(a) After hostile offensive action, such as the use of bombs, torpedoes, mines and other ammunition, has been observed.

(b) After receipt of a verified report of a hostile attack.

(c) Upon orders from this headquarters.

* * *

By command of Lieutenant General SHORT:

/s/ Philip Hayes

PHILIP HAYES,

Colonel, General Staff Corps,

Chief of Staff.

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Cincpac File No.
A2-11/FF12/
A4-3 QL/(13)
Serial 01646

UNITED STATES PACIFIC FLEET

U.S.S. PENNSYLVANIA, Flagship

Pearl Harbor, T. H.,

October 14, 1941

* * *

(b) That a declaration of war may be preceded by:

(1) a surprise attack on ships in Pearl Harbor,

(2) a surprise submarine attack on ships in operating area,

(3) a combination of these two.

* * *

(2) Air Patrols:

(a) Daily search of operating areas as directed by Aircraft, Scouting Force.

* * *

(G) DEFENSE AGAINST AIR ATTACK:

(1) The principal Army anti-aircraft gun defense of Pearl Harbor consists of several three-inch mobile batteries which are to be located on the circumference of a circle of an approximate radius of five thousand yards with center in the middle of Ford Island. The Army, assisted by such units of the Marine Defense Battalions as may be available, will man these stations. Machine guns are located both

h2

inside and outside the circle of three-inch gun positions.

(2) In the event of a hostile air attack, any part of the Fleet in Pearl Harbor plus all Fleet aviation shore-based on Oahu, will augment the local air defense.

(3) Enclosure (A) defines the air defense sectors in Pearl Harbor and is the basis for the distribution of ships within the harbor for anti-aircraft fire. Hostile planes attacking in a sector shall be considered as the primary targets for ships in that sector. However, ships in other sectors may augment fire of any other sector at the discretion of the Sector Commander.

(4) The Senior Officer Embarked in Pearl Harbor (exclusive of Commander-in-Chief, U.S.Pacific Fleet) shall ensure that ships are disposed at berths so that they may develop the maximum anti-aircraft gunfire in each sector commensurate with the total number of ships of all types in port. He is authorized to depart from the normal berthing plan for this purpose. Battleships, carriers, and cruisers shall normally be moored singly insofar as available berths permit.

(5) The Senior Officer Present in each sector prescribed in sub-paragraph (G) (3) above, is the Sector Commander, and responsible for the fire in his own sector.

(6) The Commandant Fourteenth Naval District is the Naval Base Defense Officer (N.B.D.O.) As such he shall:

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(a) Exercise with the Army joint supervisory control over the defense against air attack.

(b) Arrange with the Army to have their anti-aircraft guns emplaced.

* * *

Condition I -- General Quarters in all ships. Condition of aircraft as prescribed by Naval Base Defense Officer.

Condition II -- One-half of anti-aircraft battery of all ships in each sector manned and ready. Condition of aircraft as prescribed by Naval Base Defense Officer.

Condition III -- Anti-aircraft battery (guns which bear in assigned sector) of at least one ship in each sector manned and ready. (Minimum of four guns required for each sector). Condition of aircraft as prescribed by Naval Base Defense Officer.

* * *

Mr. Mitchell: We have a study dated August 20, 1941, five months before this attack made by General Martin of the Air Corps and Admiral Bellinger of the Naval Corps, which is a most voluminous document.

I think the committee have had copies of it, and have had it for some time. I would like to offer that as Exhibit 13.

The Chairman: Without objection, so ordered.

(The document referred to was marked Exhibit No. 13)

Mr. Mitchell: I would like to have the body of that report transcribed into the record, except the diagrams. It is only a few pages.

The Chairman: That will be done. The general counsel will mark the part to be copied so the reporter will understand.

(The matter referred to is as follows:)

rbm 1

HEADQUARTERS HAWAIIAN AIR FORCE

Office of the Air Force Commander (T-3)

Hickam Field, T. H.

In reply refer to: 20 August 1941

SUBJECT: Study of the Air Situation in Hawaii.

TO : Commanding General, Army Air Forces, Washington, D. C.

THRU : Commanding General, Hawaiian Department, Fort Shafter, T. H.

1. In compliance with copy of corrected memorandum for the Commanding General, Army Air Forces, OCS 17234-25, from the Secretary, General Staff, dated July 17, 1941, "that a study be made of the air situation in Hawaii", there is attached for consideration of the War Department a plan for the employment of long-range bombardment aviation in the defense of Oahu. This plan clearly presents the air defense of the Hawaiian Islands. Attention is called to the recommendations therein.

2. No increase in personnel of the permanent air garrison of Hawaii is necessary to bring the actual heavy bombardment strength to one group. Under provisions of Table of Basic Allowances No. 1, War Department dated December 1, 1940, fourteen additional heavy bombardment airplanes will be required to provide a total strength of one group of thirty-five B-17D type airplanes. This force is so small for the mission to be performed that it is considered entirely inadequate.

3. When the RDF installation is completed and the 15th

Subject: Study of the Air Situation in Hawaii, cont'd:

Pursuit Group has its full complement of 80 fighters no further increase for pursuit aviation is considered necessary. Provision should be made to maintain at all times the 14th Pursuit Wing at full combat strength of 80 fighters and 105 interceptors. It is contemplated that pursuit aviation will perform its normal mission in the defense of these islands by intercepting and destroying enemy aircraft in the vicinity of or over the island of Oahu. This is considered an adequate force to perform the pursuit mission in the defense of these islands.

4. A combination medium bombardment-torpedo force is considered highly desirable in order that attack can be made under conditions of low visibility when horizontal bombing is not feasible and is therefore recommended as a component part of the Hawaiian Air Force. (See Study No. 2 in attached plan.)

5. On the assumption that there is a possibility of enemy surface craft reaching the shores of Oahu, one squadron of dive bombers is considered necessary to assist the ground forces in withstanding an invasion effort by concentrating on denying the enemy any opportunity to establish beach heads. The quick and accurate striking power of dive bombers makes them particularly effective for close-in support on the ground forces and this premise is borne out by information contained in intelligence reports received on the war in Europe. Dive bombers would also be employed against hostile surface craft and submarines

Subject: Study of the Air Situation in Hawaii, cont'd:

which had penetrated close to the shores of Oahu.

6. With the addition of the force of medium bombardment-torpedo airplanes and one squadron of dive bombers no further increase in the number of light bombardment airplanes is required.

7. One additional observation squadron should be assigned the Hawaiian Air Force to supplement the new ground organization of the Hawaiian Department which is being re-organized into two triangular divisions. The ground forces of the Hawaiian Department should be provided with three observation squadrons. At present there is assigned one observation squadron (C&D) and one light bombardment squadron which could be diverted to observation duty.

8. To increase the number of aircraft in the Hawaiian Air Force as outlined in this letter and in the attached plan it is estimated that approximately 3,871 additional men should be assigned. A minimum of 216 combat crews and 180 maintenance crews are necessary to operate 180 B-17D type airplanes. Sufficient personnel are now present in the Hawaiian Air Force to man 70 combat crews and 70 maintenance crews for heavy bombardment aircraft. Additional personnel equal to the difference above should be assigned to the Hawaiian Air Force to meet these requirements. Further personnel increases should be made to activate two medium combination bombardment-torpedo squadrons, one dive bomber

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Subject: Study of the Air Situation in Hawaii, cont'd:

squadron, one additional observation squadron and five air base squadrons. The five air base squadrons will be used to maintain the outlying fields tabulated below which will house heavy bombardment squadrons as indicated. The two Air Base Groups (S) are to be used to maintain Bellows Field and the site selected for the station of the 15th Pursuit Group.

Barking Sands 2

Morse Field 2

Hilo 1

Lanai 1

Parker Ranch 1

9. The dive bomber squadron and three observation squadrons with allied services will become, in effect, air support command and will be stationed at Bellows Field.

10. Tables of Organization prescribe five enlisted men for each heavy bombardment combat crew. For continuous daily operation a minimum of fourteen men will be necessary for each heavy maintenance crew. Using these figures as a basis, personnel requirements have been computed as shown in Inclusure No. 2.

11. There is at present available, under construction and awaiting approval of the War Department, housing for 12,288 enlisted men. This study will require housing for a total of 12,813 men to provide for all Air Corps and associated personnel.

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Subject: Study of the Air Situation in Hawaii, cont'd:

This leaves but 525 men to be cared for in a future project which will be submitted when this study has been approved. For detailed analysis of housing see Inclosure No. 3.

12. It is my conviction that by increasing the present strength of the Hawaiian Air Force by one observation squadron, a minimum of one dive bomber squadron, two squadrons of combination medium bombardment-torpedo airplanes and by increasing the strength of long-range bombardment to a total of 180 airplanes a positive defense of the Hawaiian Islands can be assured without any assistance whatever from the naval forces giving the Navy complete freedom of action.

F. L. MARTIN,
Major General, U. S. Army,
Commanding.

3 Incls-
Incl #1 - Plan for the Employment of Long-Range Bombardment Aviation in the Defense of Oahu. (In triplicate).

Incl #2 - Personnel Requirement Recapitulation. (In triplicate).

Incl #3 - Air Force Housing Facilities. (In triplicate).

PLAN FOR THE EMPLOYMENT OF BOMBARDMENT AVIATION IN THE DEFENSE OF OAHU

1. GENERAL:

1. The key to this plan is found in the provision for first, a complete and thorough search of the Hawaiian area daily during daylight; secondly, an attack force available on call to hit a known objective located as a result of the search and thirdly, if the objective is a carrier, to hit it the day before it could steam to a position offshore of Oahu where it could launch its planes for an attack.

2. The most difficult problem presents itself when it is necessary to search through 360°. This might occur daily and it is the only one considered in this study. It is possible, of course, that intelligence obtained from advanced naval bases and ships at sea might implement this plan and reduce the search area to 270°, 180° or even 90°. In this case, the striking force would be augmented by those planes not required for search.

3. All computations in connection with air operations under this plan are based on the B-17D airplane. This type of airplane is considered available for either a search mission or an attack mission and consequently no reference is made to reconnaissance or bombardment aviation as such but to the search or the attack forces. The combat crew training of both will be identical and search and attack missions will

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

be rotated for the purpose of resting crews and maintaining aircraft.

II. THE PROBLEM:

1. To analyze the mission of heavy bombardment aviation in the defense of Oahu with a view to promulgating a plan in accordance therewith.

III. FACTS BEARING ON THE CASE:

1. Facts:

a. The Army mission is: "To defend the Naval Base of Oahu".

b. The bombardment mission is:

(1) When Navy reconnaissance is adequate:

"To attack and destroy enemy surface craft within radius of action."

(2) When Navy is absent or not present with equipment in Numbers of Quality:

"To search for, attack and destroy enemy surface craft within radius of action."

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

c. *Capabilities of B-17D type airplanes are:

	Gal Fuel used	Miles flown
(1) Search at 45% Power at 5,000' Altitude		
(No bombs-2500 gallons fuel)		
One hour full throttle operations	432	214
Two hour fuel reserve	272	
Climb	30	10
Cruise at 143 knots at 136 gal/hr	1766	1910
	2500	2134
Radius of Action in nautical miles		1067
(2) Search - Attack at 45% at 5,000'		
(4-600# bombs - 2100 gallons fuel)		
One hour full throttle operation	432	214
Two hours fuel reserve	272	
Climb	30	10
Cruise at 143 knots at 136 gal/hr	1366	1485
	2100	1709
Radius of Action in nautical miles		854

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

	Gal Fuel used	Miles flown
(3) Attack at 65% Power - Return at 45% Power at 15,000'		
(4-600# bombs - 2100 gallons fuel)		
One hour full throttle operation	432	236
Two hours fuel reserve at 45% power	272	
Climb	90	27
65% Power - 193 knots at 208 gal/hr	687	643
45% Power - 150 knots at 136 gal/hr	612	643
	2093	1549
Radius of Action in nautical miles		775
(4) Attack at 65% Power - Return at 45% Power at 15,000'		
(8-600# bombs - 1700 gallons fuel)		
One hour full throttle operation	432	236
Two hours fuel reserve at 45% power	272	
Climb	90	27
65% Power - 193 knots at 208 gal/hr	485	450
45% Power - 150 knots at 136 gal/hr	408	450
	1687	1163
Radius of Action in nautical miles	1700	581

* Note - The above capabilities were taken from .

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

curves in the B-17D handbook and checked by actual flight tests.

d. To perform its missions, the Fleet must have freedom of action without responsibility for the defense of its base.

e. If the solution to a problem is designed to meet the most adverse conditions, any less adverse condition will facilitate the solution.

f. Army Air Force units at present are not charged with the reconnaissance mission for the defense of Oahu.

g. The combatant force having the longer range weapon has a basic advantage, other factors being equal.

h. The bombardment airplane is the longest range weapon which the Department Commander has at his disposal.

2. Assumptions:

a. The following are the assumed or known maximum capabilities of enemy equipment:

(1) Some of his carriers can steam at 30 knots for at least 24 hours. (Best available intelligence indicates ORANGE has three carriers with this performance).

(2) His carrier bombing planes have 600 nautical miles range and cruise at 180 knots (based on performance data of the U.S. Navy carrier planes

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

and no allowance is made for take-off, rally after attack, full throttle operation and landing).

b. The following are the assumed probable capabilities of enemy equipment:

(1) His carriers steam at 27 knots for 24 hours. (28 knots is the mean top speed of his carriers; 1 knot reduction is made for foul bottoms).

(2) His carrier bombing planes have 400 nautical miles range and cruise at 180 knots (reduction in range from 600 to 400 nautical miles is made to allow for take-off, rally after attack, full throttle operation and landing).

Note: In the discussion that follows it is assumed that hostile carriers operating under conditions a and b above once committed to action will steam straight in to their launching radius. Any maneuvering by the enemy when within our search area will simplify our problem for it will give the search force more time in which to locate the enemy.

c. The Hawaiian Air Force is primarily concerned with the destruction of hostile carriers in this vicinity before they approach within range of Oahu where they can launch their bombardment aircraft for a raid or an attack on Oahu.

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

d. An enemy will not venture an attack against the Hawaiian Islands until control of sea lanes of communication is obtained. Then as the enemy fleet approaches those islands, raids by surface vessels, submarines and carrier-based aircraft, may be expected.

e. Our most likely enemy, ORANGE, can probably employ a maximum of 6 carriers against Oahu.

f. A 25-mile visibility is assumed. This assumption is based on standard U. S. Navy search and patrol methods employed in this area.

g. For the purpose of this problem the day is divided into 13 hours of daylight and 11 hours of darkness. These assumptions are based on the following computations:

(1) June 22, 20° N. Lat., Sunrise	0521
Sunset	1842
Hours of daylight	1321
Add: Morning Twilight	25
Evening Twilight	24
Total hours of daylight	14:10

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

(2) December 21, 20° N. Lat., Sunrise	0630
Sunset	1750
Hours of daylight	1120
Add: Morning Twilight	24
Evening Twilight	24
Total hours daylight	12:08
Average (1) and (2)	13:09

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Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

IV. DISCUSSION:

Part 1: The Search:

1. The only manner in which the Hawaiian area can be thoroughly searched for enemy surface craft, particularly aircraft carriers, in the event of a situation requiring such action, is to provide a sufficient number of aircraft to conduct a daily search of a desired area during daylight hours with 100 percent coverage through 360°. A method of searching 5° sectors through 360° to a radius of 833 nautical miles from Oahu employing 72 B-17D airplanes is indicated in Chart No. 1. It will be noted that the outside lines of visibility for the diverging tracks cross at the 600 nautical mile circle, the overlap area inside of that distance becoming a non-covered area beyond that distance. The width of the non-covered area increases as the distance increases beyond 600 nautical miles with the corollary that the probability of finding the target decreases as the search continues out. However, as can be seen on the chart, each search plane on the search back covers the area not covered between any two planes on the search out and, in addition, covers the area previously searched by the plane on its left on the search out but uncovered on the search back, 100% coverage of the area is, therefore, obtained on the search out and back.

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

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2. In order to have available for ready reference a means of determining coverage and non-coverage of areas on the search out using 3°, 4° and 5° sectors, there is attached Chart No. 2. The method of constructing the curves thereon is indicated on the chart. It will be observed that, with the assumed visibility of 25 miles, 100% coverage on the search out is obtained to a radius of:

a. 600 nautical miles with airplanes in 5° sectors.

b. 750 nautical miles with airplanes in 4° sectors.

c. 1000 nautical miles with airplanes in 3° sectors.

3. Under any given set of operating data for the search planes and enemy carrier, the radius of action of the search force is determined by:

a. Rate of closure of the carrier and search planes.

b. Minimum distance the carrier can be offshore and allow the search force to make interception and relay the information to the attack force.

c. Minimum time required for the attack force to make interception beyond the radius of action of the carrier planes.

4. In developing this plan, all search aircraft take off at daylight. They might take off during darkness in order to be at a certain location at dawn if definite information as to the movements of enemy surface vessels is reported from some source such as our search of a previous day, friendly surface vessels or Navy patrol.

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

h3 Part 2: This part of the discussions deals with the maximum capabilities of enemy equipment namely. his carriers steam at 30 knots and his bombing planes have 600 nautical miles range and cruise at 180 knots. See Chart No. 3.

1. Section No. 1:

a. An enemy should be primarily interested in obtaining the maximum cover of darkness for his carrier approach. This section illustrates four possible uses of darkness by an enemy to cover his approach. In each case the distance out for dusk and dawn is computed from the most distant aircraft launching circle, or 350 nautical miles. This figure is based on the fact that after launching, the carrier planes will be in the air 3:20 and during that time the carrier steams in 100 nautical miles to recover its planes.

b. 1A shows a carrier launching its aircraft at midnight, attacking and recovering during darkness; 1B shows the launching at dusk with the attack and recovery during darkness; 1C shows the launching at noon with the attack and recovery during daylight; and 1D shows the launching at dawn with the attack and recovery during daylight.

c. It will be noted that each time schedule has a daylight period within the radius of action of the attack force but that 1D permits the least time interval for our forces to operate against an enemy and requires it to attack

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Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

at the longest range. The early morning attack is, therefore the best plan of action open to the enemy.

d. It is the opinion of some individuals that a late afternoon attack is highly probable since it permits an enemy carrier to escape under cover of darkness. This presupposes that search operations are impracticable. This headquarters cannot subscribe to this opinion for the following reasons:

(1) A minor surprise raid such as a single carrier is not a logical method of attack to reduce the defenses of Oahu.

(2) It permits us to operate against him for a long period on D Day at close range.

(3) The enemy will be more concerned with delivering a successful attack than he will be with escaping after the attack. He will have carefully considered the cost of the enterprise, will probably make a determined attack with maximum force and will willingly accept his losses if his attack is successful.

2. Section No. 2:

a. This section illustrates a routine daily search by the search force which will be made in order to prevent an

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Plans for the Employment of Bombardment Aviation in the Defense of Oahu. cont'd:

enemy from making an undetected approach on Oahu.

b. Specifically, with the carrier approaching at 30 knots and the search force taking off at dawn, interception must be made no closer to Oahu than 435 nautical miles and no later than 3:03 after dawn on D Day. This permits 40 minutes to send a radio message to the home base and get the attack force in the air and 2:10 for it to intercept and deliver its attack before the carrier can launch its planes. The attack force will strike the carrier at its dawn plus 5:34 D Day, 359 nautical miles out.

c. On a time distance basis, dawn D Day for a carrier is 526 nautical miles from Oahu; dusk D Day-1 is 856 nautical miles out and dawn D Day-1 is 1246 nautical miles from Oahu. Solving the rate of closure problem for the two forces 1246 nautical miles apart, it is found that contact will be made at 1030 nautical miles from Oahu at carrier's dawn plus 7:12 on D Day-1.

d. It must be pointed out that this solution is the maximum radius of action for the search force, yet not necessarily the most difficult problem presented to our attack force. While a carrier arriving at the 1030 nautical mile circle at dawn plus 7:12 on D Day-1 cannot be attacked that day, it can be attacked the following day as shown in b

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Plans for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

above when it must come within easy range of the attack force if it is to attempt to steam to within its launching radius.

3. Section No. 3:

a. This section illustrates the most difficult problem which the attack force has to solve. It is the same problem that is illustrated in Section No. 1D. The critical point here is the carrier's position at his launching radius at dawn. Under these circumstances he is able to launch his aircraft before we intercept him and deliver an attack against him on D Day. Therefore, we must hit him D Day-1, or the day before he arrives at this position.

b. Specifically, if his dawn position D Day is 350 nautical miles from Oahu, his dusk position D Day-1 must be 680 nautical miles out and his dawn position D-Day-1 must be 1070 nautical miles out. If he makes good this schedule, interception by the search force will be made at 884 nautical miles out at his dawn plus 6:11 on D Day-1. Allowing 40 minutes to transmit a message and to get the attack force in the air, the attacking force will strike the carrier at its dawn plus 10:43 D Day-1 at a distance of 748 nautical miles from Oahu and can operate against it during the remaining 2:16 before dusk. Under the most favorable conditions for the enemy the enemy carrier can be subjected to attack by our attacking force during a period of 2:16 on D Day-1

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Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

4. Section No. 4: This section shows the radius of action of the B-17D type airplane with full load of bombs and 1700 gallons of fuel.

5. Effect of Visibility (See Chart No. 2):

a. To cover the required search area under the above conditions 120 airplanes, each covering a 3° sector, would be needed to operate to a distance of 1030 nautical miles. This number of planes would permit 100% coverage of the entire 360° on the search out.

b. Obviously any decrease in the number of planes employed will increase the sector to be searched by each plane and therefore reduces the probability of finding the target. Any uncovered area would, however, with a lesser number of search planes be covered on the search back, and depending upon the location of the carrier and the hour of the day, might permit an attack to be made on D Day-1 or D Day.

Part 3: This part of the discussion deals with the assumed probable capabilities of enemy equipment (see Chart No. 4). It is believed that his maximum capabilities will be reduced from those assumed for Sections 1 to 4, inclusive, (Chart No. 3) by the following factors:

1. His average carrier top speed will be 27 knots. This statement is predicated upon the fact that the average top

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Plan for the Employment of Bombardment Aviation in the Defense of Oahu, continued:

speed of ORANGE carriers is 28 knots, and the belief that on his run across the Pacific, foul bottoms will probably further reduce his speed.

2. The cruising range of his carrier aircraft will be 400 nautical miles. No allowance is made in previous computations for full throttle operation, for fuel reserve, or for time required to take off from, and land aboard, the carrier.

3. He will not have unlimited avenues of approach for his attack.

a. He must avoid the shipping lanes to negate detection.

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

b. Any approach to Oahu which is made from east of the 158th meridian materially increases his cruising distance and the probability of detection by friendly surface vessels. It seems that his most probable avenue of approach is the hemisphere from 0° counter-clockwise to 180° around Oahu; the next most probable, the quadrant 180° counter-clockwise to 90°; the least probable, 90° to 0°.

c. The tactical search enunciated above is not the only source of information as to his movements. Office Naval Intelligence, surface scouting forces, commercial ships at sea, radio intercept and proposed advance naval line patrol, will tend to disclose his general location and might, therefore, reduce the search area for our forces.

d. He will want to take the shortest distance to his objective, although this will be of minor consideration if his range is sufficient to permit him the long approach.

4. Section No. 5:

a. This section has been drawn to show one possible plan of attack of the enemy under his assumed probable capabilities. Here consideration has been given to the factors enumerated in paragraphs 1, 2 and 3 immediately above, with the result that his performance characteristics have been reduced to 27 knots speed for his carrier and to 400 nautical miles range for his

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

airplanes. Under these conditions it will be necessary for the carrier to approach within 233 nautical miles of Oahu before it can launch its aircraft; recovery would be made at 167 nautical miles. Accordingly, the radius of search can be reduced to 833 nautical miles and still permit the search force to locate the carrier and the attach force make its attack before the carrier-based aircraft can be launched. These assumed characteristics can reduce the required search radius to 833 nautical miles and still permit the carrier being attacked before it reaches the position from which aircraft can be launched.

b. If on D Day-1 the carrier force is at a distance of 991 nautical miles steaming in at 27 knots and the search force takes off at dawn, interception will occur at the carrier's dawn plus 5:49, 833 nautical miles away, the maximum radius of search under these conditions. Allowing 40 minutes to order the attack force out and 3:42 for the flight, the carrier can be attacked at its dawn plus 10:11 D Day-1, 715 nautical miles out and can operate against it during the remaining 2:49 before dusk.

c. Further, should the carrier be missed on D Day-1 there still remains an opportunity to attack it on D Day. Interception must be made by the search force not nearer than carrier's dawn plus 2:02, 288 nautical miles out on D Day in order to make an attack prior to launching. This attack would occur at dawn

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Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

plus 3:56, 237 nautical miles out.

5. Section No. 6: The problem here is the same as that shown in paragraph 3, Part 2 above, i.e., the most favorable plan of action open to an enemy. With the carrier making good its time schedule to arrive at its airplane launching position at daylight, interception by the search force will be made at dawn plus 5:11 of carrier's D Day-1. Allowing 40 minutes to transmit the message to the home base and for the attack force to take off, the attack force can reach the carrier at dawn plus 9:08 of carrier's D Day-1 and can operate against the carrier during the remaining 3:42 before dusk. Under the most probable plan of action of an enemy carrier, a B-17D attacking force can operate against the carrier for 3:42 of the day prior to his attack on Oahu.

6. Effect of Visibility:

a. In Section No. 5, a 5° search spread should give adequate coverage. The search time schedule is such that if interception is not made on the search out it can be made on the search back in time to transmit the information and to deliver an attack by the striking force before dusk on D Day-1. There is 75% coverage at 800 nautical miles on the search out, but on the search out and back there is 100% coverage. 72 airplanes would be used for the search.

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

b. In Section No. 6, with 5° search sectors, the probability of finding the target at 740 nautical miles is 85% for the search out and as stated in a above, 100% for the search out and back. 72 airplanes would be sufficient for complete coverage in this case, for if interception is not made on the way out, it can be made on the search back in time to transmit information and deliver an attack.

V. CONCLUSION:

1. Action by enemy carrier-based bombing planes against Oahu should be figured on the basis of their having 400 nautical miles range and a speed of 180 knots.

2. a. The most favorable plan of action open to the enemy, and the action upon which we should base our plans of operation, is the early morning attack in which the enemy must make good the following time schedule:

(1) Cross circle 881 nautical miles from Oahu at dawn of the day before the attack.

(2) Cross circle 530 nautical miles from Oahu at dusk of the day before the attack.

(3) Launch his planes 233 nautical miles from Oahu at dawn the day of the attack.

(4) Recover his planes 167 nautical miles from Oahu 2:30 after dawn the day of the attack.

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Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

b. Any variation from the above time schedule permits our attack force to strike the enemy during daylight of the day before his attack over a greater time interval and at a shorter range; or, permits our attack force to strike him during daylight of the day he attacks but before he is within his radius of action of Oahu. If an enemy carrier succeeded in slipping in undetected by our search force and launched an attack, we could and would, of course, attack as soon as possible in order to destroy or disable the carrier prior to, or during, the recovery of its planes.

3. The area between the circles with radii 530 nautical miles and 833 nautical miles from Oahu is the operating area for the solution of this problem under its most adverse condition.

4. a. With the Army Air Force responsible for its own reconnaissance, 72 B-17D airplanes will be required to search daily the area within the circle of 833 nautical miles radius from Oahu, each plane covering a 5° sector.

b. Based upon the assumption of visibility used in this study, 72 airplanes employed to search a 360° sector should result in 100% coverage with some overlap to 600 nautical miles, 85% coverage at 700 nautical miles and 75% coverage at 800 nautical miles in the search out. In every case, the search out and in would permit 100% coverage within the time interval which would

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Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

allow the launching of the bombing attack prior to dusk on D Day-1.

5. If a similar search could be conducted from Dutch Harbor, Midway, Johnston or Palmyra the possibility of enemy surface ships approaching Hawaii and the west coast of the United States undetected would be practically non-existent.

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

6. Search must be conducted during daylight hours because of the extreme difficulty of locating what will be an unlighted objective proceeding under cover of darkness. The B-17D airplant is capable of searching for, and attacking, an enemy force the day prior to its arrival within its striking distance of Oahu.

7. With this plan in actual operation the defenses of these islands can be assured without assistance from the Navy. This will permit complete freedom of action of the Pacific Fleet.

8. The B-17D airplane is capable of operating beyond the combat range of any known enemy carrier-based aviation.

9. Attack must be conducted during daylight hours because it is considered impracticable to locate and bomb a maneuvering precision target during darkness.

10. Based on the worst situation that could arise, i.e., the employment of 6 enemy carriers against Oahu simultaneously each approaching on a different course, an attack force of 36 B-17D's would be required to disable or destroy the carriers. It is expected that 6 B-17D's with bomb loads of seven 600# bombs would be sufficient to accomplish the desired result (see Study No. 1). It is contemplated that this attack force will be augmented by 36 additional B-17D's of the maintenance

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

and reserve force if in commission.

11. This attack force should be further augmented by a minimum of 36 long-range planes of the B-26 or similar type, capable of carrying torpedoes to be used as the striking force under conditions of low ceiling and visability when high altitude level bombing technique is not practicable. (See Study No. 2).

12. A reserve of 72 planes will be needed to provide for maintenance, replacement and reserve for both the search and attack forces. As was stated in paragraph 10 above, 36 of this number may be employed as part of the attack force if in commission.

13. In order to operate the above number of B-17D's, a minimum of 216 combat crews will be needed as indicated in Chart No. 5.

VI. RECOMMENDATIONS:

1. It is recommended that the War Department give immediate consideration to the allotment of 180 B-17D type airplanes or other four-engine bombers with equal or better performance and operating range and 36 long-range torpedo-carrying medium bombers to the Hawaiian Air Force for the performance of search and attack missions in an area bounded by a circle whose radius is 833 nautical miles and center is

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

Oahu, as follows:

72 for daily search missions.

36 for attack missions (these airplanes will be in readiness daily, fully armed and loaded with bombs, for a mission).

72 for maintenance and reserve from which 36 may be used to augment the attack force.

180 total B-17D's.

36 torpedo-carrying medium bombers of the B-26 or other suitable type.

2. While this number of bombardment airplanes could not be accommodated at Hickam Field and there are no other suitable bases available on Oahu, it should be only a matter of time until projects submitted to the War Department for the construction of airdromes on outlying islands of the Hawaiian group are completed which, with Hickam Field, will be adequate for operations of the above number of planes. Existing plans for the dispersion of the 18th Bombardment Wing (H) provide for units of one and two squadrons to operate from dispersed airdromes. Modification of the plan to apply to operations therefrom are anticipated and will be made.

3. It is further recommended that in making future allotments of officers and enlisted men to the Hawaiian Air

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

Force consideration be given to providing a minimum of 216 B-17D combat crews and 36 medium bomber-torpedo combat crews. In this connection, see paragraph 8, basic letter.

4. Our leading tacticians and strategists here concur in the opinion that this plan will solve the defense of the Hawaiian Islands and that to their knowledge it is the best and only means that can be devised to locate enemy carriers and make attacks thereon before said carriers can come within launching distance of Oahu. The sole purpose of the existence of the military establishment on Oahu, ground and air, is for the defense of Oahu as an outlying naval base. The best defense is an aggressive and well-organized offense. The basis of this plan is offensive action. We have had clearly demonstrated to us in Europe the fallacy of depending upon passive measures of defense. We must not base our plans of action on the "Defense of Hawaii", but rather upon a vigorous offensive. We must ferret out the enemy and destroy him before he can take action to destroy us.

It has been said, and it is a popular belief, that Hawaii is the strongest outlying naval base in the world and could, therefore, withstand indefinitely attacks and attempted invasions. Plans based on such convictions are inherently weak and tend to create a false sense of security with the consequent unprepared-

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

ness for offensive action.

In order to initiate offensive action, the Hawaiian Air Force must have at its <u>immediate</u> command well-organized, equipped and trained combat crews. It should be remembered that while reinforcements from the Mainland can be made available on short notice their expeditious presence here <u>will not solve</u> the problem. Upon their arrival they must be given an opportunity to undergo a certain amount of indispensable indoctrination and training in the plan of action of the Hawaiian Air Force. If this plan is to be effective the force recommended above must be made a reality and maintained in existence in Hawaii for combat at any time. With the United States living and working under a condition of unlimited National Emergency, Japan making its southward movement and the world in general in a complete state of turmoil we must be prepared for D Day at any time. Reinforcements, therefore, must be considered from the standpoint of <u>replacements for losses only</u>. Any delay in placing this plan in operation, such as would be necessary for the above reasons, would mitigate against its success.

It is believed that a force of 180 four-motored aircraft with 36 long-range torpedo airplanes is a small force when compared with the importance of this outpost. This force can be provided at less cost to the Government than the cost

Plan for the Employment of Bombardment Aviation in the Defense of Oahu, cont'd:

of one modern battleship. It is further believed that this force should be made available as soon as possible even at the expense of other units on the Mainland.

STUDY OF THE BOMBS REQUIRED TO DISABLE AN AIRCRAFT CARRIER

1. It is assumed that two direct hits by 500 lb. or 600 lb. demolition bombs will be sufficient to disable an aircraft carrier.

2. From the tables of probability of direct hits by bombing, results obtained by units of the Hawaiian Air Force in bombing sleds towed by Navy surface craft and from previous experiences by bombardiers who have made attacks of this nature, it is determined that about 90% probability of two direct hits may be expected from 6 B-17D's or similar type airplanes attacking a maneuvering carrier from 15,000 feet, each dropping seven 600 lb. bombs in train. Bombardiers are assumed to be capable of at least a 20 mil accuracy.

3. In arriving at the number of bombs and airplanes required, several methods of attack are considered:

a. Attack by individual airplanes from different directions, attacking in close succession.

b. Formation attacks by three plane elements from different directions and in close succession.

c. Formation attack on a 6-plane flight.

Study of the Bombs Required to Disable an Aircraft Carrier, Cont'd:

In all cases bombs are assumed to have been dropped in train by each airplane with a spacing of 80 feet between bombs. The number of bombs (42) and airplanes (6) required to give a 90% probability of two effective hits was determined to be nearly the same for each type of attack.

NEED FOR TORPEDO PLANES IN THE HAWAIIAN AIR FORCE

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1. a. Any or all of the following factors could be expected to partially or wholly prevent the successful accomplishment of the bombardment mission:

(1) Inability to find enemy force (navigation).

(2) Lack of bombing accuracy.

(3) Enemy fighter action.

(4) Hostile anti-aircraft artillery fire.

(5) Weather obscuring objectives.

b. Consideration of these factors;

(1 and 2) Navigational and bombing accuracy are primarily matters of training and practice. Efficient standards can be and are being attained by the training of combat crews in the Hawaiian Air Force.

(3) The critical altitude, high speed and defensive armament of the present heavy bombardment aircraft is such as to provide excellent defense against enemy fighters. It is not believed that carrier based fighters will be very effective against the B-17D's at high altitudes.

(4) Reports from abroad indicate that anti-aircraft fire will be only partially effective and will not prevent the accomplishment of the

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mission.

(5) The weather of the Hawaiian Islands is probably the best in the world from a standpoint of flying conditions and yet a very definite percentage of bombing missions fail because of overcast conditions which obscure the objective. Heavy bombardment as such is useless against surface craft when low ceilings (200 - 1,000 feet) prevail, and it is doubtful if it could be used below 5,000 feet without prohibitive losses from anti-aircraft fire before reaching the bomb release line. Enemy surface craft may be expected to take full advantage of all cloudiness conditions and even to wait until such conditions occur before launching an attack. At present the Hawaiian Air Force has no weapon to effectively combat surface craft under such conditions.

2. The following is submitted as a solution to this problem:

a. The most effective action against surface craft under poor weather conditions is believed to be a torpedo attack from low flying aircraft. This is substantiated by results from abroad, i.e., Bismarck sinking, Taranto attack, etc., A torpedo plane flying just off the water can operate

Need for Torpedo Planes in Hawaiian Air Force, cont'd:

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under a very low ceiling and with guaranteed accuracy against all surface craft. The torpedo plane should be land-based, of long range, fast and capable of being accurately navigated. It should operate in conjunction with heavy bombardment.

3. a. The only type airplane that could be adapted to this purpose at present in the Hawaiian Department is the A-20A. It is believed that this adaptation can be made and the problem is under consideration and test at present.

b. It is believed that the medium bombardment airplane of the B-26 type will be even more satisfactory because of its longer range.

c. It is recommended that adaptation of some such airplane be made, preferably in such a manner as not to interfere with the normal bombardment mission.

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Mr. Mitchell: Before I forget it, I want as the next exhibit number 14, to introduce a letter from Headquarters, Hawaiian Department, Office of the Department Commander, dated 14 April 1941. Subject: "Air Defense of Pearl Harbor," addressed to the Adjutant General, Washington, D. C., and signed for the Commanding General of the Hawaiian Department by Carl Grosse, Assistant Adjutant General. It has a notation on it, "Copy to Commandant 14th Naval District."

I will not read that letter. It contains reference to several of these air defense plans.

The Chairman: You want that printed in the daily transcript?

Mr. Mitchell: Yes, I want to put that in.

(The letter referred to was marked Exhibit 14, and is as follows:)

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HEADQUARTERS HAWAIIAN DEPARTMENT

OFFICE OF THE DEPARTMENT COMMANDER

FORT SHAFTER, T. H.

In reply refer to: 14 April 1941.

AG 381/67a JDP

Subject: Air Defense of Pearl Harbor

To: The Adjutant General, Washington, D. C.

1. Reference is invited to secret letter from The Adjutant General to Headquarters Hawaiian Department, above subject, dated 7 February 1941, file AG 381 (1-24-41)M. There are enclosed herewith for your information copies of the principle directives, orders, and estimates which have been issued, in cooperation with the local naval authorities, to provide for the joint defense of the Pearl Harbor Naval Base and ships of the Pacific Fleet in Hawaiian waters against surprise raids or air attacks.

2. Inclosure 1, joint letter HHD - 14th ND, dated 14 February 1941, initiated the study by joint committees of Army and Navy officers of the joint problems of the defense which were mentioned in the correspondence between the Secretaries of War and Navy, inclosed in the letter referred to in paragraph 1 above, and also included study of additional problems which were raised by Admiral Kimmel, Commander in Chief of the Pacific Fleet.

3. Inclosure 2, Annex No. VII to the Joint Coastal Frontier Defense Plan (HCF-39) is a new joint agreement with the local naval authorities which pertains to joint security measures. Attention is particularly invited to Section II of this document which relates to joint air operations. This joint agreement covers the major points which were studied by the joint committees organized in inclosure 1. Inclosure A to this Annex No. VII has not yet been completed, however tests are now being conducted to determine the most effective means of positive identification of friendly aircraft and insure its protection from antiaircraft artillery fire.

4. Inclosure 3, Joint Estimate Hawaiian Air Force and Patrol Wing TWO (Naval Base Defense Air Force) is self explanatory and will serve as the basis of joint air operations orders to be issued in the near future. These joint orders are required since it will be noted that, in the conduct of air operations, aircraft of one service passes to the tactical control of the other service.

5. Inclosure 4, Field Order No. 1 NS (Naval Security) is a new operations order for this Department covering the measures which will be taken during an alert period and initially upon a sudden raid or air attack. This order has been coordinated with comparable security orders of

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of the Pacific Fleet and the Naval Base Defense Force. This order is in addition to and does not replace the existing Field Orders No. 1 and No. 1 W which are contained in OHD-38.

For the Commanding General:

Carl Grosse,

Major, A. G. D.

Assistant Adjutant General

4-Incl.

Copy yo Commandant 14th Naval District.

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Mr. Mitchell: That is all, Mr. Chairman.

The Chairman: Is counsel in a position to advise the committee as to who will be called next?

Mr. Mitchell: Mr. Hull is our first witness on Friday morning.

Senator Lucas: Mr. Chairman.

The Chairman: The Senator from Illinois.

Senator Lucas: In the interrogation of Admiral Richardson there were some facts that he did not know which I would like to have his views on, and which I would like to have him attempt to discover for me. Here are the questions I am going to ask:

How many Naval planes were attached to the Fleet when Admiral Richardson took it over?

How many Naval planes were attached to the Fleet when Admiral Richardson was relieved of his command?

How many planes were capable of doing reconnaissance duty during that time?

How many planes were actually on reconnaissance work every day after the reconnaissance orders issued by Admiral Richardson were augmented by Admiral Andrews which directed reconnaissance on dawn and day patrol 300 miles covering a western semi-circle of 180 degrees?

That is the information I would like to have.

Mr. Gearhart: Mr. Chairman.

The Chairman: Mr. Gearhart.

Mr. Gearhart: May I ask a question of counsel?

In the event Mr. Hull is not able to appear, or for some reason does not appear would you be able to give me who the witness will be to substitute for him?

Mr. Mitchell: There are a group there: Mr. Sumner Welles, Mr. Grew, and Mr. Hamilton. Our idea is if Mr. Hull gets tired and has to retire in order to return later, we will bring on some of these other witnesses and keep going on with the State Department story as rapidly as we can. We had to assure Mr. Hull and his family that the committee will not detain him for questioning more than 45 minutes at a time. He tires very rapidly. That upsets our schedule a little.

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The Chairman: In connection with that, copies of the written statement of Mr. Hull have been furnished to all members of the committee.

Mr. Mitchell: That is right.

The Chairman: I presume it will be read by the committee before Mr. Hull comes on.

Mr. Mitchell: Yes.

We have given you copies of it in advance so you can study it beforehand.

The Chairman: As to whether the other statement should be read by somebody in the meeting, they do concern matters on which the committee may want to take action after it has been examined.

Senator Ferguson: Mr. Chairman.

The Chairman: Senator Ferguson.

Senator Ferguson: I want to inquire of General Mitchell whether or not the committee has received all of the exhibits, or all of the written information in relation to the State Department witnesses?

Mr. Mitchell: Mr. Gesell will answer that.

Mr. Gesell: We have received from the State Department all of the documents which we intended to introduce in connection with the testimony of the State Department witnesses, with the exception of one or two documents which are being

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cleared with other governments, and we expect that the clearance will be obtained before we go ahead Friday morning. All of the documents which we have obtained have been distributed to each of the members of the committee. I think the bulk of them went to the committee about a week ago, and we have from time to time, I think, including this morning, handed additional documents on the subject to the members of the committee.

Senator Ferguson: So then, at the present moment, we have all of the documents that the committee counsel desire to use, except those that you must receive clearance on? As I understand it, you are being delayed from getting certain information from the State Department because other governments will not clear the committee getting those documents.

Mr. Gesell: There has been no refusal to clear, Senator, by any Government.

Senator Ferguson: What is the situation?

Mr. Gesell: The situation is this: There is an understanding, I am informed, which has prevailed between the United States and other governments with which we are in friendly relations that they will not give publication to notes and documents they received from our officials, and we will not give publication to similar material we received from their officials for a period of 15 years, unless specific authorization

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is obtained.

Now, we have not received any refusal from any government to release the documents which we wish to present to the committee.

There are one or two situations where we have not yet heard either way, and we expect to hear in those situations before Friday morning.

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Senator Ferguson: Then if you get the approval we will receive those copies of those papers prior to the hearing?

Mr. Gesell: That is correct, Senator.

Senator Ferguson: It would be difficult to examine witnesses on documents, as I said before, unless we get them sometime before the witnesses are put on the witness stand.

Mr. Gesell: You are quite right. I can assure the Senator in this instance the volume of documents to which I refer is extremely small. We hope it may be even possible to get them to you tomorrow, if the clearance comes through. We will do the best we can on that, of course.

Senator Ferguson: As one of the members of the committee I think I have quite a few questions on the documents that I have not received. They are included, I take it, among those that the other governments must clear.

Mr. Gesell: I do not know about that.

Mr. Mitchell: We will have to check the rest to be sure it is what you have in mind. They come in pretty fast. We have a system set up of taking them and trying to keep up with them.

The Chairman: If there is nothing further, the committee will stand in recess until 10:00 o'clock Friday morning.

(Whereupon, at 4:00 o'clock p.m., the committee recessed until 10:00 o'clock a.m., Friday, November 23, 1945.)

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