Aug. 1942, p. 154.

<sup>10</sup>The monthly average of such deductions in 1937 was 13.5 percent. (Wirt-Schaft und Statistik, 1938, p. 160).

<sup>11</sup>Cf. Boberski, loc. cit.



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If a child is born during the service period, the maximum limit is raised by the amount of the maintenance allowance for the child.

In the case of dependants who did not share the service man's household, and dependants other than his wife and children, the maximum is set by their total net income including the assistance given to them by the service man, even if a dependant's pre-service income was lower than the rate plus the rent allowance.

The Index Rate

Before October 1939 dependants of wage and salary earners were in no case granted an allowance exceeding 175 percent of the local relief rate plus the rent allowance and other supplementary grants. In other words, a dependant's standard of living could not be higher than that of the average skilled worker, whatever it might have been before the breadwinner was called up.

Before the outbreak of war only men of twenty years of age were called up for the regular two-year service period, and only a minority of these were married or had dependants. Older men were called only for a short period of training or retraining. But in the autumn of 1939 millions were called, including family breadwinners from all age classes. Many a middle-class family probably resented the lowering of its standard of living which the family maintenance regulations meant for it. To avoid such complaints and discontent, an "index rate," applying only to the wives of service men, was introduced by the Joint Decree of 2 October 1939.

The index rate is distinct from the relief rate and is based only on the husband's net pre-service income from work, no deduction being made for his living expenses. It is fixed at 40 percent of his former net earnings up to 270 marks and 30 percent of earnings in excess of that amount. The maximum allowance under the index rate is 200 marks a month, which corresponds to a pre-service net income of 580 marks a month. Specimen rates are shown in the table below:

<u>Husband's net monthly income</u>	<u>Wife's monthly index rate</u>
marks	marks
100-110	40
150-160	60
200-210	80
250-260	100
300-310	116
350-360	131
400-410	146
450-460	161
500-510	176
550-560	191
580-and over	200

The index rate is used in place of the maintenance rate only when it results in a larger allowance for the wife. It appears that in large cities having a high relief rate the index rate is more advantageous for the wife if the husband's net income was over 180 marks a month; in cities of medium size, if it was over 160 marks; and in small cities with lower relief rates, it was over 140 marks.<sup>12</sup>

The index rate system was extended by a Joint Decree of 18 January 1940 to women whose marriage took place after the husband entered the service.<sup>13</sup> But if these women were wage earners before marriage or lived with their parents and can continue to do so without undue hardship,

<sup>12</sup>Soziale Praxis, 1939, p. 1236.

<sup>13</sup>Reichsministerialblatt f.d.i.v., 1940, p. 130.

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they receive the maintenance rate. The same Decree remedied the situation in the case of women whose husbands were called up after their net income had been reduced by wartime taxation. Similar provisions are made in the case of husbands released from service and employed on war work which pays them less than the jobs they had held when called up.<sup>14</sup>

The disparity, which increases in proportion to income, between pre-service income and the index rate allowance is further increased by the fact that the allowance for the dependent children is not determined by the index rate, but continues to be 30 to 40 percent of the local maintenance rate, subject to the minimum of 15 marks for each child. However, the widening gap in the upper income groups between pre-service income and index rate allowance is bridged by the special allowances described below.

Supplementary Grants

In addition to the basic allowance, the following assistance is granted to all dependants:

- (1) The 100 percent rent allowance; a family occupying its own house receives a grant towards the payment of taxes and other charges, provided that there are not more than two dwellings in the house and the family occupies at least half of the building;
- (2) Sickness and maternity assistance in cases not covered by the national sickness insurance scheme; the maternity benefits granted are equal to those provided under insurance;
- (3) Education and vocational training for minors corresponding to their capacities and their parents' social standing;
- (4) Vocational training for blind, deaf mute, and crippled dependant;
- (5) Payment of the social insurance contributions necessary to maintain the rights acquired by the dependants of insured men in cases where the maintenance of these rights is not secured by the insurance legislation;
- (6) A grant to meet the service man's wife insurance premiums or any other legally contracted instalment payments, provided the obligation was contracted before he entered the service and he is no longer able to make payments. The grant may not exceed 10 percent of the total family maintenance allowance.

All these grants are subject to the maximum limit fixed for the dependants' total income.

The local authorities are also required to pay for a dependant's funeral if the expenses cannot be met otherwise.

Special Allowance

The Joint Decree of 2 October 1939 provided for the payment of a special allowance to the service man's wife to secure the continuance of the household and the preservation of the family's belongings within the limits imposed by wartime restrictions. The right to this allowance was extended to parents and other relatives (excluding children) in July 1940.<sup>15</sup> The amount of the special allowance is not fixed by the Decree, the local authorities being empowered to adjust it to individual needs with a view to preventing such changes in the dependants' standard of living as would cause undue hardship.

The special allowance may even be granted for payment of a woman servant's wages and board if her continued employment is necessary for the proper care and upbringing of children or the care of other relatives in the household. The need for a maid is to be taken for granted if there are two or more children in the household, or if the wife is ill or pregnant. If there are special circumstances in the household necessitating

<sup>14</sup>Cf. Boberski, loc. cit.

<sup>15</sup>Ibid.

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the services of a maid, or if she has been employed in the household so long that her dismissal would result in undue hardship for her, the allowance must also be paid.

Occasional allowances may be made in cases of special need, for example, for furniture or clothing.

The special allowances are subject to the maximum limit based on the dependants' pre-service income. This fact and the special purpose of the allowances show that they are designed principally for middle-class employees, in whose case the disparity between pre-service income and family maintenance income is large enough to justify their payment. There is no such disparity in the case of the average worker, who, moreover, does not usually employ a servant.

**Financial Assistance to Self-Employed Persons**

If the service men used to make a living from his own commercial or industrial business, his farm, or professional work on his own account, financial assistance is granted to keep the business, farm or professional practice going for the duration of his service, provided that his financial position would otherwise be jeopardized. This aid is also granted to men without dependants. If the business or farm is owned by the dependant, but was managed by the service man, the dependant is entitled to the assistance.

Financial assistance of this kind must be used for engaging a substitute and for rent. If the substitute is a relative by blood or marriage of the service man, the assistance is granted only if necessary to avoid undue hardship.

The amount of the assistance in the case of a service man with dependants may not exceed 150 percent of the amount that would be due if he had been a wage or salary earner. In the case of a man without dependants the maximum is 150 percent of the amount granted to one person under the maintenance or index rate system.

If necessary, extra grants may be made for rent and, since the outbreak of the war, for various other purposes.

**Conditions of Award**

Family maintenance payments supplement the dependant's own income and can be claimed only to the extent to which they are needed. The dependant is considered needy if his income is less than the amount of the basic allowance to which he is entitled plus his rent and the supplementary grants. Dependants receiving income from capital or having relatives bound by law and able to assist them, those having a claim to assistance or pensions from private persons or from public or private institutions, and those capable of working receive maintenance only to the extent to which their income from these sources is less than the maintenance allowance due to them under the Family Maintenance Act. Certain deductions are made, however, from the income from the above sources before fixing the rate of the allowance.

If a dependant's income changes, his maintenance allowance is also changed, so that his income always amounts to that which would be due if he lived on the allowance alone. The local authority responsible for paying the allowance must review his needs at regular intervals.

It should be noted that a service man's dependants are not required to use their capital or sell their property to provide for their own support. If the service man receives an income from his capital, he must use this for the support of his dependants, but the capital or property itself is under the same protection as that belonging to the dependants.

Under the Civil Code, husband and wife and ascendants and descendants are under a legal obligation to assist each other, but the obligation of ascendants and descendants to support the dependants of service men was abolished by war legislation. The local authority may sue

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the person liable for the support of dependants for repayment of the expenses it incurs on their behalf.

Other relatives by blood or marriage and persons morally obliged to assist a dependant living in their household are expected to provide for the dependant, and their assistance is deducted from the dependant's maintenance allowance. However, the granting of such assistance if more or less voluntary since it is not enforceable in law.

Certain income from public and private institutions or persons is not taken into account when the dependant's own income is computed, although it enters into the calculation of the maximum limit based on pre-service income. The Joint Decree of 11 July 1939 specifies the following items:

- (1) Voluntary grants made by the service man's employer;
- (2) Twenty-five marks of the current allowance paid to men disabled in action during the first world war, or to veterans of the Nazi movement disabled during the Party's struggle for power; the same amount is excluded from all other types of additional allowance granted on account of serious disablement;
- (3) Fifteen marks of the special grants paid to injured pensioners of the Imperial Army (sergeants and higher ranks);
- (4) The allowances paid to children of men in categories (1) to (3) above;
- (5) Fifteen marks of the allowance paid to widows and orphans of the first world war;
- (6) The grants paid to veterans of all wars prior to the first world war;
- (7) The Government grant to families with three or more children;
- (8) Certain payments, other than current benefits, made to sick or injured persons under sickness or accident insurance and the grants to supplement old-age and invalidity pensions made under Acts of 1937 and 1939;<sup>16</sup>
- (9) Income from revaluation and other current allowances paid to victims of the inflation after the last war whose income falls below a certain level;
- (10) Grants made by private welfare organizations and by private persons not bound by law to assist the dependant.

**Income from Wages**

Dependants in receipt of a family maintenance allowance are required by the regulations to accept suitable employment and to register with the local employment office at regular intervals. If they fail to do so, or refuse to accept employment, the allowance may be curtailed or stopped, even if they are in need of the means of subsistence. The type of work which they may be required to do depends on their social position, age, health, domestic situation, and, as far as possible, professional or vocational training. A woman may not be required to take up employment if this would interfere with the proper education of her children. Account must also be taken of her household duties and her obligation to take care of relatives living in her household.

By a Decree of 25 September 1939 the Minister of Labour, who in agreement with the Minister of the Interior may allow exceptions to the registration provisions, exempted all service men's dependants from the obligation to register with the employment service.<sup>17</sup> The reason for this step lay in the number of men called up at that time, which led to a rush for registration by dependants. Most of these had either not been employed for a long time or never before engaged in gainful work. At the same time the complete shift from peace to war production had caused some unemployment, and the employment offices could draw on a surplus of more

<sup>16</sup>The pension increases granted in 1941 are presumably also excluded.

<sup>17</sup>Reichsarbeitsblatt, 1939, Part I, p. 494.

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experienced workers, whom they were transferring to war industries. The registration of service men's dependants, therefore, only loaded the offices with unnecessary work, since most employable persons in any case had to have a work book and were in fact already registered.

Above all, the Government seemed to consider it more useful at the beginning of the war to avoid compulsion, in regard to the registration of service men's dependants at a time when they were more sensitive about State interference than ever before. Instead, it tried to encourage them to enter the labour market voluntarily by placing their income from work in a privileged position when calculating the maintenance allowance.

The method of calculation originally used to determine the family maintenance allowance due to gainfully employed dependants was very complicated. Under the Joint Decree of 11 July 1939, an amount equal to one-third of the allowance due was exempted in computing the gross earnings, and only one-half of the remainder of the gross earnings was deducted from the allowance. For fixing the maximum limit based on pre-service income, however, the total earnings were taken into account.

This method of reducing the maintenance allowance by part of the earned income was not changed when the index rate was introduced in October 1939. In the case of women on the index rate, an amount equal to one-third of the maintenance rate to which they would have been entitled had there been no index rate was immune; and one-half of the remaining gross earnings was deducted from the index rate.

An important reform was affected by the Joint Decree of 2 October 1939, when the maximum limits for employed dependants' total income was raised. A fictitious pre-service income replaced the actual income. In all cases in which the dependant entered employment after the service man had joined the armed forces, the dependant's net income at the time he started to work was added to the actual pre-service income; the resulting figure was the new income ceiling. This method of computation was particularly important for persons in the lower income groups, since their income from the maintenance allowance came closest to their pre-service income.

A new change in the calculation of the maximum limit was made by a Joint Decree of 23 May 1940.<sup>18</sup> The increased income of an employed dependant who changed his employment to one demanding higher skill was also added to the pre-service income, with the result that the ceiling on his total income was again raised. In order to discourage a dependant from leaving his employment, the ceiling was lowered by the amount of his income from work if he left without valid reason.

The same decree made technical improvements in the methods of deducting part of the income from the maintenance allowance. Two-thirds of the net income from work (not from the allowance) are now excluded from the computation, and only the remaining one-third of the net income from work is to be deducted from the maintenance or index rate. In the case of a wife with children, the amount deducted is further reduced by one-half of the children's allowance.<sup>19</sup>

<sup>18</sup>Reichministerialblatt f.d.i.v., 1940, p. 1003.

<sup>19</sup>By way of illustration the case may be considered of a wife with two children whose husband had an income of 300 marks and who started to work after he was called up. Her index rate is 113 marks, the allowance for two children at 15 marks each is 30 marks, and the rent allowance is 90 marks giving a total allowance due of 233 marks. If her net earnings are 150 marks, the amount to be deducted from her allowance is 50 marks less 15 marks, (half the children's allowance) or 35 marks. The allowance is thus 198 marks, which together with her earnings of 150 marks gives a total income of 348 marks. This exceeds the actual pre-service income, but since the wife's income from work is added to the pre-service income, the ceiling is set at 450 marks and no further deductions are made (Der deutsche Volkswirt, 1940, p. 1309.)

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Special provision is made for dependants whose income from employment is so low that two-thirds of this income is less than one-third of the local maintenance rate (regardless of whether the allowance is based on the maintenance or the index rate). In this case a portion of the income from work equivalent to one-third of the maintenance or index rate remains immune, and only the remainder of the income from work is deducted from the allowance.<sup>20</sup>

The reforms of October 1939 and May 1940 coincided with two periods in which the Government was particularly concerned to attract women workers to the employment market. By October 1939 many women had retired from work because they were receiving family maintenance for the first time or, in the case of newly married women, because they went back to live with their parents. In May 1940 a general drive for the employment of women was under way to alleviate the shortage of manpower.

**The Application for the Allowance**

The application for a family maintenance allowance need not specify the various grants to which the applicant is entitled, since these are made according to need, whether or not they are applied for. All necessary supporting evidence must be submitted together with the application.

Family maintenance is due from the day on which the breadwinner leaves for his camp or combat unit, and terminates upon his return home from service. In the case of a wage or salary earner, the payment originally ended on the day on which he received his first wage or salary, but by a Joint Decree of 14 December 1940, this was changed to the end of the first full pay period and no deduction is made for any pay received during this period.<sup>20</sup>

Family maintenance may also be given for a period of not more than one month before the application is made if the dependants were in need during that time. In no case, however, may this period begin before the service man has left for service.

The maintenance allowances are paid twice a month in advance.

**Administration**

The local relief authorities are responsible for the administration of the Family Maintenance Act but may delegate this function, subject to their supervision, to the local government authority in districts with a population of over 5,000. The administration of financial assistance to self-employed persons may not be delegated. It should be noted that while the relief authorities administer public relief in their capacity as local government bodies, their duties under the Family Maintenance Act are delegated to them by the Government (because they have the necessary experience, staff and institutions for the support of the indigent) and they must therefore follow Government instructions in this respect. In practice, this means that, while the relief rate is fixed by the local authorities, the family allowances and other grants made under the Act are fixed by Joint Decree of the Ministers of the Interior and Finance. Furthermore, the local authorities are responsible for relief expenditure as part of their own budgets, but four-fifths of their expenditure on family maintenance is refunded to them by the Government. Administrative expenses in respect of family maintenance are not refunded.

<sup>20</sup>For example, if the dependant's index rate is 76 marks and rent 50 marks, the maintenance allowance due is 126 marks. But if he earns 30 marks, one-third of the local maintenance rate of 64 marks is more than two-thirds of the earnings. Consequently, an amount equal to one-third of the maintenance rate, or 21.30 marks, remains immune, and the remaining 8.70 marks of the earnings are deducted from the allowance, giving an allowance of 117.30 marks.

<sup>21</sup>Cf. Boberski, loc. cit.

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The district of residence of the dependant is responsible for granting family maintenance to him. But if the dependant was on relief before becoming entitled to maintenance, the district which granted the relief must also pay the maintenance allowance. With a view to preventing dependants from moving to places with higher maintenance rates, the Act stipulates that a beneficiary who can show good reason for moving, for example, to join a relative bound by law to support them are exempted from this provision.

An appeal against the decision of a local authority with respect to family maintenance may be lodged with the authority within one month of the date on which the decision became known to the dependant. If the authority declines to modify its decision in accordance with the appeal, the case is referred to the supervisory authority, whose decision is final.<sup>22</sup>

The Family Maintenance Act explicitly states that family maintenance is not identical with relief. At no time and in no circumstances is the beneficiary obliged to refund it, provided that it was granted in accordance with the statutory provisions. Family maintenance allowances are not liable to attachment.

The local relief authorities are required to keep the administration of family maintenance separate from that of relief, a rule designed to protect service men's dependants from being stigmatized as indigent. Moreover, the Government achieves another end by separating family maintenance from relief. Germany has a very inclusive relief census, which records the number of persons receiving relief in the various relief groups and every detail of expenditure. By the separation of family maintenance and relief, service men's dependants do not appear in this record. No figures on the number of beneficiaries or the expenditure involved have ever been published.

#### Conclusion

The German system is very flexible. In every case the maintenance granted is adjusted to the beneficiary's needs. The amount differs according to the number of dependants in a family, their position within the family and relationship to the service man, and the local cost of living. It carefully preserves the social gradations that existed before the men left for service. However, the adjustment of the maintenance allowance to individual needs is not achieved by individual case work, but by centralized regimentation which dictates rules for every conceivable situation. Consequently, the system has become extremely complicated. It demands a well-trained staff of office and field workers for calculations and investigations.

The probable reason for this system of centralized regulation is that it facilitates the refunding of the local authorities' expenses. But this is not the only reason. The stricter the regulations imposed on the authorities which grant the allowance, the fewer are the complaints which might weaken the home front.

The maintenance granted is relatively very generous. The National-Socialist system carries to an extreme the concept of the Weimar Republic that the needy must be granted a title to a definite amount, and that public support must be higher in cases where the need has been caused by political conditions than in those where it results from personal maladjustment. The present system adds an especially privileged class, receiving 175 percent and more of the relief rate, to the classes receiving 100 or 125 percent.

The expenditure on family maintenance is enormous, and must have amounted to 5,000 to 8,000 million marks a year since the invasion of Russia. Yet, compared with the total cost of the great gamble, of the war, it is probably regarded as a secondary item.

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<sup>22</sup>Order of 27 April 1942 (Reichsgesetzblatt, 1942, Part I, p. 248)

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APPENDIX B

AGREEMENT BETWEEN GERMANY AND ITALY REGARDING MUTUAL SERVICES AND  
SUPPLIES FURNISHED THE ITALIAN AND GERMAN ARMED FORCES

In execution of Art. 9 of the Agreement to facilitate the payments between Italy and Germany during the war, signed under today's date, and for the purpose of regulating the mutual services and supplies of the Armed Forces of one of the two countries for the detachments of the Armed Forces of the other country which are on its territory or on the territory occupied by it, the Italian Government and the German Government agree as follows:

Article 1

The Armed Forces of each of the two allied powers shall request from the Armed Forces of the other country the necessary funds in Italian or German currency or, since there are no agreements to the contrary, in the currency of the territory occupied by the respective Armed Forces.

Requests will be granted within ten days after ascertaining that they lie within the provisions of the present agreement, without individually examining each of the amounts requested.

The funds shall be requested according to the following distribution:

- (1) For personal allowances: on the basis of the forces present and enclosures A and B attached to this Agreement;
- (2) For expenditures:
  - (a) In the zone of operations, as per Art. 4, point 2;
  - (b) In other territories, as per Art. 4, point 3. For this purpose, an advance of three million marks or twenty million lire is to be appropriated, which will be reimbursed every month upon the presentation of a summary report of the amounts spent.

The German requests for funds shall be presented monthly through the Central Paying Office of the German Armed Forces in Rome to the appropriate Italian Military Authority in Rome. The funds are to be allocated to the Central Paying Office of the German Forces in Rome. However, funds mentioned in 2a and intended for expenditures to be effected in Africa shall be allocated by the Italian Armed Forces to the Italian Supply Office in Africa, which will hand them over to the individual German Armed Forces.

The Italian requests for funds shall be presented monthly directly by the Italian Commands to the appropriate German Offices and granted by these.

Article 2

(1) As available, or the economic situation of the furnishing country permitting, each of the two Armed Forces pledges itself to furnish to the Armed Forces of the other country stationed in its territory or in the territory occupied by them as follows:

- (a) Victuals
- (b) Quarters, furniture, and their maintenance
- (c) Other necessities for the troops
- (d) Services and transportation



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The raw materials necessary for major services or requirements requested by the German troops in Italian territory shall be advanced or replaced by Germany as agreed upon by the military authorities of the two countries. In this respect the Italian troops in German territory would be charged for corresponding supplies advanced to them.

(2) The nature and the amount of the services and supplies shall be established for each area of operations by means of agreements of a specified duration between the Staffs of the two Armed Forces.

Naturally, the Armed Forces of the two countries shall aid and assist each other in general and in cases of military necessity in particular.

**Article 3**

The victuals will correspond in type and quantity to the daily rations allotted to the Army furnishing them in the locality in which the receiving Armed Force is stationed. The same arrangement also applies to the animals.

The Armed Forces of the two countries, with the consent of the authorities in charge of the food distribution, may nevertheless make arrangements for the substitution of certain foodstuffs for others more suitable to the Armed Forces of the other country.

The items not included in the said ration shall have to be furnished by the country of the Armed Forces being provisioned.

However, by previous consent of the appropriate authority, such items will be furnished by the country in which the Armed Forces are located on condition that these items are provided for and included in the quotas for exportation to the country of the requesting Armed Forces and that the quantities supplied be charged to the quota accounts.

**Article 4**

(1) The offices and the units of the Italian Armed Forces in German territory and the offices and units of the German Armed Forces in Italian territory shall refrain from making direct acquisitions in the territories in which they are stationed, such as placing orders with the industrial organizations or requesting any services directly

(2) In the areas of operations, the Italian or German Military Authorities of the spot will be able to make arrangements with each other for allowing direct acquisitions of local products or local services when the Armed Forces which direct the operations are unable to provide themselves with them directly.

(3) In addition to the conditions indicated in the preceding paragraph, expenditures may be made in other territories also for minor needs of the troops within the limits of the funds allotted, as mentioned in Art. 1, point 2b. Also with these sums other necessary expenditures may be met, such as payments for damage indemnity or for assistance to the troops. For the acquisition of articles subject to limitation, in accordance with the provisions of the country in force, the approval of the appropriate office of the other Armed Force must be obtained before hand.

**Article 5**

All receipts and debit notes issued for services or supplies will show the price and the manner by which such price has been computed.

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The prices for services or supplies shown in Art. 3 shall be fixed as follows:

(1) In the case in which the services or supplies are the same as those given to the Armed Forces of the supplying country, the same prices computed during the period corresponding to the latter will be adopted. For such purpose the military authorities will exchange price lists from time to time.

(2) If there is no conformity in the prices for services or supplies, these shall be agreed upon by the offices of the two Armed Forces. In case it will be impossible to reach an agreement on this matter, the price requested by the Armed Forces which execute the services or furnish the supplies shall be applied, subject to the provisions of Article 8.

**Article 6**

The Armed Forces of one of the two countries stationed in the other country or in territories occupied by it will be able to request repairs, modifications or equipment of warships or merchant vessels by the firms of such country or of the occupied territory through the appropriate local maritime authorities.

The nature and the amount of the services shall be determined by the requesting Armed Forces who, in conformity with the obligation to furnish the supplies or replace the raw materials as provided in Article 2, will also test and inspect the equipment.

The requesting Armed Forces shall prepare a contract plan which will serve as the basis for the stipulation of the final contract. The stipulation of the contracts and the payment of accounts necessary in such case as well as the payment of the invoices drawn up by the firms shall be executed by the Armed Forces of the country to which these firms belong, subject to the approval of the requesting Armed Forces.

The same principles apply to repairs and modifications of motor vehicles, aircraft, and other war equipment.

The provisions of this article do not apply in cases in which, by virtue of special agreements, payment in commodities is provided.

The provisions of this article also do not apply in the case of contracts for repairs, modifications of other major services for an amount not exceeding 300,000 lire or the corresponding value in marks excepting the contracts for the usual administration of the equipment. Repairs, modifications, or services will be carried out, but the contracts shall be stipulated by the receiving Armed Forces, subject to agreements with the Armed Forces in whose country the commitment is requested. The payments will be made to the special account "War Materiel".

**Article 7**

The transportation of military personnel and equipment belonging to Italian or German Armed Forces, and effected by any means, constitutes a service as explained in Art. 2, and the following rules apply to it in particular:

1. (a) Taxes and expenditures inherent in railway transportation of personnel and equipment belonging to the two Armed Forces are charged to the Government to which the Armed Forces belong.

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(b) The Italian Armed Forces will assume the payment of taxes and expenditures in connection with the transportation of personnel and equipment belonging to the German Armed Forces, within the limits of the Italian territory or the territories occupied by Italy, at the same rates as provided for the transportation of Italian military personnel.

(c) The German Armed Forces will assume the payment of taxes and expenditures in connection with the transportation of personnel and equipment belonging to the Italian Armed Forces, within the limits of the German territory or territories occupied by Germany, at the same rates as provided for the transportation of German military personnel.

2. (a) The charter parties and transportation contracts as well as the requisition of merchant ships and other private craft for the travel of military personnel and for the transportation of the equipment belonging to the Italian or German Armed Forces shall be respectively stipulated, ordered, and executed exclusively by the Armed Forces of that of the two countries to which the ships belong.

The charter parties already stipulated directly by the German Navy and still in effect shall be transferred to the Italian Navy with the understanding that no substantial amendments to the conditions contained in them shall be made and that the execution of the contracts themselves continues to devolve upon the German Navy.

This understanding does not apply to the charter parties of a specified duration previously stipulated by the German Navy, and which are not valid in excess of three months after the signing of this Agreement. Such contracts shall not be extended after their expiration. The funds necessary for the execution of such contracts shall be allocated to the offices of the German Navy by the Italian Navy.

If the ships belong to the country which charters them and they are in the waters of the other country, the latter will allocate the funds necessary for the management of the ships, exclusive of freight, in its own currency.

(b) For the transport of German Armed Forces made by ships chartered or requisitioned by the Italian Armed Forces, the latter shall provide for the payment of the compensation for the requisition, charter or expenditures, by charging them to Germany. In case of the transport of a mixed Italo-German cargo, the aliquot part to be charged to each of the two parties shall be determined in proportion to the space occupied.

(c) The same procedure shall be followed for the payment and debiting regarding the transport of personnel and equipment belonging to the Italian Armed Forces carried out on merchant ships or other private craft requisitioned or chartered by the Germans.

(d) In cases where indemnity, even because of war, is due for damage or loss of a ship which was employed for transportation by Italian or German Armed Forces, the payment of such indemnity shall be made by the country to which the ship belongs by charging it to the Armed Forces whose cargo was on board ship at the time of the damage or loss.

In the case of a ship with a mixed cargo, the quotas to be charged to each country shall be determined in proportion to the space occupied. The payment shall be made by the country to which the ship belongs, excepting the share due by the other country.

(e) For the effects of this article the ships belonging to other countries shall be of the same type as the ships of the country which has chartered them.

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3. Transportation by air of personnel and equipment belonging to the Italian or German Armed Forces are charged to the Armed Forces to which the personnel or equipment belong.

4. Transportation of personnel and equipment carried out by military means, such as, warships, aircraft, motor vehicles, tanks, etc., is free of charge. Arrangements for transportation permits and for the replacement of raw materials shall be made by the appropriate military authorities.

Article 8

After the present Agreement comes into force, steps shall be taken for the creation of a Mixed Committee. For this purpose, the two Governments will each appoint a delegation composed of five members. The Chairmen of the two delegations shall have the authority to appoint substitute members, invite experts, and to set up subcommittees by mutual agreement for the examination of special cases.

The meetings of the Mixed Committee will take place when necessary or at least once in three months and shall be assembled by both Chairmen upon agreement, who will fix the date, place, and agenda of the meetings.

The Mixed Committee shall make decisions on the following points:

(a) Ascertaining and settling of accounts in cases as provided for in Article 9 and 10;

(b) Fixing of prices for supplies and services as provided for in Art. 2, when no agreement is reached by the competent offices of the two Armed Forces;

(c) Disputes and difficulties that may arise between the Armed Forces of the two countries in computing the services and supplies.

Article 9

The Offices of the supplying Armed Forces shall keep accounts of services, including the allocation of funds, and supplies with the indication of prices.

Each quarter of a calendar year statements of accounts and vouchers necessary for ascertaining the regularity of the entries are to be prepared and delivered to the authorized offices of the other side. The vouchers shall be returned after verification.

The statements of accounts delivered and the vouchers presented shall be examined by competent offices and, as soon as found correct, submitted to the Mixed Committee for final acknowledgement.

In cases of disputes the decision shall be made by the Mixed Committee.

The acknowledgement of the decision of the Mixed Committee shall take place within two months from the delivery of the statements of accounts to the other party.

The amount acknowledged by the Mixed Committee shall be entered in the books by the Offices as indicated in Article 6 of the "Agreement on the prompt handling of payments between Italy and Germany during the war" signed under today's date.

The balance of possible differences successively coordinated by the Mixed Committee shall be made up in the accounts of the following quarter.

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Article 10

Within two months of the coming of this Agreement into force, the Offices of the supplying Armed Forces shall present to the representatives of the other side the statements of accounts relative to the services and supplies effected up to 31 December 1941 together with all the documents necessary for the examination of the individual expenditures.

The Offices after examining and comparing the entries and vouchers presented shall submit them to the Mixed Committee for final acknowledgement. In case of dispute the decision will be made by the Mixed Committee.

The acknowledgement or the decision of the Mixed Committee shall take place within six months of the coming of this Agreement into force. The amount acknowledged by the Mixed Committee is to be recorded by the offices as indicated in Article 6 of the "Agreement on the prompt handling of payments between Italy and Germany during the war" signed under today's date. The balance of possible differences successively coordinated by the Mixed Committee shall be made up in the accounts of the following calendar quarter.

Article 11

In case the Mixed Committee should reach no decision on a controversial question, the latter shall be referred to the Chairmen of the Italian and German Government Boards.

Article 12

All the supplies declared as military equipment and destined directly for the troops of one of the allied countries which are within the customs territory of the other, and which are transported across the customs territory of the other country, are not subject to any customs inspection and are exempt from duty.

Troop transports are not subject to any frontier control whatsoever.

The Supreme Commands of the Armed Forces of the two countries shall make provision that these privileges do not lead to abuse.

Individuals belonging to the Armed Forces of the two countries, who travel alone and cross the frontier of the other country, have to comply with the customs and currency regulations in force. If during the execution of the customs inspection difficulties should arise, the frontier military authorities shall intervene as intermediaries but the right for a decision in the matter remains within the competence of the customs authorities.

Article 13

For the purposes of this Agreement the Italian territory and the German territory are understood to be:

- (a) Italy, Libya, the Italian possessions, Albania, and the territory occupied by the Italian troops;
- (b) Germany, and the territory occupied by the German troops.

The provisions of the Agreement do not apply to Greece.

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Article 14

This Agreement may be revised or amended upon the request of one of the contracting parties.

With the exception of the amounts herein indicated, this Agreement may also be amended by a simple exchange of notes between the Chairmen of the two Government Boards in case of major changes in the number of the troops stationed in the other country.

Article 15

The Agreements between the Armed Forces concluded on 21 December 1940, 12 and 13 March 1941, and 27 June 1941, are to be reviewed by competent Offices of the Armed Forces of the two countries in order to conform them to the provisions of this Agreement.

Whenever the agreements reached between the two Armed Forces deviate from the provisions of this Agreement, they shall be considered as non-existent during the validity of this Agreement.

Article 16

This Agreement comes into force on the date it is signed.

Done in Rome, in duplicate, in the Italian and the German languages on 14 March 1942-XX.

/Signed/ A. Giannini

Clodius

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Enclosure 1 to APPENDIX B

Allowances to be paid to the German Military and Militarized Personnel  
stationed in Italy

Additional per diem war pay  
Front-line allowance (special per diem allowance)  
Flight pay  
Ship's allowance  
Machinist's allowance  
Diving allowance  
Clothing allowance to personnel who dress at their own expense  
Clothing allowance to personnel authorized to wear civilian clothes, as ordered  
Food rations in cash; Mess allowance  
Prizes to personnel who distinguished themselves  
Expense money to civilian personnel assigned to police duty  
Travel and sleeping car expense money  
Reimbursement of travel expense money when travel is not gratuitous  
Contract payments and prizes for assiduous and efficient work to civilian personnel  
Salaries, wages, and allowances to officials, militarized employees and workers regularly stationed in Italy  
Compensation for loss of personal clothing or equipment  
Travel expenses to kin of wounded or ill  
Extra pay for duty in Africa and financial leave assistance to be paid in Italian currency as an exception in accordance with the existing regulations on leave to be spent in Italy  
Advance money to frontier banks for the exchange of currency allowed for exportation  
Subsidies to German military personnel, employees, and workers regularly stationed in Italy  
Quarters and subsistence allowances to military personnel who cannot be billeted in hotels or local messes at the disposal of the German Command

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Enclosure 2 to APPENDIX B

Allowances to be paid to the Italian Military and Militarized Personnel  
stationed in Germany

Salaries or wages, and additional active service pay  
Military pay and any other allowances of general or personal nature  
Family allowance to married personnel or those with dependent children  
Temporary war allowance  
Workers' wages  
Expense account and reimbursement of travel expenses  
Navigator, pilot, and flight pay  
Special ground pay  
Special embarkation allowance for embarked personnel  
Fodder rations in cash  
Prizes and additional pay for enlistment and reenlistment  
Clothing allowance to personnel authorized to wear civilian clothes  
Field allowance  
Additional per diem operations pay  
Outside residence allowance  
Special daily allowance  
Food rations in cash; Mess allowance  
Compensation for loss of animals  
Compensation for loss of harness equipment  
Compensation for loss of baggage  
Allowance and additional pay for special duty or positions and  
specialization pay  
Reward for rescue of equipment  
Pay for unused leave  
Prizes to personnel who distinguished themselves  
Contract payments and prizes to workers for assiduous and efficient  
work  
Expense money to civilian personnel assigned to police duty  
Travel expenses to kin of wounded or ill  
Advance money to frontier banks for the exchange of currency allowed  
for exportation



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APPENDIX C

ITALIAN NAVY DEPARTMENT ORDER REGARDING MUTUAL ASSISTANCE TO THE  
GERMAN NAVY

Rome, 22 April 1942-XX

From: Department of the Navy  
Cabinet

To: Headquarters, Naval Forces, Battleship LITTORIO

Submarine Command at Taranto

Special Naval Force, Cruiser TARANTO

Autonomous Section of Motor Torpedo Boats

Naval Commands of La Spezia, Naples, Taranto, Venice,  
Messina, La Maddalena, Brindisi, Pola

Autonomous Naval Command of Libya, Hq., Tripoli

Autonomous Dodecanese Naval Command, Hq., Rodi

Autonomous Naval Command of Albania, Hq., Durazzo

Autonomous Naval Command of Dalmatia, Hq., Spalato

Subj: Relations with the German Navy

On 14 March 1942, two new agreements regulating the financial relations between Italy and Germany, and the mutual services and procurement for the Armed Forces of the two sides have been signed in Rome and became effective as of the same date.

They supersede the protocol of Berlin of 19 June 1941, and the supplementary protocol of 5 August 1941.

Depending on the modifications and innovations that the new texts introduce into the coordination of relations, the temporary general rules to be followed from now on are reported herewith until, with the understanding on the part of the Germans, terms of various special agreements, originating from the general agreement of 14 March 1942, shall be set up.

Funds

Funds shall be furnished to the Central Bank of the German Armed Forces in Rome exclusively on the basis of the orders of Maripors /Officer Personnel and Administration of Military and Scientific Services/ approved by a special Committee constituted in the Foreign Ministry for the consideration of such requests.

As an exception to this rule, only procurement for agencies, commands, ships or units of the German Navy stationed in North Africa shall be provided by the North African Supply Corps of the Italian Army in Tripoli, and on the basis of the decisions of the aforementioned Committee in accordance with the instructions which it will receive from the Staff of the Italian Army.

In case of absolute and urgent necessity, and upon request, the peripheral agencies of the Italian Navy shall anticipate funds to ships, units or military personnel in transit, on strictly limited occasions, by transmitting the receipt to the Navy Department in Rome which, through Maripors, shall arrange for the reimbursement.

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Work

With the exception of cases provided under the title "Acquisitions and Supplies," the German authorities are under no circumstances to apply directly to private firms but shall make requests to the Headquarters or Commands of the Italian Navy for all the necessary work, both on board ships or by arrangement on land.

Upon receiving the request, the said Commands in concert with the German agency, and availing themselves of the works administrations or the local technical offices, shall determine the nature and volume of services and their expected cost, and report to the competent General Directorate of the Navy Department for executory provisions by specifying also if the work is to be performed in a naval establishment or by a private firm (name of firm indicated) and by bringing into evidence the points under the title "Reimbursements..."

The fixing of prices, stipulation of contracts, and payment of accounts or invoices for works in connection with repairs and modifications of warships or merchant ships in the amount not exceeding 300,000 lire, and for works in connection with the usual maintenance of such ships for even a larger amount than that indicated above, if given to private firms, shall be executed by the Italian authorities. The German authorities shall draw a contract draft which shall serve as a basis for the stipulation of a final contract, and shall proceed to the inspection and testing of the services both directly or with the assistance of the technicians requested from the Italian naval authorities, if considered necessary.

The contracts for repairs and modifications of warships or merchant ships representing an amount above 300,000 lire, and which do not include the usual maintenance of such ships, shall be concluded with the firms directly by the German Navy, with the Italian authorities participating only as regards the assignment of shipyards, fixing of prices and possible technical supervision, if requested. The accounts and payments for such work shall be the direct responsibility of the German Navy through the special clearing account "War Materiel."

It is to be borne in mind that for this purpose the Finance Ministry arranges the details of financing for firms with the main banks for German Military orders.

A contract shall be approved by the competent General Directorate which shall inform (through the Cabinet) the Ministry of Finances and the Ministry of Exchange and Currency for participation in the agreement between the firms and the contracting German side, and in the regulating of the payment in clearing house.

The settlement accounts for work of the aforesaid nature carried out at Naval establishments shall also be transmitted to the General Directorate of the Navy Department with a separate list of information to be transmitted through the Cabinet to the Ministry of Finances and to that of Exchange and Currency.

After having informed the Navy Department, the peripheral commands may immediately make arrangements for the work to begin without waiting for approval, when the cost of the work does not exceed 40,000 lire, or regardless of the amount, when the urgency of war need is evident.

Work necessary for installations on land shall all be carried out by the subordinate offices of the *Marigenimil* / *Genio Militare Marittimo* - Naval Corps of Engineers/ which shall be responsible for the contracts and payments by reporting to the Navy Department as per the second paragraph of this heading and with the authority as mentioned in the preceding paragraph.

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The local commands shall inform the firms within their territorial jurisdiction through the local technical offices that they are not to conclude contracts with agencies of the German Navy without the cognizance of the local Naval Authorities and that they are to notify the latter of any request coming directly from the Germans. Cases specifically mentioned under the title "Acquisitions and Supplies" are excepted.

Special accounting rules for recording the work shall be issued by the Marisera /Office of Administrative Services/ as a supplement to the order.

Victuals

Victuals necessary for German Military personnel shall be withdrawn only in the same kind and amount of the daily ration established for Italian naval personnel of corresponding destination, in the locality in which the delivery is carried out.

Thus, for example, the German submarine personnel shall be allotted the same articles and quantities comprising a special ration for submarines during a period of time at sea, and for those on shore, the rations of personnel on shore, etc.

The withdrawals shall be debited according to the rules of the enclosure to the Order of 20 September 1940, or any other subsequent enlarged and revised provision that may be issued.

The coupons and the settlement accounts signed by the German agency shall indicate the forces present and the duration for which the withdrawal is intended, with the Italians exercising the same controls as those for the units of the Italian Navy. In the absence of such information, victuals shall be allotted in the amount sufficient for the estimated Italian forces and for the estimated duration of the mission of the ship or of her permanence at the headquarters of the unit.

Articles not included in the ration of an Italian sailor or requested in excess to the amount allowed shall be provided through supplies sent from Germany since direct acquisitions in Italy are prohibited, with the exception of those cases which are covered by the exportation quota and which shall be submitted to the Navy Department for the verification of the article and capacity of the quotas.

When substitution of some ration articles for others available in the warehouses of the Italian Navy or on the market are requested by the Germans, reports shall be made to the Department for appropriate agreements with the German Command. In cases of urgency or of small quantities, the Naval Commands shall make decisions on the spot without waiting for the approval of the Navy Department.

Billets of German military personnel either are to be attached to corresponding messes of the Italian Navy, or have their own messes which shall be handled in the same manner as Italian billets with civilian rations, or issue individual mess passes to their personnel.

In the first case the German expenditure shall be summed up each month, and, when approved by the German Command, debited as any other service. German military personnel attached to Italian messes on board ship or ashore shall be handled in the same manner for rations only.

The respective amounts shall be deducted equally from the allowance sheet, a statement of which, approved as above, and in the absence

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of a Command, by the personnel who availed themselves of the services, or at least by the highest in rank among them shall serve for the debiting procedure.

German military personnel on detached service ashore shall pay in person for meals consumed both at messes of the Italian Navy or at hotels or restaurants.

The same restrictive meal regulations, which may be issued for Italian messes, shall also apply to German messes.

Hospital Expenses

German military personnel hospitalized at Italian Naval hospitals or sick bays, or on board Italian hospital ships shall be debited only with the rations procured in the same manner as indicated under the heading "Victuals" for German military personnel attached to Italian messes on board ship or on shore.

Incidental expense met by the Italian Navy over and above the limit, as for example, consultations, or loans of prosthetic sets, etc., shall also be debited.

Medical assistance, medicines, and operations shall not be debited.

Officers and noncommissioned officers of the German Armed Forces shall enjoy the same treatment as Italian officers and noncommissioned officers, and the hospitalization charges shall be debited according to rank.

Clothing

It is confirmed that procurement of clothing for German military personnel is prohibited, except in cases of providing shipwrecked persons with bare necessities according to the weather when German authorities are unable to provide the indispensable clothing items on the spot.

These procurements shall be debited in the same manner as those for victuals and in accordance with the enclosure to the Order of 20 September 1940, or any other enlarged and revised provision which may be issued.

Acquisitions and Supplies

The German authorities shall refrain from making direct acquisitions in Italian territories as well as requesting services directly.

Minor expenditures for services listed below are excepted:

- Maintenance and repair of immovables
- Acquisition of supplemental non-rationed foodstuffs
- Acquisition of cooking or mess equipment (implements, pots, utensils)
- Acquisition of materials for cleaning of premises
- Supply of tools and materials for minor repairs
- Chartering means of transportation for occasional trips of short duration
- Payment for work in connection with occasional loading and unloading services
- Washing of clothing or billet items when contracts for such services have been concluded with Italian firms by the Germans

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Various articles and items for assistance to military personnel  
Compensation for damage caused to a third party by German personnel or by Italian personnel under German supervision for an amount ascertained by competent Italian offices  
Unforeseen and urgent needs which cannot be supplied through the usual means  
The German Navy shall also provide directly for expenditures in connection with the management of cargo ships flying the German flag (agents' accounts, pilotage dues, port charges, loading and unloading expenses, etc.)

It is therefore agreed that, except for the above indicated minor expenses and those inherent in the operation of ships, everything else within the present rules and needed by agencies, commands, ships, or detachments of the German Navy, shall be requested from the Italian Naval Commands, which shall provide the items as soon as available. In the case of rationed or allotted goods or those difficult to obtain, the competent General Directorates of the Navy Department shall be notified, and these shall issue instructions in each case. Requests which may be considered as not sufficiently justified by the Italian authorities shall be referred to the Navy Department (Cabinet).

Fuel, Gasoline and Lubricants

When fuel, gasoline or lubricants are requested by the Germans, the local authorities shall make a note of the quantity and quality of the materials and the reason for which the request is being made. However, the transfer of the said materials, approved by the Navy Department, shall not be effected without a written guarantee of the requesting German authority to the effect that the quantities supplied shall be restored promptly.

The General Directorate shall work out successively, through the Cabinet, the procedure with the Supreme Command for the part within its authority.

Consumables

Requests for consumables made by ships or agencies of the German Navy shall be complied with only within the limits of quantities allotted in accordance with the special lists in force for the Italian Navy for similar ships or agencies, with proper adjustments of these allotments providing larger quantities, and taking into consideration the duration of the stay of a ship in our bases and the temporary or permanent nature of the requesting agency.

A monthly statement of account shall be issued and sent to the competent General Directorates of the Navy Department which shall transmit it through the Cabinet to the Supreme Command for a higher order both regarding the restoration of consumables to the establishments of the Italian Navy and the verification on the part of Germany of the restoration carried out.

Barrack and Furnishing Equipment    Mess Equipment

Requests for such articles shall always be made to the Navy Department for the appropriate decisions, with the exception of minor cases.

This equipment is not transferred but given for use gratuitously against a receipt indicating the condition of each article. An article shall be returned when no longer needed, but missing or greatly damaged articles shall be debited according to the price existing during the time of restitution and not to that when the article was first delivered.

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The cost of necessary repairs shall be debited in order to put the returned article back into working order. Wear of the article due to normal usage shall not be debited.

Therefore, at the time of restitution, the Germans shall receive back the receipt issued at the time of delivery, and issue in turn a written scaled and signed note clearly showing the name of the agency and the person at the head of it, and the name of the person in charge of the operation, certifying missing or greatly damaged articles and the acceptance of the corresponding debiting. The said debiting, when possible, shall be agreed to immediately by signing the amount of the note. In the event there are no data available for this, fixing the amount shall be the responsibility of the competent General Directorate of the Navy, which shall annotate the note in question.

Payments.

Payments for acquisitions, works or supplies, chartering of motor vehicles or floating equipment as well as for any services pertaining to the German Navy in Italy shall always be made by the Italian authorities in accordance with the same rules in force for payments for the Italian Navy. Payments as listed in paragraph 4 under the heading "Work", and others specifically provided by these rules shall be excepted.

Debiting to the German Navy

Any expense borne for the German Navy, the aggregate amount of work carried out directly in the establishments of the Italian Navy and not regulated per via clearing, and the services, materials, and supplies procured shall be reported to the competent General Directorate of the Navy Department in accordance with the enclosure to the Order of 20 September 1940 and Article 7 of the Order of 2-3 March 1941, No. 51, or successive enlarged and revised rules that may be issued. In the case of unpaid balances, especially of those prior to 31 December 1941, it is suggested that the Department be notified immediately, since a general statement of account covering the entire period of up to that date must be presented not later than on 14 May.

Motor Vehicles

Agencies of the German Navy when in need of motor vehicles may acquire same through purchase or chartering of private motor vehicles or through transfer for temporary use of motor vehicles owned by the Italian Navy. In the first case, the agencies of the German Navy shall make provisions for contracts and payments, in the second case, the use of vehicles shall be gratuitous but the transfer must be authorized by the Department if the use is to be continuous, and only the restoration of used tires, gasoline, and lubricants shall be charged to the Germans.

The materials used shall be recorded in a special monthly statement of account which shall be handled according to the same procedure as that indicated under the heading "Consumables".

Upon returning the vehicles received for temporary use, the Germans shall also restore the materials necessary for the repair of the vehicles, if damaged.

Transfer of Small Craft for Temporary Use

Tugs, barges, pontoons, and other small craft for local use owned by the Italian Navy, which may be requested for the temporary needs of

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the German Navy, shall be loaned by the local authorities for gratuitous use in consistency with the demands of the service of the Italian Navy itself and upon the guarantee of the restoration of fuel, lubricants, and consumables.

In the event the use of the craft is to be continuous, the local Commands shall refer to the Department for major decisions.

**Quarters**

Quarters shall be furnished by the Italian Navy upon the approval of the Navy Department, and where necessary, hotels and houses shall be rented with contracts concluded directly by the Italian Navy which shall pay the rents and make appropriate arrangements with the civil local authorities preventing the depreciation of the location.

Similar arrangements shall be made for future requests for the occupation of grounds or buildings.

**Chartering of Ships and Transportation by Sea**

Chartering of ships and transportation by sea cannot be carried out directly by the Germans but shall be contracted for by the Italian Navy. Small craft for local use requested by the German Navy can be chartered directly by the peripheral Italian authorities which shall fix the prices and conditions, while for ships of larger tonnage, the local high commands shall refer to the Maristat /Navy General Staff - Stato Maggiore della Marina/ which shall make the necessary provisions.

The Italian Navy shall provide for the payment for the requisitioning, chartering, expenses provided in the contracts, and any other additions in connection with transportation carried out for the German Armed Forces by means of merchant ships chartered or requisitioned by the Italian Navy. These expenses shall be debited to Germany and, therefore, the dependent Commissalies /Commissione Allestimento Navy - Naval Purchasing Commission/ shall notify the Maripera by a monthly report of transportations carried out as mentioned above, by furnishing all the necessary data for the registration of the debit.

In the case of mixed Italian-German cargo on merchant ships, the chartering and possible loss of a ship shall be charged to both Navies in proportion to the space occupied.

For the purpose of appropriate debiting, the Commissalies shall notify the Maripera by a monthly summary of the aliquot to be charged to the Germans.

Transportation of persons and goods carried out by military means such as, warships, aircraft, motor vehicles, tanks, etc., are gratuitous against a guarantee of restoration of raw materials (fuel, gasoline, lubricants, tires), provided the means of transportation has been moved and used for the exclusive use of the Germans.

**Railway Transportation**

Agencies of the German Navy concerned shall make requests for railway transportation to the Army Staff, Department of Transportation (Superesercito - Transporti).

The cost of railway transportation borne for German authorities and carried out by the Italian Naval authorities shall be summed up in two separate lists according to whether war materials or war booty, or other materials in general are involved, with payment in clearing on the part of the Germans in the first case, and debiting as for all other expenditures, procurements or services, in the second case.

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**Labor**

No Italian or native workers can be hired by German commands or agencies in Italy or in Italian occupied territories without the approval of local authorities of the Italian Armed Forces in order not to derange the demands for labor on the Italian part, the trade union organizations or the existing wages. The agencies of the Italian Navy upon receiving a request from the Germans shall make provisions in accordance with the circular letter of the Marinaff, No. 29994 of 23 April 1941, or any other successive revised provision.

**Restoration of Raw Materials**

As soon as a request for work is made by the Germans, as mentioned above, the Naval authority to which the request is being submitted shall notify the Navy Department which shall determine whether the work must be carried out by Naval or private establishments.

As said above, the work shall always be divided into two categories: first, for an amount of or below 300,000 lire or regular maintenance; second, work of cost exceeding 300,000 lire.

In the event the Navy Department determines that the work is to be carried out by Naval establishments, the peripheral technical authorities in agreement with the local German authorities shall compile a list of materials necessary for the execution of the work.

The local German authority shall apply to the German Naval Command in Italy, located in via Principessa Clotilde 29, Rome, which shall send the requested materials directly to the Italian Naval shipyard which is to carry out the work; the said shipyard upon receiving the materials shall begin work.

In the event the Navy Department determines that the work is to be carried out by private shipyards, the firm so designated and under the supervision of the Naval technical authority shall compile a list of necessary materials and submit it to the local German authority for approval by a special seal and endorsement, or, in the absence or approval of the Central German authority, to the Italian Naval authority supervising the work.

These lists, agreed upon and approved by the German authorities and the supervising local Italian authorities shall be sent to the said German Naval Command which shall make provisions for the shipment of the materials.

As already said for Naval works establishments, private shipyards shall not begin work prior to the arrival of the materials shipped by the German authorities.

The procedure mentioned above refers to normal cases. However, when it is a question of really urgent work inherent in war need, which are especially pointed out to the German authorities or considered such by the Italian authorities, they shall not be delayed until the arrival of the materials from the German side.

In such cases, the peripheral local authorities shall submit a list of necessary materials, compiled as mentioned above, to the Navy Department, whether Naval or private shipyards are involved.

The Navy Department, upon the approval of the High Command, Office of War Potential, shall authorize the use of stored materials, if available.

The aforesaid lists of materials must reach the Department with a written note signed and validated with the seals of the German Naval



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Command by which it pledges to return the materials loaned by the Italian Navy due to the urgency of the work, as soon as possible.

All the materials which are to be transferred by Naval establishments, even though subject to restoration, shall equally be entered in the statements of account to be debited to the German Navy.

Only materials in connection with the works shall be listed in the notes, such as: metallic materials for any stage of manufacture; timber; electrodes for electric welding; fuel and lubricants for testing, etc.; leather; rubber; lining in general; non-conducting materials; metallic utensils. Miscellaneous materials whose restoration is not considered indispensable are excluded. However, it remains understood that even the material which is not to be restored, such as: rags, cotton remnants, small timber for shoring or scaffolding, etc., shall be charged to the account as in the cost of the jobs.

In addition to the materials in connection with the work consumables also are subject to restoration, such as: rubber, fuel, gasoline and lubricants, as mentioned under the respective headings, and in general, all the remaining materials which are being furnished, if necessary.

**Prices**

Excepting the provisions under the heading "Quarters", the prices to be debited to the German Navy shall be fixed in accordance with the following criteria and corresponding to those which would be followed if the procurements were made to other Italian Armed Forces:

- (a) Invoice price for local purchases
- (b) The same transferring price as charged to the agencies of the Italian Navy for materials, foodstuffs and articles obtained from Naval depots or establishments at a transferring price.
- (c) The current price for materials as in (b) but having no transferring price.

Since the receipts of the German agencies are to show the debiting prices of materials and services, but should difficulty arise in accepting them, especially in cases not covered in (a) and (b), prices, considered equitable by the Italian part, shall be marked as provided at the end of paragraph 2, Art. 5 of the Agreement, and under no circumstances shall the price marking be omitted altogether.

**Expenditures, Procurements and Services for the German Army and Air Forces**

On the whole, it is established that for any need the Armed Forces of one of the two countries stationed in the territory of the other may have, they refer to the corresponding Armed Forces of the latter, which shall provide what is necessary. Consequently, agencies of the Italian Navy shall comply only with the requests of the German Navy within the limits of these rules.

However, as for units or agencies of the Army or the Air Forces of the Reich referring for their needs to the Italian Naval authorities in locations where agencies or commands of the Italian Army or Air Forces are absent or are in no position to provide what is necessary, the Italian Naval Command shall make provisions according to the same criteria or directives contained in these rules, acting both as concerns the method of complying with the requests and the notes

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and receipts to be obtained from the German side, as well as the method of accounting in the same manner as if it were the case of Naval agencies of the Reich.

The lists and necessary statements of accounts for such expenditures, procurements or services requested by these rules or any other enlarged rules that may be issued shall be drawn up separately from those pertaining to the Navy of the Reich.

Notifications for the purpose of debiting

All the dependent authorities are abided by the strict observance of these and successive provisions regulating the same matter, and by the terms which shall be established for the pertaining notifications admonishing that sanctions as provided in Art. 82 of the Royal Decree of 18 December 1933, No. 2440, relative to the administration of the patrimony and general accounting of the State, shall be applied to those who will not comply with them.

Temporary Provisions

The works and procedures in course shall be as far as possible fulfilled in conformity with the present rules, and uncertain and controversial cases shall be promptly referred to the Navy Department (Cabinet).

ARTURO RICCARDI  
Under Secretary of State

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APPENDIX D

ITALIAN NAVAL ACCOUNTING INSTRUCTIONS REGARDING MUTUAL ASSISTANCE TRANSACTIONS

NAVY DEPARTMENT

GENERAL DIRECTORATE OF ADMINISTRATIVE SERVICES

Administrative Accounting Inspectorate

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RULES FOR TRANSFERS, WORK, AND VARIOUS SERVICES RENDERED WITHOUT PAYMENT  
IN CASH TO FOREIGN AGENCIES, REPRESENTATIVES OR TROOPS

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PREMISES

In reference to the provisions of Articles 49, 50, 51, and 52 of the R. D. L. /Royal Decree-Law/ of 21 June 1940, No. 856, converted with modifications into law on 21 October 1940, No. 1518, on patrimonial and financial management in time of war, the procedure to be followed in case of transfers, work and various services rendered without payment in cash to foreign agencies, representatives or troops, and to be, therefore, charged to the foreign government concerned, is outlined in the following rules.

Any service to be rendered to a foreign agency shall be authorized by the Department, or, as delegated by it, by the highest ranking local authority within the limits prescribed by the instructions received for this purpose.

The procurement of funds is usually reserved for the Department which provides it in accordance with the formalities established by a special agreement stipulated with the foreign government concerned.

The request for services by a foreign agency shall be made on a special coupon clearly showing the title of the requesting agency, the full name and rank of the person at the head of it, and the specification of the service.

The Department should be notified in the shortest time possible in a manner prescribed by the following rules.

CHAPTER 1

TRANSFERS

A. Agencies which are legally accountable

- (a) Warehouses of Working Establishments, Technical Offices and Light-House Areas

Upon the presentation of a coupon, an order for the allotment of materials requested for transfer shall be drawn up in three copies on form 45 Reg. Ars. (7) and handled in the following manner:

The consignee shall deliver the three copies of the order, with the first copy showing the catalog prices, to the Administrative Office. The latter shall return them to the consignee after having indicated in the second and third copies (by properly matching the columns of the order) the current value of the transferred materials and after having validated the figures by endorsement.

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The consignee, at the moment of the acceptance of the materials for the requesting foreign agency, shall hand the second copy of the order to the person authorized to make delivery of the materials and have him sign his full name and rank on the third copy of the order in acknowledgement. The two orders, (the first and the third) remaining in possession of the consignee, will be submitted by him to the Accounting Office which shall return the first copy, provided with a debit note to the foreign government to serve as an instrument of discharge, to the warehouse, and forward the other copy, by way of the Department's General Directorate, to the Central Accounting Office for the purpose of completing the documents debited to the Foreign Government concerned.

The debit note on the part of the Accounting Office shall be worded as follows:

"In conformity with and for the effect of the provisions contained in the R. D. L. /Royal Decree-Law/ of 21 June 1940, No. 856, converted into law on 21 October 1940, No. 1518, it is made known that a copy of the duly receipted document is transmitted to the Navy Department for the prescribed debiting procedure.

The aggregate value of the transferred materials in Lire.....  
(words and figures) is approved."

Chief, Accounting Office

If the warehouse should transfer raw materials to the foreign government, with the latter's guarantee of restoring them, the transfer shall be handled as if it were a definite settlement.

(b) Fuel, Gasoline, and Lubricant Depots and Consumable Stores

Form 45 shall be drawn up in the same manner as indicated in (a) but the transfer shall take place only upon a written guarantee of the requesting foreign authority that the quantities supplied will be promptly restored. This guarantee does not exclude the settlement of the debit of the foreign agency, which shall have to take place on the basis of the price list of fuel, gasoline, and lubricant, and that of the current prices of consumable materials.

(c) Victuals and Clothing Warehouses

In case of transfer of foodstuffs three copies of a settlement account will be drawn up on form T. XXV, No. 1610 of the catalog as provided in Art. 105 of the Provisional Instructions for the application of the Royal Decree of 15 December 1932, No. 2040 (D.C.G.2) estimating the transferred foodstuffs according to the prices in force.

A copy of the account shall be delivered by the authorized Maricommi /Office of the Naval Supply Corps/ to the requesting foreign agency which shall acknowledge receipt by signing the second copy.

The second copy of the account together with the third copy and the withdrawal coupon shall be submitted to the Navy Department (Maricommi) for further forwarding to the Central Accounting Office.

The Accounting Office shall retain one copy and return the other with a debit note. The latter shall be sent by Maricommi Roma /Office of the Naval Supply Corps in Rome/ to the transferring Maricommi which shall regard it as a discharge document for all purposes.

The procedure similar to that established for all the Maricommi shall be followed by the competent Command for transfers carried out by the victuals warehouse of Augusta.

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The same rules as established for the transfer of victuals shall apply to the transfer of clothing, by drawing a settlement account on form T.XLVI, as provided in Art. 113 of the above mentioned D.C.C.2.

(d) Medical Supply Depots

In case of the transfer of medicines, the depots will draw a note on form 58, as provided for in the plan of the Management and Accounting Regulations for Italian naval vessels and agencies on land D.G.C.3, 1940 issue, in accordance with the instructions given in (a) for forms 45 Reg. Ars., by estimating the medicine transferred according to the prices in force.

(e) Warehouses of the Corps of Engineers for the Navy

The transfer of equipment on the part of the Warehouses of the Corps of Engineers for the Navy will be shown by form 25 of the Work Regulations of the Corps of Engineers appropriately adapted, by following a procedure similar to the instructions given in (a) for form 45 of Reg. Ars. (7).

B. AGENCIES WHICH ARE NOT LEGALLY ACCOUNTABLE

The transfer of materials (excepting victuals and clothing) by Italian naval vessels or agencies on land which are not legally accountable shall be carried out as follows:

The transferring agency, upon the presentation of the withdrawal coupon by the foreign agency, shall draw an order, in duplicate, for the delivery of the materials to be transferred with the description of the materials according to the nomenclature.

Then it shall send the two copies of the order to the Administrative Office for the latter to mark the current value of the materials to be transferred and to validate the figures with an endorsement.

The two copies of the order shall then be returned to the transferring agency which at the moment of the delivery of the materials shall hand one copy to the person of the foreign agency authorized to take delivery and have him sign his full name and rank on the second copy in acknowledgement.

The transferring agency shall submit the latter copy of the order to its Accounting Office for the issue, on a separate sheet, of a debit note which it will attach, in substitution of the usual vouchers, to the request submitted to the competent warehouse in order to have the transferred materials replaced.

If the warehouses, from which the transferring authority shall have to obtain the replacement of the transferred materials in the future, are subordinate to various agencies, the said authority shall draw as many copies of orders as there are warehouses and the Accounting Office shall draw a corresponding debit note for each order.

The debit note shall be worded as follows:

In conformity with and for the effect of the provisions contained in the R.D.L. /Royal Decree-Law/ of 21 June 1940, No. 856, converted into law on 21 October 1940, No. 1518, it is made known that the order dated . . . . drawn by . . . . (name of transferring agency), evidencing the delivery to . . . . (name of requesting agency) duly receipted by the receiver, has been transmitted to the Navy Department for the prescribed debiting procedure.

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This order concerns the warehouse . . . . . for the following materials . . . . .

Chief, Accounting Office

The Accounting Office shall submit the copy of the order in its possession to the Central Accounting Office, by way of the competent General Directorate of the Navy Department, for the prescribed debiting to the Foreign Government.

For the transfer of victuals by the depots which are not legally accountable, an order shall be drawn, in triplicate, proving the transfer, as per Art. 150, No. 3 of the Management and Accounting Regulations of the Italian naval vessels and agencies on land (D.G.C.3, 1940 issue). Such order shall have the same course as that for the settlement accounts form 1610 (D.C.C.2) of legally accountable victuals and clothing warehouses, with the only difference that while for these latter the third copy accompanied by a debit note of the Central Accounting Office shall be enclosed with the legal accounting, for the Depots, instead, the third copy with the debit note shall be attached to the quarterly statement of accounts, as per Art. 156 of the above mentioned D.G.C.3, 1940 issue.

For the transfer of clothing on the part of depots which are not legally accountable, the procedure shall be the same as that established for the transfer of victuals, as indicated in the preceding paragraph, and the third consignment order together with the attached debiting note shall be enclosed with the statements of account by the transferring depots, as per Art. 215 of the Regulation D.G.C.3, 1940 issue.

CHAPTER II

WORK

Work Performed by Factories, Repair Ships and Repair Shops of the Navy

For work performed on the basis of the authorization received, the workshop shall make sure that the foreign authority signs his full name and rank on a declaration giving a detailed description of services received, the amount and nature of materials used, and the total number of days worked. Also it must show whether the raw materials used were furnished by the foreign authority requesting the work or that such authority had given the guarantee that they will be restored.

Another copy of the above mentioned declaration signed by the workshop manager and by the Officer in charge and endorsed by the Director shall be delivered to the receiving foreign authority.

The workshop shall send the declaration, signed by the foreign authority, and a copy of the work order, acknowledged by the Accounting Office, to the Administrative Office for the drawing up of a settlement account in which the raw materials furnished by the foreign agency shall not be counted. The status of such raw materials shall be recorded in a special account.

The Administrative Office, in turn, shall draw up two copies of a settlement account showing the total amount of the expenditure (including the quota of general expenditures established for agencies not pertaining to the Navy) which shall be debited to the foreign government on the basis of the current prices, and shall send them to the Accounting Office by enclosing the declaration of the work performed signed by the foreign authority, and a copy of the work order with one copy of the settlement account.

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The Accounting Office shall supply one copy of the account with a debiting note similar to that provided in Chapter I, and thus completed, send all to the workshop to be attached to the work order; the second copy of the settlement account with the documents enclosed with it shall be sent by way of the competent General Directorate of the Navy Department to the Central Accounting Office for the prescribed debiting procedure to the foreign government.

Work performed by various agencies

The agency which has executed the work shall draw up a declaration, in duplicate, similar to that prescribed in the preceding paragraph, as well as a settlement account of the work, also in duplicate, whenever it has the necessary data for making the evaluation; in the contrary case, it shall send the above mentioned declaration, signed by a foreign authority in acknowledgement, to the nearest competent executive office for such service for the drawing up of the settlement account.

The handling of the aforementioned account, as regards the Accounting Office, shall be identical with that indicated in the preceding paragraph.

CHAPTER III

LOANS

The loan of materials to a foreign agency is made gratuitously in the absence of instructions to the contrary by the Department.

A special order form 45 Reg. Ars. shall be written for the materials loaned in which the status of their use shall be indicated. At the time the materials are returned, a memorandum certifying the status of the materials with the specification of the extent of possible damage sustained and the amount of repair necessary for restoring the articles returned shall be written; natural wear of the materials shall be disregarded. Missing articles or those greatly damaged shall be debited according to prices existing at the time of the return of the materials.

If during the loan period spare parts of the materials shall be furnished or repair of the articles loaned made, a supplementary order corroborating the operation shall be written.

The Accounting Office shall send a summary list of all the loans made within the course of each month and of all the articles returned to the Central Accounting Office by way of the General Directorate of the Navy Department. With this list must also go a memorandum of restitution showing that an equivalent number of articles not returned was debited to the foreign agency, or a memorandum showing the amount of repairs necessary to put the articles returned into working order.

(a) Loans of materials charged to legally accountable warehouses

The order of delivery, form 45, shall be drawn up in three copies of which one to be given to the requesting foreign agency, the second, signed by the foreign agency, to be retained by the Accounting Office for the purpose of the settlement in due time of future compensations charged to the foreign agency, and the third copy, also to be sent to the said Office, which shall forward it to the transferring agency with the following declaration:

"In conformity with and for the effect of the provisions contained in the R.D.L. /Royal Decree-Law/ of 21 June 1940, No. 856, converted into law on 21 October 1940, No. 1518, it is made known that for the

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materials listed in this form whose aggregate value of nomenclature is of Lire . . . . . (words and figures) . . . . . a debit entry to the . . . . . government has been opened under the account "Loans" kept by this Accounting Office.

It is also certified that a copy of this document, duly receipted, is retained by this Accounting Office for the purpose of defining the ratio between the Navy and the receiving agency."

Chief, Accounting Office

At the moment the materials loaned are being returned, an appropriate memorandum shall be drawn up in two copies, of which one copy, signed by the warehouse consignee, shall be given to the representative of the foreign agency, and the other copy, with the signature of the receiving consignee shall be transmitted to the Accounting Office for the issue of a charging order and for its registration.

In the event that the foreign government is to be debited, a third copy of the memorandum of restitution, signed by both parties, shall also be sent to the Accounting Office which shall attach it to the order of delivery, as per the preceding paragraph, and send it to the competent Directorate for the drawing of a settlement account. This account together with all the documents which have originated it, shall be sent to the Accounting Office, which, after having made the necessary entries, shall forward it, by way of the Department's General Directorate, to the Central Accounting Office for debiting to the foreign government and for the issue of an appropriate debit note to be sent to the Accounting Office for registration.

In case the necessary data for settling the debit are missing, the latter shall be determined by the competent General Directorate of the Department.

(b) Loans of materials on the part of other agencies

The same procedure as that indicated above shall be followed, with the only difference that the second copy of the orders of delivery or re-delivery shall serve exclusively for recording the changes to be made in the inventories, records of allotments and current accounts.

It is to be remembered that for the transfer of materials necessary for the use of the articles given on loan (for example: fuel, lubricants, etc.) the rules as indicated in Chapter I (b) shall be observed.

CHAPTER IV

CHARTERING OF SHIPS OR FLOATING EQUIPMENT

The chartering of ships or floating equipment shall be based on a written contract concluded with the agent or the owner of the ship or the floating equipment.

The invoices issued by the agent for the chartering concluded by the local authorities delegated by the Department shall be submitted, before they are paid, to the foreign authority concerned for endorsement confirming the actual use of the service invoiced.

Upon payment, the invoice shall be transmitted to the Navy Department (Mariners - Officer Personnel and Administration of Military and Scientific Services) for forwarding to the Central Accounting Office which will issue a debit note to be sent, by way of Mariners, to the paying agency for inclusion in the expenditure account.



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The invoice proving the chartering contracted directly by the Department and already approved by the foreign agency-user shall be transmitted to the Maricommi (Office of the Naval Supply Corps) charged with making the payments on the credits granted, and for the subsequent handling of the invoice in accordance with the procedure as indicated in the preceding paragraph.

In the case of chartering a ship made in behalf of the Navy, even if the transportation should be made for a foreign authority, the quota of the total expense to be charged to the foreign authority shall be determined in proportion to the space of the ship occupied by this authority. The Department (Maripers) shall be notified of the quota by a monthly summary.

CHAPTER V

PAYMENTS

A. Payments for acquisition of materials, work, and various services committed to private firms

Any services rendered by a private firm to a foreign agency, which require payment on the part of the Navy, shall be carried out, bearing the following in mind:

(a) Payment shall always be made with credited funds allocated by the Department and charged to Art. 78 b in the current year and to corresponding articles in the successive years;

(b) Expenses originating from services rendered to a foreign agency shall be borne by the Italian Navy in accordance with the rules currently in force in the Italian Navy regarding similar operations.

A peripheral authority shall request an authorization of the Department for rendering a service if the corresponding expense is in excess of 40,000 lira. In case of an emergency, the request should be made by telegraph;

(c) Materials acquired and transferred without going through the Navy warehouses shall not involve the usual loading and unloading operations, which, in case of verification, would be on paper only;

(d) Payments in question shall be supported by documents proving the reason for the extension of credit by the private firm to the Navy on the one hand, and the credit ratio on the Navy with the foreign agency, on the other.

Consequently, the administrative agency which directly arranges the payment with an order in favor of a third party, in accordance with the above mentioned points, shall withdraw the paid off order from the Provincial Treasury and send it together with the original documents to the Central Accounting Office of the Navy (by way of the General Directorate) which shall issue a debit note of the expense to the foreign government concerned for inclusion in the statement of account in the place of the original document of the expense.

If payment is made with cash funds at the disposal of the person entrusted with making the expenses, the Administrative Offices shall send a settlement account furnished with documents to the Central Accounting Office, by way of the General Directorate, which shall issue a debit note as indicated above.

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When payment is to be made by the Navy through a direct order, it shall be the responsibility of the competent General Directorate to inform the foreign government. The name of the foreign authority which has received the services shall always appear in the documents showing the expense.

**B. Payments made for services rendered by the Navy directly**

**(a) Hired Personnel**

The instructions of the Circular No. 29994, dated 23 April 1941-XIX of the Marinaff /Office of Civilian Personnel and General Affairs/, or any other future provision modifying it shall be followed.

If Navy workers are placed at the disposal of a foreign agency from time to time, they shall be considered as absent from work in their workshops during the days they are on loan, and shall be entered on a special list kept by the office of the management concerned.

All fees due to the workers for any service (standard fees, overtime pay, insurance, retirement, etc.) for the days they were present in a two weeks period shall be computed on this list.

Payments on this list shall be the same as those for the workers.

A certificate for the withdrawal of funds, provided with a debit note drawn by the Accounting Office in place of the list, approved by the foreign authority and provided with the extremes of the expense debit note, shall be forwarded to the Central Accounting Office for the debiting of the expense, to the gross of the deductions, to the foreign government.

Hired workers who are placed at the disposal for a foreign agency for an indefinite period of time (such as interpreters, employees for headquarters, billets, and mess halls, etc.) shall also be entered on the aforementioned list as a special group.

**(b) Transportation of goods and people**

Transportation of people and goods carried out by military means such as warships, motor vehicles belonging to the Navy, etc., for the benefit of foreign authorities, shall be made free of charge and the foreign government shall restore used tires, fuel and lubricants when the transportation has been at the request and for the exclusive use of the foreign authority.

Railway transportation of articles belonging to the Navy or acquired by it on behalf of a foreign authority shall be made against reimbursement of expense sustained. If a cash payment has been made, the procedure for cash payments shall be followed; in any other case, a settlement account shall be drawn, which, with the approval of the foreign authority for whom the transportation has been carried out, shall be transmitted together with the original documents to the Central Accounting Office, by way of Marinaff /Office of Civilian Personnel and General Affairs/.

**CHAPTER VI**

**VARIOUS SERVICES**

**(a) Navy Mess Halls**

When, according to instructions given by the Department, the foreign government is to be debited for the use of Navy mess halls

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by foreign military personnel, the document proving the debiting and approved by the foreign command or, in its absence, by the personnel who availed themselves of the service, shall be sent to Maricommis Rome /Office of the Naval Supply Corps in Rome/ for forwarding to the Central Accounting Office.

**(b) Hospital Expenses**

Hospital administrations shall adhere to the instructions given by the Department.

When in applying these instructions it is necessary to debit the foreign government, the amount of the debit must be indicated in a special settlement account which, with the approval of the foreign authority concerned, shall be sent to the Department's Central Accounting Office, by way of the General Health Directorate, for debiting to the Administration of the Hospital-sender for inclusion in the statement of account.

**(c) Use of docks, cranes, etc.**

For the use of docks, stationary cranes, etc., of the Navy, the debit of the foreign authority shall be calculated according to the rules indicated in articles 133 and 134 of Reg. Ars., and conditions which from time to time shall be determined by the Department, or by local authority, as instructed by it.

When the foreign government is to be debited, the settlement account shall be provided with a document of the foreign authority certifying the service rendered to it, and transmitted to the Central Accounting Office, by way of the competent General Directorate, for all the debiting procedure.

**CHAPTER VII**

**SERVICES RENDERED BY FOREIGN AGENCIES TO THE**

**ITALIAN NAVY**

Services similar to those foreseen in the preceding chapter and rendered to the Italian Navy by foreign agencies shall be reported, in the shortest possible time and upon the evaluation of the transferring foreign agency and the acceptance of the receiving agency of the Navy, to the competent General Directorates of the Navy so that they may notify the Central Accounting Office regarding crediting the foreign government concerned.

**ARTURO RICCARDI**  
Under Secretary of State

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This report is based almost entirely upon official German documents held by the American and British navies, wartime and post-war reports of U.S. Naval intelligence personnel, and interviews which were conducted with former officers and officials of the German Navy. Many of the documents had to be translated from the original German before they could be used. The project files now contain digests of information extracted from Office of Naval Intelligence files and in some instances copies of intelligence reports themselves, translations made in London and Washington, and sound recordings and transcribed stenographer's notes made during the interviews.

**Bibliographies**

There are no printed bibliographical lists of the subject matter of this report. The sources of information which have been used were discovered through the suggestions of interested persons, through extensive research in official files containing information of broad application to the German Navy, and through detailed and exhaustive questioning of individuals professionally informed about the supply aspects of German naval logistics.

**Official Files**

The files of the Office of Naval Intelligence contain a vast amount of documents containing information about the German Navy's organization, its operating experience, methods employed, its personnel and other logistical data pertinent to the aspects of supply that have been covered in this report. At the Naval Classified Records Center may be found microfilmed copies which were made of most of the German classified documents captured at Tambach Castle in 1945. These documents, when translated are extremely fruitful sources of basic and authentic information of naval in-

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teiss\*. The library and the archives of the Naval War College are excellent sources of information for making comparisons and evaluations in a study of this type. Source materials of a general nature may be found in the Navy Department Library, the Bureau of Supplies and Accounts Library, the Library of Congress, the National Archives, the files of the NEW YORK TIMES, LIFE, TIME and FORTUNE Magazines, READER'S DIGEST and the U. S. Naval Supply Research and Development Facility at Bayonne, N. J.

The Foreign Document Section of the British Admiralty at London has the original documents of the Tambach collection described above. Many of the files of these documents were summarized and translated by persons employed in this study. Copies of such translations have been furnished to the British Navy.

Personal Interviews

The project officer had direct contact with all the assistant chiefs and most of the divisional heads of the Bureau of Supplies and Accounts. From these officers came much assistance when comparisons and evaluations of the German system were made. In Europe, fifty-four foreign officers or officials with specialized knowledge pertinent to this report were interviewed. These people gave generously of their vast experience. Their contributions are an important addition to the U. S. Navy's information on German naval logistics.

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GLOSSARY

Adm Q1	Admiral Quartermaster Division, Naval War Staff; also the Admiral Quartermaster, VAdm Bruno Machens, himself
Adm Q1 II	Mobilization Requirements section of Admiral Quartermaster Division
Adm Q1 III	Fuel and Transportation section of the Admiral Quartermaster Staff
Adm Q1 IV	Coastal Section of the Admiral Quartermaster Division
Adm Q1 V	Fleet Training section of the Admiral Quartermaster Division
Adm Q1 VI	Sea Transport section of the Admiral Quartermaster Division
Admiralintendant	Special Service Supply Officer with the rank of Rear Admiral
Admiraloberstabsintendant	Special Service Supply officer with the rank of Admiral
Admiralstabsintendant	Special Service Supply officer with the rank of Vice Admiral
Admiralty	Navy Department
Amstrat	Supply official of Middle Intendantur Service with the rank of Lieutenant Commander
BdK	Small Battle Units Command
BdU	U-boat Command
BdUOP	U-boat Operations division of Naval War Staff
Flottenintendant	Special Service Supply Officer with the rank of Captain
Fregatten-Kapitaen	Line officer with the rank of Commander
Geschwaderintendant	Special Service Supply officer with the rank of Commander
Group Command	A command structure embracing the shore establishment and forces afloat, except independent commands, for logistic and operational control
Group North/Fleet	A command structure combining the shore establishment in Norway, Baltic countries and Germany and surface forces in the Fleet commands
Group South	A command structure embracing all shore activities in the Balkan countries and surface forces operating in the Black, Aegean, Eastern Mediterranean and Adriatic Seas

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<b>Group West</b>	Command structure combining all shore establishments in France and Lowland Countries and surface forces operating in the Atlantic
<b>Inspectorate, Acceptance</b>	An inspection organization subordinated to the High Command of the Armed Forces that accepted finished products for all the armed services and assisted industry in expediting production
<b>Inspectorate, Armament</b>	A technical organization belonging to the High Command of the Armed Forces that expedited and assisted industry in production
<b>Inspectorate, Naval</b>	A technical supply organization belonging to the Navy charged with production, procurement, storage and distribution of equipment and supplies for which it was responsible
<b>Intendantur(en)</b>	Senior Supply Official at Kiel or Wilhelmshaven charged with administration of all accounting, pay, food, clothing, and equipment needed in barracks, pay, and accounting offices and clothing and food stores
<b>Intendantur Offices</b>	Clothing stores, food stores, pay offices, accounting offices, pre-audit offices and accommodation offices and supply centers, depots and storehouses for equipment and stores carried for those offices and stores
<b>Kapitaen zur See</b>	Line officer with the rank of Captain
<b>Kapitaenleutnant</b>	Line officer with the rank of Senior Lieutenant
<b>Korvetten-Kapitaen</b>	Line officer with the rank of Lieutenant Commander
<b>Leutnant zur See</b>	Line officer with the rank of Ensign
<b>Logistic Support Departments</b>	Field activities of Adm Qu III, located at Kiel and Wilhelmshaven, Germany, and St. Nazaire, France, to administer the fuel program and the supply ships and tankers engaged in logistic support of forces afloat
<b>Lower Deck Personnel</b>	All non-commissioned personnel - similar to our enlisted personnel, except majority were drafted
<b>M/Allg</b>	Civil Personnel division of the Admiralty
<b>M/Matt</b>	Naval Attache division of the Admiralty
<b>Marineoberinspektor</b>	Supply official of Middle Intendantur Service with the rank of Senior Lieutenant
<b>MarPers</b>	Bureau of Officer Personnel
<b>MarRuest</b>	Bureau of Warship Construction and Repair
<b>MarRuest/AWa</b>	Ordnance division of MarRuest
<b>MarRuest/FEP</b>	Invention and Patent division of MarRuest
<b>MarRuest/K</b>	Warship Construction division of MarRuest



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MarRuest/K-4	Ship and Dockyard section of MarRuest/K
MarRuest/NWa	Communication division of MarRuest
MarRuest/Pi Wa	Construction Battalion division of MarRuest
MarRuest/Rue Wi	Economics division of MarRuest; allocated raw materials and plant facilities among MarRuest divisions and to Adm Qa III
MarRuest/Sonderstab Org MB	Statistical section of MarRuest/Rue Wi
MarRuest/SWa	Mining and Blocking division of MarRuest
MarRuest/TWa	Torpedo division of MarRuest
MarWehr	Bureau of General Affairs
MarWehr/C	Supply/Administrative division of MarWehr
MarWehr/C-I	Pay and Allowances section of MarWehr/C
MarWehr/C-II	Welfare and Billeting section of MarWehr/C
MarWehr/C-III	Provisions and Clothing section of MarWehr/C
MarWehr/G	Medical division of MarWehr
MarWehr/Tr	Lower Deck Personnel division of MarWehr
Ministerialdirektor	Supply official of Senior Intendantur Service with the rank of Vice Admiral
Ministerialdirigent	Supply official of Senior Intendantur Service with the rank of Rear Admiral
Ministerialrat	Supply official of Senior Intendantur Service of the rank of Captain
Ministry of Agriculture and Food	National agency that allocated raw and processed foods to armed forces
Ministry of Economics	National agency that allocated raw materials and plant production facilities to the armed forces prior to 1942
OBd KM	CinC Navy
Oberleutnant	Line officer with the rank of Lieutenant junior grade
Oberregierungsrat	Supply official of Senior Intendantur Service with the rank of Commander
OKH	High Command of the Army
OKL	High Command of the Air Force
OKM	High Command of the Navy
OKM/E	Navy Budget Office
OKW	High Command of the Armed Forces, similar to our Department of Defense
OKW/AuslAbwehr	Overscas section of the Foreign Intelligence division of the High Command of the Armed Forces. Controlled activities of the Secret Supply Service

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<b>OKW/MA</b>	Medical division of the High Command of the Armed Forces. Responsible for distribution of medical supplies and equipment
<b>OKW/Rue Wi</b>	Military Economy and Armament division of the High Command of the Armed Forces. Charged with allocation of raw materials, finished products and plant production facilities to the Army, Navy and Air Force
<b>OKW/WFStd/Heimstab</b>	Home Staff of the High Command of the Armed Forces. Charged with allocation of transportation to Army, Navy and Air Force
<b>Organization Todt</b>	Ministry of Labor
<b>Regierungsrat</b>	Supply official of Senior Intendantur Service with the rank of Lieutenant Commander
<b>Reichsrat</b>	Legislative body similar to U.S. House of Representatives
<b>Reichstag</b>	Legislative body similar to the U.S. Senate
<b>Second Admiral</b>	Admiral attached to a group or chief command staff charged with distribution of personnel or other administrative tasks
<b>Senior Administrative Staffs</b>	Successors to Intendanturen. Established as a part of each group or naval chief command to administer all pay, food, clothing and accounting functions
<b>SKL</b>	Naval War Staff
<b>1 SKL</b>	Operations (non U-boat) division of the Naval War Staff
<b>2 SKL</b>	U-boat Operations division of the Naval War Staff
<b>3 SKL</b>	Intelligence division of the Naval War Staff
<b>4 SKL</b>	Communication division of the Naval War Staff
<b>5 SKL</b>	Enemy location division of the Naval War Staff
<b>6 SKL</b>	Nautical division of the Naval War Staff
<b>Speer Ministry</b>	Ministry of Armament and War Production
<b>Verwaltung</b>	Supply/Administrative groups of government and military organizations
<b>Verwaltung Corps</b>	Supply Officer Corps of the Navy composed of regularly commissioned officers; organized in 1935 to replace old Zahlmeister Corps
<b>Zahlmeister</b>	Supply official who served at sea prior to 1935 as a paymaster

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