

O. N. I. PUBLICATION No. 9

CONFIDENTIAL

ANTISUBMARINE WARFARE

NOTES FOR THE USE OF NAVAL
ARMED GUARDS



NAVY DEPARTMENT
OFFICE OF NAVAL INTELLIGENCE

MAY, 1917



WASHINGTON
GOVERNMENT PRINTING OFFICE
1917

DECLASSIFIED
Authority E.O. 10501

MAY 4 1927

O. N. I. PUBLICATION No. 9

CONFIDENTIAL

ANTISUBMARINE WARFARE

NOTES FOR THE USE OF NAVAL
ARMED GUARDS



NAVY DEPARTMENT
OFFICE OF NAVAL INTELLIGENCE

MAY, 1917



WASHINGTON
GOVERNMENT PRINTING OFFICE
1917

DECLASSIFIED
Authority E.O. 10501

CONFIDENTIAL

CONFIDENTIAL

ANTI-SUBMARINE
WARFARE

INSTRUCTIONS FOR THE USE OF NAVAL
ARMED GUARDS

NAVY DEPARTMENT
OFFICE OF NAVAL INTELLIGENCE



OFFICE OF NAVAL INTELLIGENCE,

May 12, 1917.

This pamphlet contains information regarding anti-submarine warfare, compiled by Lieut. A. H. Miles, United States Navy, for the use of the naval armed guards placed aboard merchant ships. Nothing in it is to be considered as an order; it is to be regarded solely as a circular containing information that may be of use.

ROGER WELLES,

Captain, United States Navy,

Director of Naval Intelligence.

14362-17

3

DECLASSIFIED
Authority E.O. 10501

ANTISUBMARINE WARFARE.

NOTES FOR THE USE OF NAVAL ARMED GUARDS.

The submarine had no value as a war machine until the invention of the periscope. By the use of the periscope, partial invisibility was obtained in delivering the attack, thus giving the submarine the power of "ambush," or of making the *surprise* attack. The surprise attack is the reason for the submarine's existence, for without it, the submarine degenerates into slow moving torpedo boat with all its limitations.

Thus, to combat the submarine, if we prevent it from delivering this surprise, we destroy its effectiveness. In the protection of merchantmen, it should be our aim to prevent the surprise, for it is known that if the submarine once located, by maneuvering, we have a fair chance of escaping the danger of being torpedoed.

By arming merchantmen, we keep the submarine submerged, thus confining it to low speeds of small radius and preventing it from using its guns as a surface vessel.

The main points to be considered, then, are as follows:

A BRIGHT LOOKOUT.

By detecting the submarine when it shows its periscope while getting into position for firing, we can alter course to avoid the danger. If forward of the beam, and it be possible to turn the stern toward the submarine while still beyond effective torpedo range, this is the safest course to pursue. If abaft the beam, the greatest safety lies in always turning stern to submarine and running away at highest possible speed. A slight alteration of the course will then avoid a torpedo coming from astern, a small target is presented, and the disturbed wake of the ship

might probably deflect the torpedo from its mark. If sighted forward of the beam, and it is impossible to turn away outside of torpedo range, it is preferable to turn toward him and proceed at top speed. This brings the submarine in danger of being rammed, and, if he fires, causes him to get off a hurried shot under unfavorable conditions, for it is well known that a successful torpedo shot from a submarine requires the boat to be steady on her course, at an angle near the horizontal, and not changing at the time in depth. By turning away, we at once relieve the submarine commander of the anxiety of being rammed, and he has a good opportunity of taking careful aim while you are presenting your largest target, i. e., the broadside. Moreover, by heading toward the submarine a small target is presented, and a torpedo could best be avoided by a small touch of the helm. Ram in the vicinity of the periscope, if possible, but if he dives, which is his most probable action, alter course at once to bring stern to spot where he last is seen, and your safety is assured. Steam into the wind and sea whenever possible in satisfying the above tactics, for the sea will knock down his speed; he will be unable to use his gun on account of sea breaking over his low decks, and if submerged good periscope work is prevented by constant spray. In all cases, open with your gun, and having once gotten the range, keep up a rapid fire as long as a target is seen. Keep the fall of shots slightly under rather than over, remembering that an over is a wasted shot. A submarine's best sustained speed is not over 10 knots, and he can not keep this up for longer than an hour at most. After that, he is finished until dark, when he must rise to recharge his electric storage batteries. The effective torpedo range for the present can be assumed to be 2,000 yards, and a torpedo's speed 30 knots. His best surface speed is 18 knots, and best submerged speed, 10 knots. At 7 knots his maximum duration is about four hours.

Zigzagging is of no value to you once the submarine has seen you, but make your best speed over the ground.

Lookouts for submarines make the common mistake of only looking for submarines off on the horizon; this of course should be done also, but the most probable distances at which a periscope is likely to appear is from 300 to 800 yards from your vessel, from dead ahead to either beam. Smoked glasses should be used by at least one lookout when the sun is low, and a bright lookout kept down the sun path. A periscope can be detected 6,000 yards away with a sea with no whitecaps. With whitecaps, it is difficult to differentiate between whitecaps and the feather from a periscope wake, but if watched closely can be distinguished from a whitecap by its persistence to the vision. A sea gull on the water might be taken for a periscope wake, but glasses will soon bring this out. Very often a flock of sea gulls will follow a submarine, and when flocks of these are seen the locality should be carefully searched with the glasses. Similarly, sharks will play around a stationary submarine when submerged, and when fins are seen in the water in dangerous areas they should be given a wide berth. Sharks also play about floating mines, and, too, floating German mines are made in some instances to resemble a shark's fin projecting above water. Do not pass between these, as mines of this variety are attached to each other by wire cable. Mines are sometimes fitted with dummy periscopes, so be careful not to ram one in mistake for a submarine. Beware of all floating objects on the water and give them a wide berth. Three-power glasses are best for lookouts on continuous watch, but at least six-power glasses should be handy in case a suspicious object is seen. Lookouts should be placed as far forward in the eyes of the ship as possible, and at least one stationed as high aloft as possible. Two should be on the bridge to cover from ahead to each beam, and one should be aft at the stern with efficient communication to the bridge. Lookouts sighting a suspicious object should call out the estimated distance and at the same time point with the arm in the general direction. Officers of the watch should take immediate action

when a report is received from a lookout. It must be remembered that just because the officer of watch can not see anything at the time it is no sign that the object reported was not a periscope which in the meantime has disappeared. A skillful submarine commander will never show his periscope for more than 5 or 10 seconds. Officers of the watch should receive thorough instructions as to course of action to be taken in all cases.

A lookout should be sent high aloft just before dawn, and he should carefully scan with powerful glasses the horizon for submarines on the surface. Submarines always lie on the surface at night and they may be located in this manner before they have a chance to submerge. In thick weather they may be suddenly encountered on the surface and most probably at a short range, when they could be seriously injured by gunfire. At nightfall assume that you have been tracked during the day and alter course at least four points for one hour before coming back to the original course. The original track can be regained in the morning if necessary. If opportunity presents to have convoy, take it and keep convoy on the bow most favorable to submarine attack. Steam off the quarter of another vessel if you get a chance; this will screen you from surprise from that bow at least. Remember that anything you can do to prevent the *surprise* will be a prime factor in the safety of the ship, and in this your lookout is of first importance.

SPEED.

The faster your speed the harder time the submarine will have in closing to make the attack, the more difficulty he will have in hitting with the torpedo, and the smaller the danger sector from ahead becomes. Consequently, see that the master and chief engineer fully realize the importance of this factor in the safety of their ship.

ZIGZAGGING.

In order to get in position to fire a torpedo it is a matter of great skill for a submarine commander to get at the right spot without detection, especially so on account of

his low submerged speed and of the two unknown quantities, i. e., your course and speed, which he must know approximately in making his last totally submerged run to the firing position. Zigzagging makes this doubly difficult for him. He comes up to fire and finds that you are not where he expected to find you. He is out of range, probably, and has lost his chance of attacking because he now has not time or speed to catch up with you. If he sees or suspects you are zigzagging, it will make him give more periscope exposures and you have a better chance to detect his presence, thus considerably reducing the probability of surprise attack. Also, to hit with the torpedo, he must know fairly well your course and speed. Zigzagging, therefore, is very disconcerting to the submarine commander and should not be neglected in dangerous waters.

IF CHASED.

Hold him down with your stern gun. If he is seen to be gaining, wait until he gets within about 2,000 yards, then turn and attempt to ram. This will cause him to dive or be rammed. This operation can be repeated while help is coming. Never tamely surrender to a submarine, but continue to harass him while sending out your S O S calls.

RAIDERS.

In the ocean trade routes or at sea assume no vessel to be friendly. If a sail be sighted, alter course to bring it abaft the beam, and if it closes, changes course toward you, or acts in any way suspiciously, bring it astern and make all possible speed until out of sight.

REWARDS.

On account of the importance attached to a good lookout, it is suggested that a reward be offered to any lookout whose vigilance can be shown to have saved the ship from attack.

MINES.

Experience so far has shown that submarine mine layers never lay mines unless they can be sure of their exact position; this on account of danger to themselves.

Consequently safe navigation may be expected out of sight of land in so far as anchored mines are concerned. The fact that a mine field laid by a submarine has lately been swept, is no indication that no mines are present, this because German submarines have lately been laying time mines, which come up at predetermined intervals unknown to us.

MESSING.

In especially dangerous zones have all hands continuously on deck at the guns, and arrange with steward to have meals served on deck. Never under any circumstances allow the number of men on deck to be decreased to less than one gun crew.

INFORMATION.

Confidential information should not be confided to any person whom it does not concern, nor should it be referred to in public places.

GUNS.

Fill all oil holes each morning. Gunner's mate try out elevating and training gear three times daily. Owing to the weather and salt spray the parts often become stiff, and it is only by constant attention that the guns are kept ready for action. This is very important in antisubmarine warfare, where the guns might be wanted on instant notice. Sight scales must be set at the most probable range and deflection. Tompions out when at sea. Use muzzle bags. Keep guns always loaded in submarine waters. Have at least 25 rounds of ammunition handy by each gun. Lay out a practice spotting range on deck (7 inches=2 yards), and drill spotters daily. Hold sightsetting and pointing drill on passing vessels when available. Fire at target steaming away from it and toward it. A barrel on a grating is suitable. Use ranges 300 yards to 2,000 yards.

Guns should be bore-sighted at approximately 800 yards.

WATCHES.

The officer in charge of the guard should regularly be stationed on the bridge. Outside of the time when he is here he should be in his stateroom or at the guns. His whereabouts should always be known to the petty officer of the guard.

A lookout should be kept near each gun, not only to watch for submarines, but to prevent persons ill-disposed from tampering with the guns or ammunition. Also there should be detailed four petty officers to act as petty officers of the guard, whose duty it is to make half-hourly inspections of the lookouts, guns, and make the rounds of the decks at night to see that all lights are out.

All orders concerning the guard or guns should be transmitted through the petty officer of the guard. When not making his rounds he should be in the vicinity of the forward guns, where he can be readily found. No specific recommendations regarding watch standing can be made, but must be worked out in detail on each particular ship. It is important that all the men on watch be armed with pistols, as it is possible that the enemy may have agents on board who may seek to overpower the guard at sea or disable the guns. Rope off the space in the vicinity of the guns.

FLASH LIGHTS.

It has been found that a great many persons carry their own private flash lights, which they use carelessly about the decks. These should be absolutely forbidden and every person on board required to turn his in before sailing time.

PORTS.

After being closed for the night, no port should be permitted open. Cases have occurred in which the passenger or member of the crew, in order to get air, has after turning out his light opened the port. Later the light was turned on and the port left carelessly open. Notices of caution should be posted conspicuously about the ship.

Extreme vigilance is the price of a completely darkened ship, and frequent inspections by those in authority *must* be made.

WATER-TIGHT BULKHEADS.

These should be inspected for water-tight integrity, etc. They should be kept closed and dogged at all times at sea, day and night. All unnecessary doors, nonwater-tight, should also be kept closed, for this might assist, at least, in keeping the ship afloat for a longer time while aid was coming. Fore and after bulkheads are a menace, because in the case of a torpedo the ship will probably take a list over on the holed side. Fore and aft bulkhead doors should be removed.

CLOTHING.

Members of armed guards should be careful that they have a complete outfit of heavy clothes, boots, rain clothes, and pea-coats. Woolen underwear is especially desirable to guard against exposure in open boats, particularly necessary in case of wet clothes due to rain or boat capsizing. In northern latitudes it is extremely cold even during summer months.

GUN'S CREW.

The armed guard should resist the submarines to the last and never tamely allow them to take charge of things. Submarines have shelled ship's boats and shown by their actions that they have no regard for the common rules of humanity or respect for life, therefore, it is suggested that a policy of "no surrender, no quarter" be adopted toward them, in which case we are given the advantage of meeting them on common ground, and in the course of time it might induce them to timidity and lack of daring. I learned at the embassy, London, that a few submarine commanders were achieving more success than the majority. This they attributed to the fact that some were more daring than others, and this quality is most essential in a submarine commander. Consequently, any measures that we take to make them more wary of us will decrease their efficiency.

NOTE.—The machine gun should *not* be put in the same boat with blue jackets in uniform. In carrying out the above idea, care must be taken in passenger ships that nothing is done that might jeopardize the lives of noncombatants.

DEPTH BOMBS.

It is recommended that all ships be equipped with a howitzer firing a depth bomb of at least 150 pounds of TNT. A heavy charge landing in the water and exploding at a depth in the vicinity of a submarine is going to do serious damage, not only to the personnel, but to the delicate internal mechanism of the boat (such as gyro compasses, storage batteries, depth gauges, etc.). A leak might be started which would force her to the surface, in which case she should be destroyed by gunfire. If submarine commanders knew that they were going to be greeted with a heavy explosion of this nature when once discovered, they would become very wary and make their totally submerged runs of longer duration, which in connection with our own zigzagging would be a large factor in preventing them from accomplishing the surprise attack which is of course the submarine's only reason for existence. It is quite possible that a hit may be made, in which case the submarine would be destroyed, while with the low trajectory gun alone, the chances are slim indeed of doing much damage. Submarines are *not now* being destroyed. They are centering their attacks on merchantmen; here they must be met and combated. While keeping our shipping moving, we protect them and at the same time fight the submarines. In my opinion, the immediate solution of the submarine menace is heavily armed convoys made up with the idea of preventing the submarine from delivering the surprise attack and later of destroying him. A trial of this plan would at least develop something, and at present the only thing which we appear to be doing is a modification or an elaboration of the British plan, which it must be admitted had not been successful in protecting shipping or combating submarines.