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MINE WARFARE FORCES(U) NAVAL INTELLIGENCE SUPPORT
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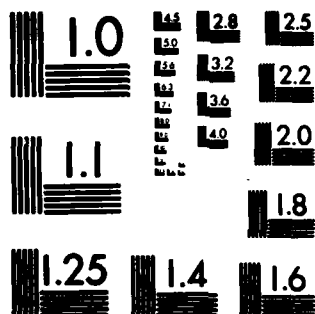
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NAVAL INTELLIGENCE SUPPORT CENTER

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MINE WARFARE FORCES

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The mission of our Navy is multi-faceted and complex; the successful completion of the mission both in peacetime and wartime requires a combination of various mutually supplementary naval warfare assets.

The concept of the Navy regards mine warfare as a critical component in the mission spectrum.

The operational area of our Navy in the northern flank of NATO appears to be particularly well suited for mine warfare because of the shallow coastal waters, the narrows, bays, narrow river estuaries and harbor approaches. On the one hand, the mine is an effective agent for defense of our coasts and the Baltic approaches against attack, and on the other hand, because of the geo-strategic situation offers the potential enemy the opportunity to perform specific mine warfare operations to interrupt our trans-Atlantic and inner-European supply and reinforcement lines and as well to restrict the operational freedom of NATO naval forces.

Therefore, mine laying and mine clearing both have an equal and major degree of importance for the German (FRG) Navy. The extraordinary efforts which the German Navy has made to modernize its equipment demonstrates this importance.

All those who work to maintain the naval defense of our country should have a basic degree of familiarity in the area of mine warfare and its equipment.

The objective of the following series of articles is to contribute to such information.

Bethge
Vizeadmiral (Vice Admiral)
Inspecteur der Marine
(Naval Chief of Staff)

MINE WARFARE - Its Role in The Concept of The Navy

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Mine warfare still has the aura of the unknown for many naval officers, perhaps even the aura of the extraordinary, a situation which can only mean that particularly junior officers are either not familiar with or not sufficiently familiar with mine warfare. In this regard, the mine either used offensively or in defensive measures against it, is a weapon which must be of interest for every officer, certainly for the reason that the mine can be encountered anywhere. This applies as well particularly for those individuals, who are not assigned to mine warfare units, regardless of the organization in which they serve. The better the mine is known, the more a correct and objective evaluation of its effectiveness is possible. Therefore, with the following article a general statement is intended on the role of mine warfare in the concept of the Navy (FRG). In the following articles on mine employment and defense against mines, these two correlated factors of mine warfare are discussed more comprehensively.

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HISTORICAL PERSPECTIVE

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The mine is more than 200 years old. The employment of this weapon occurred until the turn of the last century only in sporadic, collateral form. The mine first was projected onto the horizon of operational planners in the Russo-Japanese War in 1904/05. The effects of the mine, when realized, at that time surprised those naval officers who though exclusively of naval engagements on the high seas and had a direct impact upon the further development both in the technical and the operational context. A parallel could be made to the development of the torpedo. Prior to WWI for a long time the function of torpedo and mine technician were combined in one individual. Both weapons were maintained and employed by smaller units.

It should be emphasized that up to this point only the moored anchor mine has been discussed, and this applies until after WWI. This mine was cheap to produce, safe and easy to handle until dropping and in most instances resulted in the currently termed "mission kill". The disadvantage was the limited effective radius and therefore the necessity for mass deployment. On this basis, therefore, the deployment of ca. 300,000 mines in WWI and 500,000 mines in WWII alone in European waters can be explained. The ground mine with influence fuze, which was employed after 1939, constituted a new quality on the basis of the acoustic and magnetic field radiation of the ship hull. This generated completely new problems for the anti-mine defense. The only response to this was then the simulation with magnetic/acoustic and displacement (pressure) sweeping, because other solutions were not yet then technically available.

Without going into detail, reference can be made to several specific mining operations within the parameters of the total warfare in both World Wars and of various post-war conflicts. Many thousands of moored anchor mines were deployed between Scotland and Norway as a barrier against German submarines. The (German) Navy deployed a large number of mines in the North Sea as flank protection against attacks from the west and in many individual operations against the English and even North American east coasts and against the most important communications and shipping points. In the English Channel a large number of mine fields was laid by both sides in individual operations. In the German Navy alone ca. 100,000 personnel in the most diverse units were used in the anti-mine warfare role. The mine had its effects in a wide range; it diverted personnel and resources; it complicated supply and operational freedom, forced detours and delayed other important operations, for example, in the Korean War, where the Americans were forced by primitive mines to re-plan a landing in the rear of the North Koreans and could implement this operation only weeks later (Inchon).

Only a few know how long the Suez Canal was blocked by mines after the Israeli-Egyptian War of 1973. The danger could be eliminated only with Western support in months of operations with helicopters, mine divers and particularly with the very new mine hunting techniques.

In Vietnam the Americans ventured only very late in the war to interdict sea supply to Hanoi. They accomplished a total blockade beyond the end of the war with only a few thousand conventional mines.

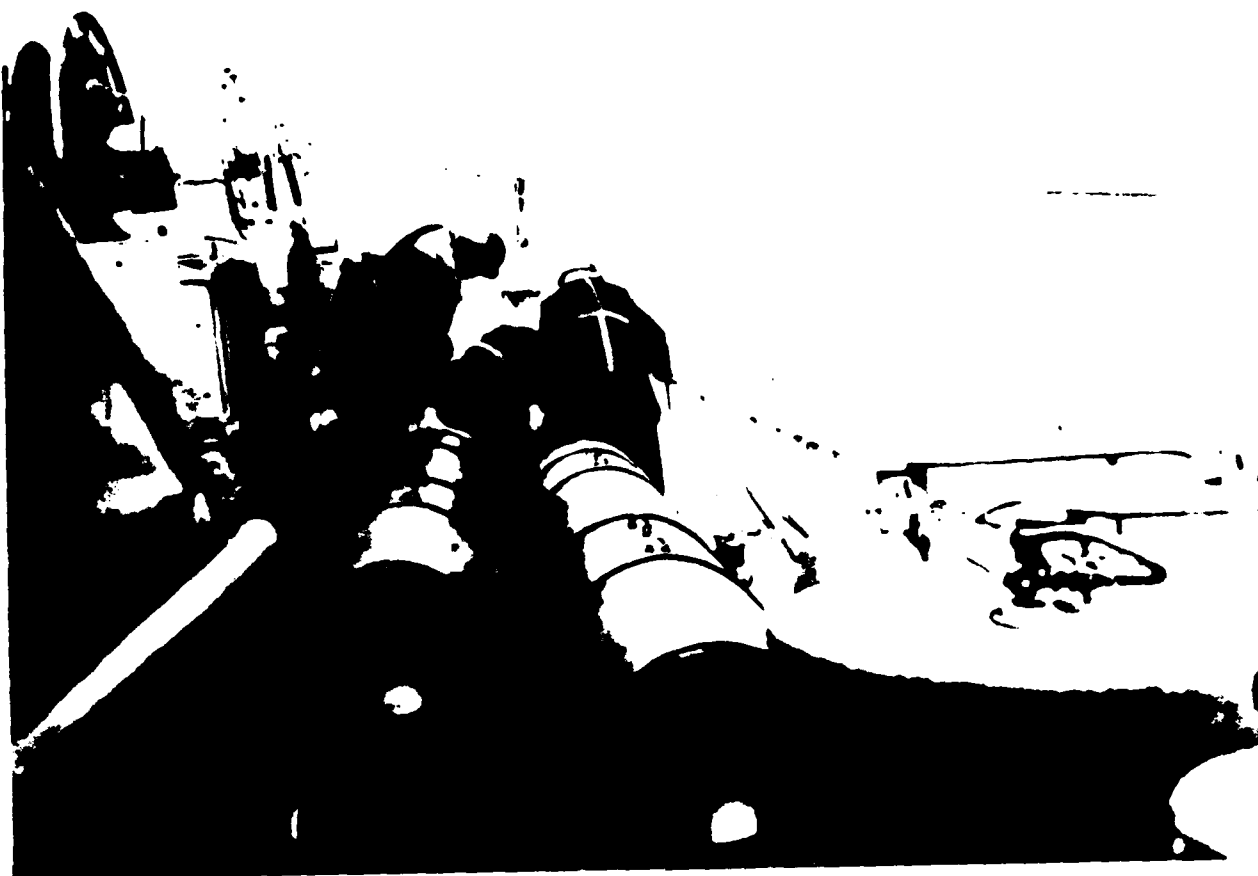


Fig. 1: Preparation for deploying ground mines.

The war between Iran and Irak directs our attention again to this region which is so critical for the oil supply. Only the French Navy for the last two years has kept mine countermeasure units constantly in East Africa for the event that the very simple idea should occur to someone to lay a few mines in the Straits of Hormuz or in other passages. In such an event it is absolutely certain that not a single shipping company would let even a single tanker take the risk of operating in such waters. Even a good reserve of oil would not prevent serious problems from developing in the West.

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These brief historical remarks should suffice. Now we will direct our attention to the present and the future and particularly to the role of mine warfare in our sphere of interest.

MISSION OF MINE WARFARE FORCES WITHIN THE PARAMETERS OF OUR PLANNING

The plan of our (German) Navy as a sub-concept within the context of the defense policy and military-strategic guidelines, is the basic document, in which the task and the missions of the Navy in peacetime, in time of crisis and in the event of attack are specified. In addition, this plan can be considered only within the parameters of the NATO Alliance.

The forward defense applies for all of the (FRG) armed forces. For the Navy this means providing the protection of our territory in the Baltic Sea and in particular the defense of the Baltic Approaches, to restrict the operational freedom of the enemy and preventing the enemy from using the straits.

In the North Sea the issue is to protect and insure the necessary civilian and military supply lanes and the arrival of reinforcement troops. This last mission certainly sounds quite easy, but assumes its

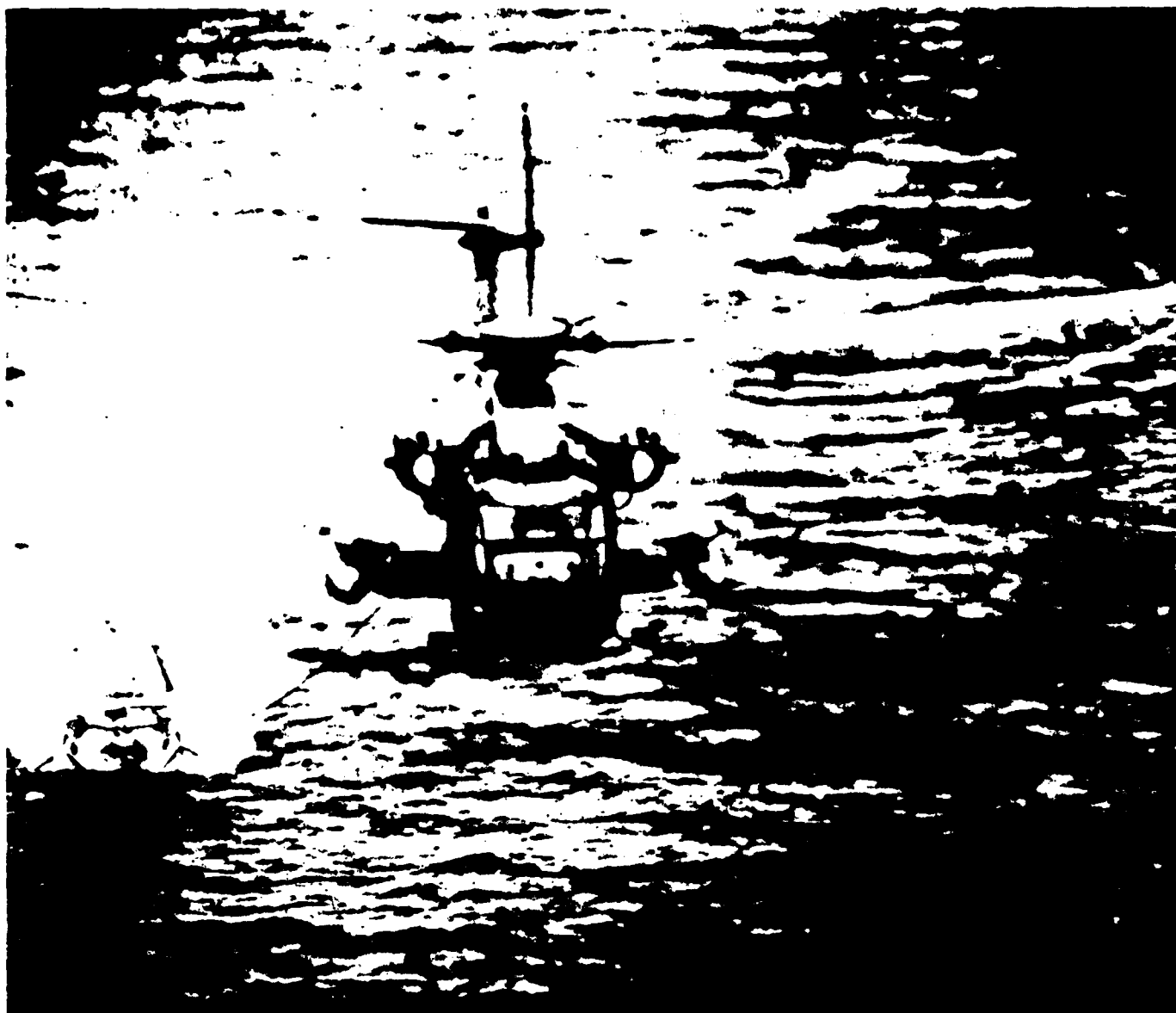


Fig. 3: Minesweeping device towed by an American helicopter during the clearing of the Suez Canal after the end of Israeli-Egyptian hostilities. /65

full dimensions and implications, when the dependence of the Federal Republic of Germany upon the sea lanes and the goods transported in them is considered. These are thousands of tons of goods daily, which cannot easily be transhipped on an alternative basis in other harbors. Military supplies in material and troops have to be landed or transshipped where there is the greatest threat on land.

▼ Already in the formulation of the mission and in its contextual points of emphasis it can be noted that mine warfare is assigned an important role. Before this role itself can be addressed, however, several other collateral conditions have to be considered, which exert a particular influence upon mine warfare:

The geography: In the entire operational area of our Navy the shallow water depths, the narrows, river estuaries and harbor approaches provide ideal conditions for mine warfare and because of these conditions make mine warfare a critical component of our naval warfare. The well known statement that the mine changes the geography applies particularly to

Even with relatively few units, barriers can be developed successively. /65
which cause large detours or time delays. Naturally, in such an area this applies equally for both friend and foe.

▼ Technology has made progress in the development of the mine just as in all other weapons. The mine has become intelligent, therefore more efficient, i.e., it no longer wastes its explosive, but ignites only if it is productive. The mine has learned to make a distinction between a true and spurious target, i.e., for example, between a ship and a simulation device. Therefore, today the large number of mines is no longer required, but the same degree of threat can be projected with lesser expenditure. The response to this technological development in mine countermeasures is mine hunting. It engages only the mine target actively. Fuze settings with all of the subtleties have therefore become less critical. Of course, however, minehunting also has its limitations; these are caused by the oceanography. Salt content, temperature layering, ground conditions and other influences make a modern simulation sweeping still important in the future along with minehunting.

▼ The economic dependence of our country upon secure sealanes has already been mentioned. It should gain be emphasized at this point that in the event of conflict every small and large ship is of critical importance. Every loss, which is caused by inadequate mine countermeasures capability, is just as painful as the loss which happens at sea because of missile or torpedo. It is even worse. if the ship is sunk at our own doorstep, after it has succeeded in putting thousands of miles behind it. Here the issue is not oranges and bananas, but critical goods, such as minerals, oil, ore or basic food stuffs such as fish, which we cannot do without. /66

▼ The results after the conclusion of the Law of The Sea Conference will also have effects upon mine warfare. This complex of subjects, which some important countries (USA, USSR) to sign in draft form only if it does not conflict with their political interests. will make the area of mine warfare even more complex. A state which extends its territorial waters to 12 sm cannot merely plan protective minefields* on a large scale. As before it has to guarantee the peaceful transit

*Protective minefields are lead for defense of territory in own coastal waters.

of other and particularly neutral states. Such a minefield cannot therefore be laid in times of crisis without other qualifications and ramifications.

▼ From the international collateral conditions there result, either from custom or from treaty rights, whether ratified or not. in any event complex political restrictions for mine warfare. No responsible government politician can risk to order minelaying operations in international waters too prematurely, where the peaceful transit particularly of neutral shipping would not longer be insured. Therefore, a political estimate of the situation is particularly critical for mine warfare. Any operations plan and the implementation of a minelaying operation is contingent upon a final and high-level political decision.

OPERATING MEANS AND DEPLOYMENT

In the development of the (FRG) Navy in the 1950's a relatively large number of mine countermeasures units were commissioned. This happened not at the least from the lessons of WWII and the extensive sweeping operations after 1945 - the restricted shipping lanes were eliminated only after 25 years because of the continuing mine hazard - and can

certainly be attributed to the estimate of the situation by the first Naval Chief of Staff Vice Admiral Prof. Friedrich Ruge (Ret.), who as an experienced mine hunter was aware of the mine threat even within the parameters of the new mission on the side of the allies.

In the course of the 1960's, as well because of the accelerated development of other weapons, such as the missile and the wire-guided torpedo, which replaced mines on S-boats, the minelaying mission became the first priority for the units of the mine warfare flotillas, which are stationed in the Baltic and mine countermeasures became the second priority. A very extensive deployment of mines in floating and shore depots, associated with the 39 SM- and BM ships as the minelaying capability, thus accommodate the concept of "small and many" in an almost ideal manner and provided a high degree of realizability of defensive minelaying operations. If hostile mines are laid in the Baltic, an adequate mine countermeasures capability must be available to contend with them.

The mine threat in the North Sea is of a completely different character. Here specific enemy mine operations can paralyze almost the entire shipping traffic. Therefore in recent years with considerable expenditure the modernization of the 18 KM-ships was prosecuted and was completed this year. 12 mine hunters and 16 ships of the Class 351, which are designated as solenoid influence sweep ships or TROIKA, constitute a modern mutually complementary mine countermeasures capability. These two weapon systems will in the coming years provide the experience required with which a further improvement in the form of a higher degree of effectiveness, i.e., faster and more effective in combatting mines, can be realized in order to be able to accommodate the qualitatively increased mine threat.

ROLE IN THE CONCEPT OF THE NAVY

If we consider again the mission of the Navy and in this regard the threat in the northern flank area of the enemy having to take possession of the Baltic Approaches and to interdict communications between America and Europe - which is of critical importance for the survival of our country and of our western neighbours - whether in the Atlantic or in the North Sea, then the definite integration of mine warfare into the total warfare concept results automatically.

Forward defense in the Baltic means with balanced operational means beginning the defense are far to the east as possible. For this purpose the Navy has acquired the weapons systems MRCA TORNADO and submarines. Both weapons systems are capable of performing minelaying operations. In this regard the issue is not that of the overworked concept of cost and effectiveness and - why does the direct relationship missile or torpedo against ships always have to be evoked? With the capability of laying mines outside enemy harbors, on the supply lines which are so critical for him and/or on the approach routes of presumed amphibious landing units, extraordinary effects can be realized. This does not have to be just a hit and the damaging of a large surface combatant, but in any event the mine causes delays and restricts operational freedom considerably. Both are effects which are required in order to be able the own mission. It is perhaps not generally known and it is therefore emphasized here again that the Warsaw Pact maintains over 200 mine countermeasures units in active service in the Baltic; this is by far the largest number of such units in the world. The obvious conclusions can be drawn from this.

Being able to lay tactical and offensive minefields in waters controlled by the enemy means binding enemy forces and attributes directly to deterrence, and is therefore a defensive technique in the sense of our concept. However, because of considerations of internal law, such mine fields can be laid only after a declaration of war. /66

The situation is different with protective minelaying operations for defense of the coasts in own territorial waters. They could be performed under favourable circumstances - i.e., at the right time only when the political decision has been made - even in a crisis situation. However, the problem and the issue remains as to what areas of the coast are threatened. In order to be certain, then the entire coast on which landings are possible has to be mined - including operations with hovercraft. Therefore, these operations are dependent upon a good estimate of the enemy capabilities and intentions, i.e., therefore of good reconnaissance results and generally therefore remain operations to be performed at the last moment. In addition, such mine fields can be laid only with special ships with very shallow draft. However, such units are not very fast and have very little survivability, because they cannot defend themselves even against the slightest enemy action. Therefore, a national political decision has to be made at the earliest possible moment, if such operations are to have an effect, and in particular to act as a deterrent. In addition, an adequate number of mines must be available, in order to be able to intervene as required in new non-anticipated focal points on a situation basis.

Probably the most difficult minelaying operations are those of a defensive type in waters in which the particular country has sovereignty, but which fall into the category of the economic zone (200 sm), of the high seas, of international waters with peaceful transit allowed through straits.

The politically and legally complex issue as to when mines may be laid depends upon the estimate of the situation - what does the enemy intended to do at what time, where and with what forces. In addition, prior to any minelaying operation long-term organizational and planning preparations have to be made. In other words, mines cannot be carried on board like missiles, torpedoes or other ammunition and then be employed by pressing a button. Defensive minefields are therefore in the context of our concept a mixture of the factors enemy intentions, time, geography, target ship and many other conditions. The more prior plans are made and stipulated in regard to enemy action and activity, the less flexible and possibly less effective a mine field can be.

How and where protective, defensive or tactically offensive minefields are laid, such operations should never be performed independently. The very critically determinative time factor in the total sequence from preparation of the mine until laying requires permanent protection in direct and indirect form. The greatest threat certainly comes from the air, and therefore support in this area is particularly important, particularly for the reason that smaller units are not capable of carrying an adequate anti-air defense in addition to the mine load. Other weapon systems, whether aircraft or air defense zones or surface units, and in particular a well functioning command and control system are critical for a successful minelaying operation under combat conditions. Therefore, the mine binds a multiplicity of units in time and space. This requires both a high standard of training and a knowledge of basic operational procedures of mine warfare on the part of all involved. The objective should be to make the commitment of other resources to mine warfare as brief as possible. /67

The major problem is further the protection of minelaying operations insofar as they are within range of enemy attack forces. In addition, this protection cannot be performed as long as the enemy minefields are not exactly known. Therefore, frequently here only night operations can be considered; this however delays rapid countermeasure results. Therefore, only an indirect protection is possible, which however is no less extensive. The forces available for this can be deployed only on a situation basis. The multiplicity of tasks of the units suitable for protection, the fact that they may not immediately be available, makes the mine countermeasures itself and its protection a difficult problem of integration in the total sequence of an operation.

Once laid, minefields should remain resistant. This is accomplished on the one hand by appropriate technical-tactical fuze settings; on the other hand, enemy minelaying cannot always be prevented. For this reason two additional important factors in mine warfare must be noted, which require a close degree of cooperation with other units: First, the surveillance of the own minefield is critically important, regardless of what operational means, either direct or indirect. Secondly, - If the enemy weakens the field by countermeasures by for example clearing a path for his own transit - this must be compensated by supplementary mining.

Fig. 2: Detonation of a mine by "blowing". Mine divers set an explosive charge on the mine, which was then electrically ignited from a rubber boat.

Therefore, it has to be known where the enemy has conducted clearing operations in order to perform supplementary mining on a specific basis. These operations are therefore no individual actions of the minelaying forces, but operations in conjunction with other units.

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The broad and complex field of mine warfare and its role in the concept of the (FRG) Navy would invite still a multiplicity of comments. The issue here was to address several basic issues in a general sense. The following articles, which describe minelaying and mine countermeasures, describe the complex role of mine warfare further. Thereby it becomes apparent and understandable that the role of mine warfare depends to a large extent upon a close integration in the total strategy of naval warfare on and below the water. □

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