

EXHIBIT NO. 116

Op-30C-MD
 (SC)N20-12
 Serial 07830
 Confidential

FEBRUARY 11, 1941.

From: The Chief of Naval Operations.
 To: The Chief of the Bureau of Ordnance.
 Subject: Experimental and Development Work on Nets and Booms.
 Reference: ALUSNA London Dispatch 041625 of February 5, 1941.

1. Reference (a) requested information concerning all promising experimental and development work on nets and booms done by the U. S. Navy since March 1940.

2. As far as this Office is aware, no such work has been done other than the making of minor modifications to the Admiralty designs. It is considered that experimental and development work should be undertaken. If necessary, additional personnel for this purpose should be secured.

3. There appears an urgent need for an anti-torpedo net which can be laid and removed in certain harbors in a short time for temporary use, and which will give good if not perfect protection from torpedoes fired from planes. The present Admiralty type net is designed to withstand torpedoes armed with cutters, and its appurtenances are very heavy. A lighter net which will stop a torpedo not armed with cutters would furnish some protection, especially against torpedoes which would explode on contact with a metal net.

4. Effort should be made to reduce the weights of the present Admiralty nets and booms and their appurtenances without reducing their efficiency in order that they may be more readily handled. As a beginning, it is also suggested that plans be made to test sections of the old A/S net and of the new, as well as indicator nets, by attacking submarines. While such tests may duplicate British experiments, valuable lessons may be learned. It is requested that this office be kept informed of development work and all tests and experiments conducted with nets and booms.

H. R. STARK.

Op-30C1-AJ
 (SC)N20-12
 Serial 09330
 Confidential

NAVY DEPARTMENT
 OFFICE OF THE CHIEF OF NAVAL OPERATIONS
 Washington, Feb. 15, 1941.

From: The Chief of Naval Operations
 To: The Commander-in-Chief, Pacific Fleet
 Subject: Anti-torpedo baffles for protection against torpedo plane attacks, Pearl Harbor.

1. Consideration has been given to the installation of A/T baffles within Pearl Harbor for protection against torpedo plane attacks. It is considered that the relatively shallow depth of water limits the need for anti-torpedo nets in Pearl Harbor. In addition the congestion and the necessity for maneuvering room limit the practicability of the present type of baffles.

2. Certain limitations and considerations are advised to be borne in mind in planning the installation of anti-torpedo baffles within harbors, among which the following may be considered:

(a) A minimum depth of water of seventy-five feet may be assumed necessary to successfully drop torpedoes from planes. One hundred and fifty feet of water is desired. The maximum height planes at present experimentally drop torpedoes is 250 feet. Launching speeds are between 120 and 150 knots. Desirable height for dropping is sixty feet or less. About two hundred yards of torpedo run is necessary before the exploding device is armed, but this may be altered.

(b) There should be ample maneuvering room available for vessels' approaching and leaving berths.

(c) Ships should be able to get away on short notice.

(d) Room must be available inside the baffles for tugs, fuel oil barges and harbor craft to maneuver alongside individual ships.

(e) Baffles should be clear of cable areas, ferry routes, and channels used by shipping.

(f) Baffles should be sufficient distance from anchored vessels to insure the vessels' safety in case a torpedo explodes on striking a baffle.

(g) High land in the vicinity of an anchorage makes a successful airplane attack from the land side most difficult.

(h) Vulnerable areas in the baffles should be so placed as to compel attacking planes to come within effective range of anti-aircraft batteries before they can range their torpedoes.

(i) Availability of shore and ship anti-aircraft protection, balloon barrages, and aircraft protection.

(j) Availability of naturally well protected anchorages within a harbor from torpedo plane attack for a number of large ships. Where a large force such as a fleet is based, the installation of satisfactory baffles will be difficult because of the congestion.

3. As a matter of interest the successful attacks at Taranto were made at very low launching heights at reported ranges by the individual aviators of 400 to 1300 yards from the battleships, but the *depths of water* in which the torpedoes were launched were *between 14 and 15 fathoms*. The attacks were made in the face of intensive and apparently erratic anti-aircraft fire. The eastern shore line of the anchorage and moorings were protected by numerous balloon barrages, but there was no trawler borne balloon barrage to the west. The torpedoes were apparently dropped inside of the nets, probably A/T nets.

4. It is considered that certain large bays and harbors, where a fleet or large force of heavy ships may be anchored and exposed with a large body of water on an entire flank, should have that flank protected by a series of baffles if the water is deep enough for launching torpedoes. The main fleet anchorage at Scapa Flow, for instance, has an A/T net extending slightly to the north of a line between Calf of Flotta and Cava Island protecting the main fleet anchorage. The depth of water where this net is laid is approximately 17 fathoms. On the other hand constricted harbors, in which practically all available space is taken up by anchorages, and which is relatively deep probably must depend upon other defense measures. It might be possible and practicable to provide in some places, which are not protected by relatively shallow water, anti-torpedo baffles practically surrounding a limited [2] number of berths for large ships, such as battleships or carriers. An extreme example of this is furnished at the present time by the French at Dakar, where double nets surround the Richelieu; she is placed similarly as in a dry dock, and evidently would have to open a section of the net to be hauled clear. The depth of water at Dakar, however, is very shallow.

5. The present A/T nets are very expensive, extremely heavy, their heavy anchors and moorings take up about 200 yards of space perpendicular to the line of the net, take a long time to lay, and are designed to stand up under heavy weather conditions. There is apparently a great need for the development of a light efficient torpedo net which could be laid temporarily and quickly within protected harbors and which can be readily removed. It is hoped that some such net can be developed in the near future.

6. Recommendations and comments of the Commander-in-Chief are especially desired.

[s] H. R. STARK.

Copy to: CinC Atlantic Fleet.
CinC Asiatic Fleet.

[1] Op-30C1-AJ
 (SC) N20-12
 Ser. 010230
 Confidential

NAVY DEPARTMENT,
 OFFICE OF THE CHIEF OF NAVAL OPERATIONS,
 February 17, 1941.

From: The Chief of Naval Operations.

To: The Commandant, First Naval District
 The Commandant, Third Naval District
 The Commandant, Fourth Naval District
 The Commandant, Fifth Naval District
 The Commandant, Sixth Naval District
 The Commandant, Seventh Naval District
 The Commandant, Eighth Naval District
 The Commandant, Tenth Naval District
 The Commandant, Eleventh Naval District
 The Commandant, Twelfth Naval District
 The Commandant, Thirteenth Naval District
 The Commandant, Fourteenth Naval District
 The Commandant, Fifteenth Naval District
 The Commandant, Sixteenth Naval District
 The Commandant, Naval Station, Guantanamo.

Subj: Anti-Torpedo Baffle for Protection Against Torpedo Plane Attacks.

1. In previous correspondence, the Commandants and local joint planning committees have been requested, where considered necessary, to submit recommendations concerning the employment of nets and booms in their defenses. In nearly all cases the recommendations received were limited to harbor entrances. One of the reasons for this was that the Department, after previously making a study of many harbors, submitted certain proposals for consideration by the districts, but did not specifically propose any protection against torpedo plane attacks.

2. The Commandants and local joint planning committees are requested, if they have not already done so, to consider the employment of and to make recommendations concerning anti-torpedo baffles, especially for the protection of large and valuable units of the Fleet in their respective harbors, and especially at the large fleet bases.

3. In considering the use of A/T baffles, the following limitations, among others, may be borne in mind:

[2] (a) A minimum depth of water of 75' may be assumed necessary to successfully drop torpedoes from planes. About 200 yards of torpedo run is necessary before the exploding device is armed, but this may be altered.

(b) There should be ample maneuvering room available for vessels approaching and leaving berths.

(c) Ships should be able to get away on short notice.

(d) Room must be available inside the baffle for tugs, fuel oil barges and harbor craft to maneuver alongside individual ships.

(e) Baffles should be clear of cable areas, ferry routes, and channels used by shipping.

(f) Baffles should be sufficient distance from anchored vessels to insure the vessels' safety in case a torpedo explodes upon striking baffle.

(g) High land in the vicinity of an anchorage makes a successful airplane attack from the land side most difficult.

(h) Vulnerable areas in the baffles should be so placed as to compel attacking planes to come within effective range of anti-aircraft batteries before they can range their torpedoes.

(i) Availability of shore and ship anti-aircraft protection, balloon barrages, and aircraft protection.

(j) Availability of naturally well-protected anchorages within the harbor from torpedo plane attack on a number of large ships. Where a large force such as a Fleet is based, the establishment of certain baffles would be difficult because of congestion.

R. E. INGERSOLL,
Acting.

cc: CinCPac
 CinC Atlantic
 CinC Asiatic

Co, NavNetDep, Tiburon BuOrd
 Co, NavNctDep, Newport Op-12

UNITED STATES FLEET

U. S. S. PENNSYLVANIA, Flagship

CinC File No.
S81-5/0398
Confidential

AT SEA, HAWAIIAN AREA, Mar. 12, 1941.

From: Comander-in-Chief, U. S. Pacific Fleet.

To: The Chief of Naval Operations.

Subject: Anti-torpedo baffles for protection against torpedo plane attacks, Pearl Harbor.

Reference: (a) CNO Conf. ltr. file Op-30C1-AJ (SC) N20-12 Serial 09330 of 15 Feb. 1941.

1. In view of the contents of reference (a), the Commander-in-Chief, U. S. Pacific Fleet, recommends that until a light efficient net, that can be laid temporarily and quickly is developed, no A/T nets be supplied this area.

H. E. KIMMEL.

C-N20-12/ND14
(0250)

Confidential

20 MARCH 1941.

From: Commandant, Fourteenth Naval District.

To: The Chief of Naval Operations.

Subject: Anti-torpedo baffles for protection against torpedo plane attacks.

Reference: (a) CNO Classified ltr serial 010230 of February 17, 1941.

1. In reply to reference (a) the following comment and recommendation on anti-torpedo baffles for vessels moored in Pearl Harbor is submitted.

(a) The depth of water in and alongside available berths in Pearl Harbor does not exceed forty-five (45) feet.

(b) There is limited maneuvering area in Pearl Harbor for vessels approaching and leaving berths which prevents the departure of a large group of vessels on short notice.

(c) Most of the available berths are located close aboard the main ship channels, which are crossed by cable and pipe lines as well as ferry routes. The installation of baffles for the fleet moorings would have to be so extensive that most of the entire channel area would be restricted.

2. Other harbors in the Fourteenth Naval District have a water depth limitation similar to Pearl Harbor.

3. In view of the foregoing the Commandant does not recommend the installation of baffles for moorings in Pearl Harbor or other harbors in the Fourteenth Naval District.

C. C. BLOCH.

cc: to

CINCPACIFIC
BUORD

Op-30C1-LH
(SC) N20-12
Serial 027830

NAVY DEPARTMENT
OFFICE OF THE CHIEF OF NAVAL OPERATIONS

Washington, Apr. 9, 1941.

From: The Chief of Naval Operations

To: The Chief of Bureau of Ordnance

Subject: Anti-Torpedo Nets

Reference:

(a) Op-30C Serial 07830 of 11 Feb. 1941

(b) O. N. I. Serial 24-41, Monograph Index Guide 603-600

1. In reference (a) the Chief of Naval Operations brought forth the necessity for experimental and development work in connection with nets and booms, and especially the need for a light anti-torpedo net. The attention of the Bureau is directed to reference (b) which gives certain details of an apparently much lighter net now used by the Germans.

/s/ R. E. INGERSOLL,

Acting.

Op-30C1-AJ-5/19
 (SC) N20-12/ND14
 Serial 046230

Confidential

MAY 20, 1941.

From: The Chief of Naval Operations.
 To: The Commandant, Fourteenth Naval District.
 Subject: Net Defenses, Fourteenth Naval District.
 Reference:

- (a) CNO ltr. OP-30C Serial 367330 of Dec. 7, 1940.
- (b) CNO ltr. OP-30C Serial 375930 of Dec. 23, 1940.
- (c) CNO ltr. OP-30C Serial 18530 of Jan. 21, 1941.

1. The Commandant is directed to lay the net defenses in the Fourteenth Naval District, when the procurement of material permits, if this meets with the approval of the Commander-in-Chief, Pacific Fleet. The Bureau of Ordnance has been requested to expedite the procurement of the necessary material.

2. The laying of the above defenses will necessitate certain protective measures to shipping and to the nets, and will necessarily place the harbors to some extent in a situation similar to that existing under war conditions. In reference (a) the Commandant was directed to take preliminary steps to be prepared to lay the nets and to properly tend them after laying. In reference (b) an estimate of personnel necessary at the beginning of a war was submitted for information. In reference (c) the Commandants were authorized to confer with Local Coast Guard authorities concerning necessary additional navigational aids. Local regulations and instructions considered necessary for the information and control of shipping should be taken up with the District Engineer, U. S. Army, and the District Commander, U. S. Coast Guard.

3. The present standard A/T net is 30 feet in depth, which when suspended protects to a depth of 35 feet when not affected by currents. Hence, it is possible that magnetically fired torpedoes may be fired under the nets and exploded below ships berthed inside of the nets. It is suggested, therefore, that the inner of the double A/T nets be suspended as much as 15 feet in order to give necessary vertical protection where the depth of water permits torpedoes being fired under the nets and under ships berthed inside. The suspension of the inner net decreased partially the protection furnished by two nets for shallow running torpedoes. Later it may be advisable to order aprons to be secured to the present type of net.

R. E. INGERSOLL,
Acting.

Copy to:
 BuOrd
 Op-12
 CinCpac

Op-30C1-AJ
 (SC) N20-12
 Serial 055730
 Confidential

NAVY DEPARTMENT
 OFFICE OF THE CHIEF OF NAVAL OPERATIONS
 Washington, June 13, 1941.

From: The Chief of Naval Operations
 To: The Commandant, First Naval District
 The Commandant, Third Naval District
 The Commandant, Fourth Naval District
 The Commandant, Fifth Naval District
 The Commandant, Sixth Naval District
 The Commandant, Seventh Naval District
 The Commandant, Eighth Naval District
 The Commandant, Tenth Naval District
 The Commandant, Eleventh Naval District
 The Commandant, Twelfth Naval District
 The Commandant, Thirteenth Naval District
 The Commandant, Fourteenth Naval District
 The Commandant, Fifteenth Naval District
 The Commandant, Sixteenth Naval District

Subject: Anti-torpedo baffles for protection against torpedo plane attacks.
 Reference: (a) CNO conf. ltr. Op-30C1 Serial 010230 of Feb. 17, 1941.

1. In reference (a) the Commandants were requested to consider the employment of and to make recommendations concerning anti-torpedo baffles especially

for the protection of large and valuable units of the fleet in their respective harbors and especially at the major fleet bases. In paragraph 3 were itemized certain limitations to consider in the use of A/T baffles among which the following was stated:

"A minimum depth of water of 75 feet may be assumed necessary to successfully drop torpedoes from planes. About two hundred yards of torpedo run is necessary before the exploding device is armed, but this may be altered."

2. Recent developments have shown that United States and British torpedoes may be dropped from planes at heights of as much as three hundred feet, and in some cases make initial dives [2] of considerably less than 75 feet, and make excellent runs. Hence, it may be stated that it can not be assumed that any capital ship or other valuable vessel is safe when at anchor from this type of attack if surrounded by water at a sufficient distance to permit an attack to be developed and a sufficient run to arm the torpedo.

3. While no minimum depth of water in which naval vessels may be anchored can arbitrarily be assumed as providing safety from torpedo plane attack, it may be assumed that depth of water will be one of the factors considered by any attacking force, and an attack launched in relatively deep water (10 fathoms or more) is much more likely.

4. As a matter of information the torpedoes launched by the British at Taranto were, in general, in thirteen to fifteen fathoms of water, although several torpedoes may have been launched in eleven or twelve fathoms.

R. E. INGERSOLL.

Copy to:

CinCpac
CinClant
CinCaf
C. O. Naval Net Depot, Tiburon
C. O. Naval Net Depot, Newport
Comdt. NavSta, Guantanamo
Comdt. NavSta, Samoa
BuOrd
Op-12

Op-30C1-FM
SS1-3 (410916)
Serial 470330

SEPTEMBER 16, 1941.

Restricted

From: The Chief of Naval Operations

To: The Chief of Bureau of Ordnance.

Subject: Experimental and Development Work on Nets and Booms.

Reference:

(a) Op-30C Serial 07830 of 11 February 1941.

(b) Op-30C1 Serial 027730 of 9 April 1941.

(c) Alusna London ONI Report Serial 1674, Mono. Index Guide No. 910-4000 of 24 July 1941.

(d) ONI Serial 1745 Guide No. 910-4000 of 1 August 1941.

1. It is suggested that in order that progress may be made in solving some of the problems which confront us, that a small group of officers, engineers and draftsmen be assigned exclusively to planning improvements in net and boom designs and to development and experimental work. The group, it is suggested, may be aided by using the facilities of the Net Depots at Tiburon and Newport. It is suggested that these two depots appear suitable as centers for experimental and development work.

2. In references (a) and (b) the Chief of Naval Operations indicated the desirability of undertaking some research and development work. Among other suggestions, the need for a lighter anti-torpedo net was stressed, which can be laid and removed in harbors in a short time for temporary use, and which will give good if not perfect protection from torpedoes fired from planes.

3. Designs are requested to be prepared giving A/T net protection to one or more large ships moored in harbors against torpedo plane attack in which the

A/T net may be placed completely around one or more large ships, similar to placing the ship (or ships) in a "dry-dock" of A/T net. It may be assumed that the currents inside of most harbors are not as great as at the entrances, and the moorings of such nets may be of less weight and less extensive than for the present A/T nets which are designed principally for harbor entrances. As such nets may desired for advance bases, as little weight and volume of material as possible is desirable. As little space as possible should be taken up by the nets in order not to take up too much anchorage space.

4. Designs of A/T nets which might be attached to booms on ships or floating off of ships at anchor are requested to be prepared in conjunction with the Bureau of Ships. In a design of this type it may be possible to do away with mooring the nets. A net which deflects rather than stops the torpedo may possibly be designed.

5. Reference (c) is a preliminary Admiralty report on the development of a torpedo net defense for merchant ships at sea. It is requested that the Bureau of Ordnance in conjunction with the Bureau of Ships undertake a similar development work for the protection of ships underway at sea.

6. It is possible that in our Navy the assumption has been reached that anchorages protected by nets are secure. Nets are defensive measures and, in general, are without destructive means. Patrol vessels are required in conjunction with net defenses, and of the two measures of defense, the vessels, capable of offensive action, are probably the more important. It is not believed that the tests with nets conducted by the British should be accepted as conclusive. While one test of torpedo firing against an A/T net has been conducted by the Bureau, the torpedo was not equipped with cutters. No other tests have as yet been held. It may be well to repeat and to extend the British tests. It may be worthwhile to know the exact damage which will be done to an anti-torpedo net from a torpedo fired in the net.

7. Until the present in great measure reliance in this mode of defense has been placed on British designs, experiments and tests. It is considered that now we should be in a position to take more progressive action. In this letter it is realized that the requests made are not concrete and definite, but serve only to indicate several of the problems toward the solution of which action may be directed.

R. E. INGERSOLL,
Acting.

Copy to: BuShips

UNITED STATES PACIFIC FLEET

U. S. S. PENNSYLVANIA, FLAGSHIP

Cincpac File No.
A16/ND14/(16)
Serial 086W
Secret

PEARL HARBOR, T. H., *Sep 20, 1941.*

From: Commander-in-Chief, U. S. Pacific Fleet.

To: Commandant, Fourteenth Naval District.

Subject: Blocking Pearl Harbor Channel.

Reference: (a) Com-14 Conf. ltr. C-A16/H3/ND14 (0800) of August 16, 1941.

1. In view of anti-submarine defenses approved for and now in process of installation at Honolulu and Pearl Harbor, the Commander-in-Chief does not desire to reopen the question of anti-submarine nets thereat.

2. With reference to laying defensive mine fields off those harbors, it is believed there is insufficient prospect of commensurate return for the restricted maneuverability and risks involved to our own ships.

3. The Commander-in-Chief has noted with approval the action initiated toward obtaining suitable radar for protection of channel entrance. He would like to see this matter vigorously prosecuted. Please keep him informed as to progress.

4. WPL-46 assigns salvage in these waters as a task for the forces afloat, assisted by such facilities as the shore establishment may be able to provide. Organization and assembly of equipment is now in process under Commander Base Force. It is requested that the results of the study and inventory referred to in paragraph (3) of the reference (a) be made available to Commander Base Force and that, if and when necessity arises, appropriate local facilities and technical facilities be furnished him.

H. E. KIMMEL.

Op-30C1-HF
 (SC) N20-12/ND12
 Doc. 35904
 Serial 0101130-

NAVY DEPARTMENT,
 OFFICE OF THE CHIEF OF NAVAL OPERATIONS,
 Washington, 3 October 1941.

From: The Chief of Naval Operations
 To: The Chief of Bureau of Ordnance
 Subject: A/T Net Defenses, San Francisco Bay.
 Reference: (a) Proceedings of meeting of Local Joint Planning Committee, Northern California Sector, Pacific Coastal Frontier, of September 17, 1941.

Enclosure: (A) Copy of reference (a).

1. Enclosure (A) is forwarded for information.
 2. Attention is invited to paragraph 3 of the enclosure. The Chief of Naval Operations considers it urgent to develop an anti-torpedo net which can be made up, towed to a desired location, and quickly laid. The use of pontoons, as suggested, does not appear to solve this question; a reduction in the number of moorings, at present necessary for the standard net, would seem to be required.

[S] R. E. INGERSOLL,
 Acting.

[1] PW2/A16-3/022
 Confidential

Sr.

EXHIBIT NO. 117

PATROL WING TWO
 U. S. NAVAL AIR STATION
 Pearl Harbor, Hawaii, U. S. A., 16 Jan. 1941.

From: The Commander Patrol Wing TWO,
 To: The Chief of Naval Operations.
 Via: (1) The Commander Scouting Force.
 (2) The Commander-in-Chief, U. S. Fleet.
 Subject: Patrol Wing TWO—Readiness of.
 Reference: (a) OpNav Conf. serial 09522 to the Commander-in-Chief, U. S. Fleet "Protection of Fleet Aircraft."

1. I arrived here on October 30, 1940, with the point of view that the International situation was critical, especially in the Pacific, and I was impressed with the need of being ready today rather than tomorrow for any eventuality that might arise. After taking over command of Patrol Wing TWO and looking over the situation, I was surprised to find that here in the Hawaiian Islands, an important naval advanced outpost, we were operating on a shoestring and the more I looked the thinner the shoestring appeared to be.

2. (a) War Readiness of Patrol Plane Squadrons is dependent not only on the planes and equipment that comprise these squadrons, but also on many operating needs and requirements at Air Stations and outlying bases over which the Patrol Wing Commander has no direct control. Needs and requirements for War Readiness include: spare planes, spare engines, hangar and beach equipment, squadron equipment, spare parts, stores, material, bombs, ammunition, base operating facilities, overhaul and repair facilities, qualified personnel to man all these facilities and shops, all in sufficient adequacy to insure continuous operating readiness. These cannot be provided overnight. The isolation of this locality from the source of supply, the distance, and time involved, make careful and comprehensive long distance planning mandatory. I am informed that in the past, the average interval between the actual request and receipt of material has been nine months.

(b) Reference (a) reads, in part, as follows: "In about one year practically all fleet aircraft except Patrol Wing TWO will have armor and fuel protection". As there are no plans to modernize the present patrol planes comprising Patrol Wing TWO, this (2) evidently means that there is no intention to replace the present obsolescent type of patrol planes in Patrol Wing TWO prior to one year and that Patrol Wing TWO will be practically the last Wing to be furnished new planes. This, together with the many existing deficiencies, indicates to me