

EXHIBIT No. 43

Op-12B-7-djm. (SC) A16-1/NO14
Serial 070012

NAVY DEPARTMENT,
OFFICE OF THE CHIEF OF NAVAL OPERATIONS,
Washington, June 23, 1941.

Secret
From: The Chief of Naval Operations.
To: The Commander in Chief, U. S. Pacific Fleet.
Subject: Fourteenth Naval District—local defense forces.
References: (a) CincPac secret serial 065W of May 26, 1941.
(b) W171-40.

1. The Chief of Naval Operations is aware of the situation in regard to the naval local defense forces of the Fourteenth Naval District discussed by the Commander in Chief, Pacific Fleet in reference (a), and realizes the necessity of increasing the strength of these forces.

2. Until the unsatisfactory situation pointed out by the Commander in Chief can be remedied, the light forces and aircraft of the Pacific Fleet will have to be employed in the local defense of the Hawaiian Naval Coastal Frontier. The Chief of Naval Operations has taken cognizance of this necessity by providing in reference (b) that the Commander Hawaiian Naval Coastal Frontier act as an officer of the U. S. Pacific Fleet, operating under orders of the Commander in Chief thereof, in command of task groups of that fleet under all circumstances, when so directed.

3. The Chief of Naval Operations has taken action to increase the strength of the Naval Local Defense Forces of the Fourteenth Naval District by the immediate acquisition of four patrol winners for conversion to Y1'. It is also anticipated that at least five (5) sampans, recently condemned, will be available in the District. The SACRAMENTO is under orders to depart from Norfolk for the Fourteenth Naval District on June 23, 1941.

4. The construction program of PC's and YMS's will not permit the delivery of vessels of this type to the Fourteenth Naval District before the late fall.

5. The Chief of Naval Operations is considering the acquisition and conversion of a number of the vessels assigned to the Hawaiian Naval Coastal Frontier in appendix II, of reference (b). The questions of funds and personnel, and the suitability of these vessels will affect the decision reached.

6. The Commander in Chief, Pacific Fleet, and the Commandant, Fourteenth Naval District, will be kept informed of assignments made.

7. The urgency of delivery of this document is such that it will not reach the addressee in time by the next available officer courier. The originator therefore authorizes the transmission of this document by registered mail within the continental limits of the United States.

H. R. STARK.

Copy to: Com14.

EXHIBIT No. 44

CONFIDENTIAL

(Rough) 05/pav

UNITED STATES FLEET

U. S. S. PENNSYLVANIA, Flagship

Cinc File No.
A9/PF12/(05)
Serial 01275A

PEARL HARBOR, T. H., 15 August 1941.

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

To: The Secretary of the Navy.

Via: The Chief of Naval Operations.

Subject: Annual Report of the Commander-in-Chief, U. S. Pacific Fleet, for the period 1 July 1940, to 30 June 1941.

Reference:

(a) Article 699(4), U. S. Navy Regulations, 1920.

(b) Opnav ltr. Op-13A/CT, A9-1 (330527) dated 27 May 1933.

Enclosure: (A) Thirty-five copies of subject report.

1244 CONGRESSIONAL INVESTIGATION PEARL HARBOR ATTACK

1. In accordance with the instructions contained in references (a) and (b), enclosure (A) is forwarded herewith. Included therein is data obtained from the annual reports of the Commandants Thirteenth and Fourteenth Naval Districts, and the Commanding General of the Fleet Marine Force, (Second Marine Division).

2. By separate correspondence, the Commanders-in-Chief of the Asiatic and Atlantic Fleets were directed to submit annual reports direct to the Navy Department for their respective Fleets, with a copy to this Command. Unless the Department so desires, it is not intended to issue a combined annual report for the entire United States Fleet.

3. As noted in the distribution list below, copies of this report have not been distributed to Bureaus or offices of the Navy Department.

H. E. KIMMEL.

Cinpac File No.
A9/FF12/(05)
Serial 01275A

CONFIDENTIAL

UNITED STATES PACIFIC FLEET
U. S. S. PENNSYLVANIA, *Flagship*

ANNUAL REPORT OF THE COMMANDER-IN-CHIEF, UNITED STATES
PACIFIC FLEET FOR THE PERIOD 1 JULY 1940 TO 30 JUNE 1941

Cinpac File No.
A9 FF12 (05)
Serial 01275A

UNITED STATES PACIFIC FLEET
U. S. S. PENNSYLVANIA, *Flagship*

PEARL HARBOR, T. H., *August 15, 1941.*

Confidential

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To: The Secretary of the Navy.

Via: The Chief of Naval Operations.

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H. E. KIMMEL.

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P. C. Crosley,
Flag Secretary

[1]

PART 1—ORGANIZATION

(A) EXISTING ORGANIZATION.

(a) Comment on existing organization including suitability and adequacy of the Fleet for accomplishment of its primary war mission:

(1) On 1 February 1941, in accordance with General Order No. 143, the United States Fleet was organized into administrative and task organizations as follows:

(a) The United States Atlantic Fleet.

(b) The United States Pacific Fleet.

(c) The United States Asiatic Fleet.

(2) On 1 June 1941, there was made effective, in the United States Pacific Fleet, a task organization designed to facilitate inter-type training and at the same time provide for a ready transition from a peacetime organization to one more suitable for the most probable operations of war. Three new task forces were created as follows:

Task Force ONE, under Commander Battle Force, with the primary mission of training and development of tactics of a Covering Force.

Task Force TWO, under Commander Aircraft, Battle Force, with the primary mission of training and development of tactics of a Reconnaissance and Raiding Force.

Task Force THREE, under Commander Scouting Force, with the primary mission of training and development of tactics for Expeditionary and Amphibian Operations.

The above Task Forces absorb all the battleships, carriers, cruisers and destroyers of the Pacific Fleet. Submarines, patrol planes and mincraft, while operated primarily as separate types, are assigned from time to time to one of the above Task Forces as required for special training or operations. This organization has largely relieved the Commander Battle Force and Commander Scouting Force, as such, of their operational functions, but they retain their responsibility for general supervision of administration, training and material of their respective Forces. As Commanders of Task Force One and Three, respectively, they are given operational functions and responsibilities more adaptable to the probable operations of war.

(3) There is, in process of accomplishment, a general reorganization of the Base Force. This, when completed, will provide a squadron and divisional organization more adaptable to the accomplishment of both peace and war missions of that command. The organization will provide the following:

Squadron Two—Harbor services.

Squadron Four—Transportation of personnel, landing force equipment, etc.

Squadron Six—Offensive and defensive mining and general services.

Squadron Eight—Transportation of bulk cargo.

The final establishment of this organization is awaiting the reporting of squadron commanders and staffs and availability of suitable flagships.

On 12 June 1941, there was established, in the office of the Commander Pacific Southern Naval Coastal Frontier, nucleus personnel of the Base Force Subordinate Command. This step will also place the logistic supply of the Fleet more nearly on a war basis.

(4) The above organization is believed suitable and adequate, at the present time, for the accomplishment of the war mission of the Fleet. The strength of the Pacific Fleet in numbers of ships is adequate for only limited offensive operations in the Pacific because of [2] the distances involved and the known enemy strength and strategic dispositions in that area. There is a serious deficiency in numbers in practically all Types, but particularly in aircraft carriers, improved aircraft of all types, destroyers and light cruisers and also in auxiliary tankers, supply ships, and transports including the destroyer transport.

(5) In addition there are material deficiencies, including radar, close anti-aircraft defense weapons, sonic gear, aircraft radio identification, advance Base equipment and landing equipment.

(6) To all this must be added the total inadequacy of personnel. Deficiencies in the numbers required to man the ships at present in the Fleet are serious enough. When, however, it is realized that the Fleet is now short of personnel, that it will be called upon to further deplete its numbers to furnish its trained personnel to new construction, that even now the losses exceed the replacements, then this personnel deficiency added to the deficiencies in numbers of ships and essential material in ships, leads to the conclusion that the adequacy of the Pacific Fleet for the accomplishment of its war mission leaves much to be desired.

(B) CHANGES IN ORGANIZATION.**(a) Executed.**

Subsequent to organization of the U. S. Pacific Fleet on 1 February, 1941, the following changes have been executed:

(1) Battleship division THREE, YORKTOWN, Destroyer Squadrons EIGHT and NINE, Cruiser Division EIGHT, CINCINNATI, Patrol Squadron SIXTY-ONE, CIMARRON, SANGAMON, SANTEE, RELIEF, WILLIAM P. BIDDLE, FULLER, HEYWOOD, LITTLE, MANLEY, STRINGHAM, McKEAN, BRANT, PARTRIDGE, ALGORMA, and KALMIA, were transferred to the Atlantic Fleet.

(2) Mine Division NINE was transferred to the Asiatic Fleet.

(3) New, converted, or recommissioned units were added to the Fleet: SAILFISH, TAMBOR, TAUTOG, THRESHER, TUNA, CURTISS, BOREAS, CASTOR, KASKASKIA, PLATTE, RAMAPO, SABINE, SEPULGA, NAVAJO, SEMINOLE, Patrol Squadron FORTY-FOUR.

(4) Submarine divisions and squadrons changed to new numbers on 1 June, 1941. Patrol plane squadrons and mine divisions were renumbered 30 June, 1941 and 1 July, 1941, respectively.

(b) Expected.

No changes in the basic organization of the Pacific Fleet are anticipated. New, converted, and recommissioned units are expected to join as they became available. These additional units are indicated in Pacific Fleet Confidential Notice 6CN-1 (Cincpac Serial 01011).

[3]

PART II—OPERATIONS AND TRAINING**(A) EMPLOYMENT SCHEDULES.****(a) Policy regarding Fleet Employment.**

Caused by developments in the international situation, drastic changes have been made in Fleet employment during the fiscal year, 1941. Schedules were initially based on administrative organization and type controlled training, with certain periods set aside for the development of inter-type coordination and Fleet exercises. Under this system, ships averaged four operating weeks (of four or five days underway with week-ends in port for inspections and recreation) to two weeks in upkeep. With increasing necessity for basic war training and security measures in Fleet operating areas, transition to a Task Force operational program was effected. Two Task Forces were employed at first, each at sea and in port alternate weeks. This arrangement proved impracticable because of large fuel expenditures and loss of extended upkeep periods essential to material maintenance. With the organization of the Pacific Fleet, a three Task Force assignment was adopted to insure necessary coordinated Task Force training for war, to provide for instant transition to full war operational status, to conserve fuel, and permit most efficient use of repair ship upkeep facilities. Under this reassignment, Task Forces averaged eight days at sea to thirteen in port. Of each underway period about five days are devoted to gunnery exercises and type training, three days to Task Force exercises. The time allocation to various activities under the current three Task Force system is satisfactory.

(b) Major changes in approved schedules.

(1) No major Fleet tactical period for an extended Fleet Problem was scheduled during the fiscal year 1941. In lieu thereof, shorter periods during which two or more Task Forces conducted joint exercises were scheduled as follows:

9-16 September 1940

3-5 March 1941

18-20 March 1941

14-26 May 1941

28 June-3 July 1941

(2) During a part of the 14-26 May 1941 period, joint Army-Navy exercises were conducted.

(3) Pacific Fleet Landing Exercise No. 1 was conducted by Commander Scouting Force in the San Clemente Area in late May and early June, 1941. This exercise was curtailed by withdrawal of the transports.

(4) The addition of leave, liberty, and recreation cruises from the Hawaiian Area to West Coast ports caused some disruption of schedules, which was more than compensated for by improved morale and reduction in logistic requirements.

(5) Numerous changes in schedules resulted from the degaussing program and restricted availabilities for increased anti-aircraft defense, splinter protection,

and radar installations. Time assignment to these items is decreasing as the program progresses.

(6) CHICAGO, PORTLAND, BROOKLYN, SAVANNAH and Destroyer Squadron THREE made a good will cruise to Australian and New Zealand ports from 3 March to 10 April, 1941. SANGAMON accompanied this force as far as Samoa.

(7) Escort trips to Manila were made by CONCORD and TRENTON, to Samoa by CONCORD, and to Midway by Cruiser Division EIGHT.

(B) *FLEET TRAINING.*

(a) *Phases of strategical and tactical training with review of results.*

Strategical training, other than that undertaken by the Fleet War Plans Section, has been limited to studies by individual commands of probable strategic areas and special situations existing therein. In setting up Fleet minor problems emphasis has been placed on rapid estimates of changing situations.

Tactical training has been based on probable war requirements and instant transition from exercise to full war operational status. To these ends the Fleet has been organized in three primary Task Forces:

[4] *Task Force ONE*—Covering Force.

6 BB, 5 CL, 1 CV, 1 OCL, 2 DL, 16 DD.

Task Force TWO—Reconnoitering and Raiding Force.

3 BB, 1 CV, 4 CA, 3 CL, 1 OCL, 1 DL, 8 DD.

Task Force THREE—Amphibious Force.

8 CA, 1 CV, 2 DL, 16 DD, 5 SS, 5 DMS, 6 AP, 4 APD, 24 VP, Second

Marine Division less defense battalions and advanced base detachments.

Specific tactical situations have been presented to each of these Task Forces, for study in port, for game board exercises, and for test in the form of inter-type exercises or minor problems during operating periods at sea. Great benefit has accrued in the increased understanding of Task Force and Task Group commanders of the limitations and capabilities of the individual types and development of coordinating doctrines.

Operations have also included the conduct of Advanced Light Force and Submarine Practices; bombardment and landing exercises; photographic reconnaissance; attacks on the Fleet or smaller dispositions by air, submarines, and destroyers, both day and night; fueling at sea exercises in which all types fueled from tankers, and destroyers fueled from battleships, cruisers, and carriers; towing; mining; minesweeping.

Satisfactory doctrines have been developed for concerted action by patrol planes and submarines, patrol planes and destroyers, cruisers and destroyers.

New and more flexible cruising dispositions have been devised. Means of changing the front of a Fleet disposition and deploying during darkness have been developed and tested with all ships darkened.

The use of Radar is causing many changes in tactical ideas. Progressive training is underway in the use of this instrument and its tactical application to defense against day and night air, submarine, and destroyer attack. Training in Radar adaptation to gunnery is also proceeding. To develop the maximum usefulness of this equipment its installation in all ships and planes must be expedited, and the automatic feature for identifying friendly forces must be incorporated.

The change from peacetime to wartime training has been accompanied by unrelenting efforts toward realism. Appropriate material conditions and conditions of readiness are maintained underway, all ships except submarines are habitually darkened, actual anti-aircraft fire is opened on targets towed over Fleet dispositions, starshell have been used to develop night contacts, live depth charges have been used to condition submarine crews against this form of attack, and through cooperation with the Army, battle lookouts have been trained to recognize all types of aircraft now in use in the Hawaiian Area.

The rapid and continuous flow of personnel through the Fleet, transfer of trained men to new assignments, recruit replacements, substitution of reserve for regular officers, all tend to retard the training of the Fleet as a whole. Adjusting operating plans and schedules to accomplish basic training of new personnel, while bringing about a realistic preparation of a Fleet for war has required intense and strenuous efforts of officers and men.

Careful studies have been made of all available intelligence reports of foreign operations. Lessons learned therefrom are being steadily incorporated into the doctrines and training of all Fleet components.

(b) *GUNNERY TRAINING.*

(1) *BASIC AND GENERAL.*

With few exceptions the mandatory practices were completed by all ships of all types. Training was necessarily interrupted for installation of degaussing equipment, but the interruption served ships as a basic training period for new personnel which were received, in most, cases, during installation periods.

All types have tested and effected essential changes in ships' organizations to bring conditions of readiness into proper symmetry. These reorganizations of battle con- [5] ditions of readiness have effected an increase in offensive power for each condition, and, by more efficient use of man power, a decrease in work load per man.

All types have conducted extensive studies of the ammunition service of all batteries, with service ammunition. These studies have isolated faults and determined means for improving the drill requirements for ammunition service.

The necessity for the development and training of all forms of battle lookouts has been emphasized. Exercises both day and night, with increased realism, have been developed and every opportunity is used to conduct them.

The free inter-change of services between types, inter-type exercises, and intelligence bulletins, have brought out weaknesses of gunnery doctrines, with resultant correction and almost constant refinement.

The availability of Army coast defense triangulation stations during the past two quarters, for underway rangefinder calibration, has been especially valuable.

All types conducted successful gunnery schools. The schools emphasized fundamental training. In view of the large number of inexperienced officers in all types, and the increasing responsibility being forced upon all junior officers, these schools were invaluable.

Antiaircraft gunnery has improved in all types during the year. The degree of improvement is not measurable because of the great number of new personnel, both officers, and men, that have been trained, and because of the increased realism and difficulties that have been introduced in antiaircraft practices. It is manifest, however, that the satisfactory development of the antiaircraft batteries may be obtained only by continued emphasis and constant improvement in the methods of training.

Surface firings are in general satisfactory. It is evident in these batteries that performances were affected by the large percentages of inexperienced personnel.

All types have conducted simulated Fire Support and Shore Bombardment exercises. In addition, type doctrines for Fire Support and Shore Bombardment have been developed and promulgated. Heavy Cruisers and Destroyers have actually conducted one bombardment practice during which valuable lessons were learned.

The increasing degree of the emergency and the resultant operational restrictions, differences in the state of training of units of a type, and experiences from abroad, have gradually forced wider divergences from the conventional gunnery cycle. This has been evidenced by the development of new practices to fit conditions experienced abroad, and local restrictions, as well as the requests and recommendations by type commanders for greater latitude of discretion. The need for such latitude is apparent if progressive training is to keep pace with the ever changing and necessary demands of the international situation. Full latitude in the conduct of gunnery training has recently been granted by the Chief of Naval Operations.

(2) IMPORTANT DETAILS.

SUBMARINES.

During the past year authority was obtained from the Bureau of Ordnance to fire torpedoes six times between overhauls provided not more than thirty days elapsed between the first and last firings. This has resulted in a great increase in the number of torpedoes fired, especially on practice approaches, with consequent improvements in the condition of all submarines. This force has concentrated on the training of junior officers for command and especially in the art of torpedo firings which has permitted the junior officers to obtain a great deal of experience in actually firing torpedoes. Information from intelligence reports has indicated that a great deal of torpedo and gun firings from submarines by all belligerents has been conducted at night. Therefore the training in night approaches and torpedo firings has been greatly intensified. This training has also included the exercising of night lookouts in picking out and identifying targets. No night gun firings have been conducted this year, but it is planned to conduct them in the near future using remnant ammunition.

All submarines of Submarine Squadron TWO and some submarines of Submarine Squadron FOUR, have made mine plants of 32 mines which appears to be the limiting number than can be made in one continuous plant.

[6] Results obtained from the .50 caliber machine gun firings while better than the previous year are not considered satisfactory. Advantage has been taken of all quotas to the machine gun school assigned this force.

DESTROYERS.

Two Advanced Day Battle practices were conducted. One Squadron of destroyers and two light cruisers participated in each of these practices, which involved both gun and torpedo fire.

Two Advanced Light Force practices were participated in by destroyers. A high standard of torpedo performance was obtained.

Antiaircraft practices against radio controlled targets were fired at every opportunity and with considerable success. A type of surprise antiaircraft practice, which is the most realistic seen to date, was developed in destroyers and has since been adopted by all types.

The reduction of fire because of casualties associated with the loading of the gun continues to be a serious problem. The isolation of material failures from personnel mistakes is difficult in most cases, due primarily to inexperienced and constantly changing personnel. The suggested removal of loading machines from destroyers is considered to be courting disaster.

The lack of a supply of trained enlisted rangefinder operator-spotters, and the lack of time and facilities for selection and fundamental training in destroyers, is probably the largest single factor against attaining desired performance. The establishment of shore based rangefinder operator-spotter training centers, distinct from optical schools, would greatly improve this situation.

The performance of torpedoes over the year has been most satisfactory. The need for depth charge racks, extensions, and throwers, has become increasingly apparent. Particular consideration should be given in new construction to increasing the number of depth charges carried and to improved handling facilities.

The Sound School has produced a large number of competent sound operators during the year. Increased opportunities for sound training have been provided the destroyers in the Hawaiian Area. The results of practices and training runs have been satisfactory.

LIGHT CRUISERS.

10,000-ton Class.—These ships have demonstrated their ability to shoot fast and hit consistently at short and intermediate ranges. Their performances at night have been particularly impressive. There has been an appreciable improvement in spotting and control of gunfire over last year.

7,500-ton Class.—These ships have shown some improvement in hitting with their main batteries during this year. Increasing number of 3" 50 caliber guns from six to nine has improved antiaircraft defense, but lack of suitable control seriously reduces the potential effectiveness of this battery.

HEAVY CRUISERS.

Accuracy of range finders has been considerably improved as the result of frequent rangefinder calibration made possible by the services and cooperation of Harbor Defenses, Pearl Harbor. The value of these calibrations to effective gunners cannot be over emphasized.

Prompt opening salvos and continuous volume of fire have been continually stressed with improved results.

The lack of an adequate allowance of small arms ammunition has been a serious handicap in small arms training and firing, especially with the continual influx of new personnel. Consequently, little improvement has been made in the performance of these weapons.

[7] Heavy Cruisers have been reorganized so that all the anti-aircraft batteries are manned in Condition of Readiness II, and all of the 5" battery and part of the 3" and machine gun batteries in Condition of Readiness III.

CARRIERS.

Carrier gunnery has been affected by a congested schedule of operations. It has not been possible to conduct all mandatory practices, except in ENTERPRISE. Basic training has been stressed and successfully continued. Comprehensive training plans for lookouts have been instituted and progress is being made.

The effectiveness of RADAR equipment was successfully demonstrated in the YORKTOWN firing at a radio controlled target plane.

BATTLESHIPS.

The performance of battleships in gunnery for the past year is summarized:

- (1) Main batteries in general—good.
- (2) Antiaircraft batteries—fair.
- (3) Secondary batteries—poor to fair.

In spite of the considerable reduction in experienced personnel, their replacement by inexperienced personnel, and the increased complements, there has been and is now a progressive improvement apparent in gunnery activities in battle-ships.

Battleship training exercises have been revised and improved and additional exercises, covering aircraft surprise attack and lookout training, have been added.

An exercise to provide data for analysis and study, as to the cause of "lag on turns", is in effect.

The MISSISSIPPI established means for precise calibration of rangefinders in Pearl Harbor. This development was promulgated to the Pacific Fleet.

GUNNERY OBSERVATIONS.

Both day and night fall of shot observation has been made by available pilots of VO and VCS Wings whenever opportunity offered. Low altitude spotting stations at about 1500 feet were taken by several units for information and training. Carrier scouting squadrons also observed fall of shot as circumstances and heavy schedules permitted. Color identification of 6-inch splashes at long ranges was found difficult. In view of the high rate of fire of the main battery of light cruisers, spotting the individual salvos of the opening ladder proved impracticable after the battery had gone to continuous fire. By spotting the individual salvos of the opening ladder and then spotting only specifically designated salvos aircraft can effectively assist in spotting the main battery six inch fire.

AIRCRAFT.

Type gunnery schools for VF, VSB, and VT were again organized. They were originally scheduled for the San Diego area but it was necessary to establish them at Pearl Harbor as the majority of the Fleet remained in Hawaiian waters. The schools operated under difficulties due to dearth of firing areas, equipment, office, shops, and school room space, and transfer of experienced personnel. However, the value of the schools became more apparent as time progressed and as each squadron and aviation unit became depleted of its experienced personnel.

All mandatory and monthly training practices have been fired. Almost continuous training in IBP (Fixed Guns), IBP (Free Guns), IBP (Dive Bombing), and IBP (Depth Bombing) has been carried on to qualify all possible new personnel. Practically all required personnel have qualified in the above mentioned practices. The Monthly Aircraft Training Practices have been of great benefit in maintaining proficiency of personnel, insuring proper maintenance of material and providing an interesting periodic check-up in all phases of training. Due to the numerous unexpected changes in schedule and the influx of new personnel, less opportunity than formerly for investigation of experimental practices has been afforded, but very favorable progress was made in night bombing, together with night illumination, of UTAH.

[8] In the patrol wings, points of particular interest were the substitution of monthly training exercises for the old methods of concentrated training for various practices in succession, the introduction of low altitude glide bombing against submarines, the use of new delayed action high intensity flares for night bombing and torpedo attacks and the emphasis given torpedoes as a major offensive weapon for patrol planes. Concentrated gunnery training has been greatly curtailed, as it has in other aircraft units, by the exigencies of the expansion program and other operations in connection with security and transfer of units. The effect of this curtailment has been minimized as much as possible by using all available time and facilities for ground training.

ANTIAIRCRAFT.

This form of gunnery and its associated problems have been stressed over the year. Exercises have been placed in effect that provide training in tracking on combatant planes, plane identification, and surprise attacks by combatant aircraft simulating horizontal, dive and glide bombing, and torpedo plane attacks. In addition, units with ship based observation planes have developed exercises simulating the various forms of attack with own planes.

The need for competent antiaircraft control parties and gun crews in each condition watch has been emphasized, and all ships now have in training three or four crews, depending on the type. Exercises promulgated are designed to provide training for all crews.

Two types of practices have been developed which are deemed effective and realistic training. The first, a surprise attack, is by a radio controlled target against a single ship. The attack can take place at any time over an extended period, and serves to stimulate lookout training as well as control and battery

training. It is proposed to extend this practice to small formations of ships to develop the technique of formation aircraft defense.

The second practice developed is an attack by horizontal bombers against a Fleet disposition. The targets are sleeves, or flares, towed by utility wing planes. The ammunition allowance is limited to between ten and four rounds per ship. The exercise has been conducted in conjunction with other Fleet exercises, and in cruising, approach, and battle dispositions. It has served to add interest to the exercises, stimulate anti-aircraft batteries and lookouts, and to assist in determining the adequacy, and weaknesses, of dispositions against various forms of attack or combinations of attacks.

UTAH conducted extensive firing in connection with the Fleet elementary and advanced anti-aircraft schools. It is believed that these schools, in 5" 25 caliber, 1" .175 caliber and .50 caliber anti-aircraft fire, provided exceedingly valuable training to the personnel of the Fleet and has led to improved anti-aircraft gunnery. However, with the percentage of hits obtained, ability to knock down drone aircraft is still most disappointing. Small fragmentation of the bursts seem to be a contributing factor. UTAH developed an open sight for the 5" 25 caliber gun which appears to give promise of considerable utility in local control, especially against dive bombing.

The Fleet Machine Gun School has served a most useful purpose, and its continuance is considered vital. In the face of a possible shortage in training and target practice ammunition for fifty-caliber guns, the need for such training, if acceptable efficiency with this gun is to be maintained, cannot be too forcefully stressed. Prior to the opening of the Fleet Machine Gun School at Puuloa, two classes were held aboard UTAH. The Puuloa school was ready for operation in January. Since that time 1003 students have completed the course. Of these 25 qualified as experts, 777 as gunners and 201 failed to qualify. When this school was forced to close because of lack of ammunition, a class in maintenance of machine guns was started. This activity has been most favorably received by the Fleet and much good is being accomplished.

MINING.

(a) *Gunnery.*—Two fifty-caliber machine guns have been installed on each AM and DM. The prescribed practices have been fired by all DM's. Two additional fifty-caliber machine guns are recommended for DM's.

Mine Divisions ONE and TWO have been provided with two portable depth charge racks. Each rack carries four depth charges and four spares are allowed. Each division has conducted a depth charge practice and has dropped two live depth charges. Normally, when these divisions are operating as tactical units of the Fleet, the depth charge racks are carried mounted ready for use.

Mine Division NINE has had a depth charge rack installed holding six charges: two spare depth charges are allowed. The rack does not interfere with mining.

(b) *Mining.*—Several slight departures have been made necessary from prescribed practices by restricted use of areas.

A thorough investigation has been made into the causes of premature firings, and recommendations have been made to the Bureau of Ordnance to reduce the percentage of premature firings.

Shortages in material have been remedied, or additional items contracted for. Recommendations have been made for:

(1) The modification of deficient items, such as extender mechanisms, K2 Mod. 2 diaphragm assembly and pellet holder, method of float securing and releasing, and antennae winding.

(2) The distribution of available mines.

(3) Facilities necessary for the preparation of mines.

The Minecraft Mine School has qualified seventy-six men in Mk. VI and Mk. VII mines. The method of mine assembly has been changed to a production assembly line, with a view to preparing a nucleus for wartime assembly. This method of assembly was employed for Battle Mining Practice "Easy", and 285 Mk. VI mines were assembled in 2½ days (159 in the last day).

Minecraft completed the regularly scheduled plants and, in addition, ten experimental plants

MINESWEEPING.

The preliminary tests of the "O" Type and magnetic minesweeping equipment installed in Mine Division NINE appeared satisfactory. The magnetic sweeping equipment limits the time a ship can sweep because of the very rapid rise in battery temperature during the operation.

A semi-permanent mine field has been established off Oahu for training in the detection of mines by underwater sound equipment. The ability of trained operators to detect mines was established and some drill has been accomplished. Tests to determine the practicability of locating mines by aerial photography, or visual aircraft observation, have not given favorable results.

Base Force minesweepers have had more than the normal amount of training in minesweeping. The bird class sweepers conducted regular dawn sweeps of the area off Pearl Harbor. The high speed sweepers have done so less often. However, the high speed sweepers have drilled extensively in the various phases of minesweeping with the Fleet and independently. Their proficiency in the use of the gear provided may be considered as satisfactory. During the past year little improvement in sweeping gear and the technique of using it has been shown.

GENERAL.

Services for gunnery exercises to the Fleet have been provided with great difficulty during the past year. The increased demand for services has taxed facilities to the limit. The necessity for concentrating services in the Hawaiian Area has reduced the availability of these services on the West Coast to almost zero. The shortage of high speed towing ships and series 60 sled targets has been most keenly felt. One result of this has been that the ships of Mine Division SIX (formerly Mobile Target Division ONE) have had very little minesweeping exercise and two ships—BOGGS and LAMBERTON—have been unable to complete any of the prescribed gunnery during the year. Upkeep periods for this division have been shortened and occasionally interrupted. The officers and crews of these ships have done a splendid job.

The Fleet Camera Party has had an increased load incident to the greater number of ships served and the difficulties of services occasioned by operations at sea under conditions approximating those of war. A large number of young officers have received very valuable training while on temporary duty with the Camera Party.

[10] (c) ENGINEERING PERFORMANCES.

Engineering performances were generally satisfactory. A marked increase in hours underway and miles steamed was noted. As might be expected, under the operating conditions imposed, general increases in the fuel per mile were noted. Electric drive battleships were unable to maintain full power under tropical conditions due to limiting temperatures in the motor winding. Increased displacement, excessive fouling, and high injection temperatures combined to prevent a few ships from making the required full power R. P. M. Reliability has been excellent. The Engineering Competition was suspended as of midnight 30 April.

(d) COMMUNICATIONS.

(1) Training Program.

Throughout the year a continuous training program in rapid communications has been prosecuted with accent placed on securing efficient Task Organization command communications within the Fleet in the event of war.

Training in the use of cryptographic aids, military uses of the direction finder, underwater sound signaling, creating and avoiding interference and in radio deception have been actively prosecuted by Type Commanders by frequent standardized and impromptu drills with generally excellent results.

A heavy training load was placed on experienced communication personnel by the rapid influx of new men. Many Naval Reserve Communication ratings joined the Fleet, many, who were not properly qualified to perform the duties of their rate. These men had to be extensively trained before they were able to function in the communication organizations. The Transfer of numerous experienced men outside the Fleet resulted in placing comparatively new and inexperienced men in responsible positions where they were required by necessity to carry their share of the load. Although this resulted in some inefficiency at times, it was found that new men attained a state of efficiency after further training.

Individual training in proficiency in communication ratings has been prosecuted by ships utilizing the striker method, which, though inefficient as compared with shore based schools, has been employed of necessity. Where possible the shipboard striker method of training radio and visual has been augmented by schools at the Destroyer Base, San Diego, SubBase P. H., various air stations, and on tenders. The results of such school training has been excellent and the schools will be continued.

The increased use of voice circuits in the Pacific Fleet indicated the necessity for training of both officers and men in voice procedure. Such training has been

carried out, but further training remains necessary in this field. Particularly successful training and resultant improvement in voice radio circuits has been noted in Aircraft, Battle Force.

(2) *Control and Supervision.*

In order to train commanders afloat in their responsibilities in regard to communications the major responsibility of training program has been entrusted to Task Force and Type Commanders rather than using the standardized communication competition as was used in past years. For the same reasons Task Force Commanders have been required to prepare own communication plans based on standard communication doctrines. It has been emphasized throughout the year that communications are an integral function and responsibility of command.

A system of numerical designations of Task Organizations has become adopted which has simplified command communications and made possible the promulgation of radio frequency plans and call signs for any and all phases of a naval campaign. Particularly gratifying was the acquirement of the ability to organize and operate large or small Task Organizations composed of various type ships from unrelated administrative organizations without confusion or hiatus due to communications.

New administrative organization frequency plans have been issued which in general provide for all ships in any port being on one frequency, and eliminating the previously used system of assignment of frequencies to divisions and squadrons. Type frequencies have been allocated but are seldom used except for drills and exercises.

[11] (3) *Personnel.*

The communication personnel situation has continued to be acute due to transfers to new construction, to converted merchant ships, and to the expanding shore station facilities. The introduction of RADAR has also increased the duties of these men in the fleet units so equipped. The induction of a large number of reserve radiomen and the increased size of service schools has somewhat alleviated this situation so far as numbers are concerned; however, the personnel received from these sources are generally not qualified for the rates held and require from 6 months to a year's training within the Fleet before they are capable of taking the place of experienced personnel being lost to the Fleet. The service school graduate received as Radiomen third class could not in any respect fulfill that rate.

The sound enlisted personnel have suffered in a similar manner. This situation is being alleviated by the increase in the Sound School for Preliminary Training and an increase in the advanced training within the Fleet.

Reserve officers to a large extent have replaced regular officers in communication duties within the Fleet. These officers came to the Fleet untrained, and required extensive instruction before they could take over their duties.

(4) *Material, Visual.*

An urgent need for an improved type of visual blinker signal gun has become apparent since ships of the Fleet have been operating in a darkened condition at night. Bureau of Ships has cooperated with the Greenway Reflector Company in the development of a blinker signal gun which will have a limited arc of visibility and control of range visibility. It is expected that 25 of these signal guns will be received on or about 25 July 1941 for service test in the Pacific Fleet.

Experiments have been conducted in the various types of ships within the Fleet with a low power flashing light mounted on 7 x 50 binoculars. Reports received from forces afloat indicate that this experimental light is practicable and provides greater security than the present blinker gun when ships are operating in a darkened condition, at night. Recommendations will be submitted regarding the manufacture of this light.

New signal halyards have been installed in the ARIZONA, PENNSYLVANIA, NEVADA and OKLAHOMA. These yardarms slope aft at an angle from the athwartship line and give a desirable offset to adjacent flag hoists and tend to keep the signal halyards from fouling the anti-aircraft directors. This arrangement is a decided improvement. In Battleship Division THREE the signal bridge was located on the mainmast and the arrangements for visual signalling in these ships is unsatisfactory. Lack of quick control, the use of exposed and fragile loud speakers, absence of secondary hoists, and obstructions account for the unsatisfactory arrangement. It is considered that the primary signal station should be in the vicinity of the foremast in this division.

There is an urgent need for improved recognition devices at night between surface ships and aircraft and between submarines and aircraft. Much use has been

made of the recognition device in current use on surface ships. In order to use any recognition device quickly and accurately, personnel must be trained constantly in its use. There has been considerable training in the use of the current device during the past year.

(5) *Material—Radio.*

(a) Underwater Sound.

Super-sonic depth finders continue to function satisfactorily in all types. During the year the existing modernization program in destroyers for super-sonic echo-ranging equipment was completed. The modification of single-frequency (24 Kcs.) installation in DD's 347-393 by two-frequency installations (20 Kcs. and 24 Kcs.) is now in progress although considerable delay is being experienced in obtaining delivery of material. The installation of echo-ranging equipment in the remaining light minelayers, and high speed minesweepers is sorely needed and when received will increase materially the utility of these types to the Fleet. The delivery of sound equipment is slow and recommendations have been made to speed up this procurement program.

[12] Aircraft. Battle Force, experimented during the year with the development of a combined oxygen-microphone mask for high altitude flights; encouraging results have been attained.

Frequency or amplitude modulated super-frequency equipment, Model CXAB CXAC has been installed in the CALIFORNIA, TENNESSEE, and OKLAHOMA. Tests of this equipment are now in progress. Ultra-high frequency amplitude modulated TCD RAR equipment is being installed in Crndiv SIX.

(b) *Research and Experimental.*

Battleships have continued to experiment with the reception of weak radio signals to determine what improvements are necessary.

Considerable work has been done in submarines to receive low frequency shore station radio signals under water. The results of these experiments have been most gratifying and should prove invaluable for war operations.

Considerable experimenting has been done with RADAR equipment, now installed, to improve its performance and reliability.

The U. S. Naval Radio Laboratory, San Diego, Calif., has cooperated with the Fleet units present in San Diego in essential work, tests and repair beyond the capacities of these units.

During the past year considerable wave propagation data was accumulated covering the frequencies used by patrol planes. A number of clear channel harmonically related series were found to give excellent signals, day and night, during trans-Pacific ferry flights.

Project Baker in Patrol Wing ONE continued experiments and tests with Blind Landing Equipment, together with numerous other tests of ultra-high frequency receivers, antennae, aircraft direction finders, and miscellaneous radio equipment.

(c) *General.*

The frequency coverage of radio equipment within the Fleet, particularly in the smaller units, has proved to be a serious handicap in the working up of frequency plans for the various Task Forces. If all ships were able to use any frequency from 195 to 18,100 Kcs. for transmitting and receiving, considerable simplification would result in the structure of frequency plans for command communications.

As a whole radio equipment is reliable, effective and easy to operate. In some instances crystal control equipment cuts down the necessary flexibility.

During the year the procurement program of new equipment went forward but still the lack of modern equipment was seriously felt in some units.

Installation of ultra-high frequency equipment in destroyers, light minelayers, and high speed minesweepers was completed during the year.

New aircraft homing equipment has been installed in LEXINGTON and ENTERPRISE. The associated plane equipment, has been received in limited quantities in LEXINGTON and ENTERPRISE air groups. Preliminary tests indicate that this equipment is of great value to ship-based aviation, both for military and safety purpose.

The LEXINGTON is in need of modernization of its radio transmitters.

Satisfactory ship board radio direction finding ability above 1000 Kcs. continues to be an unsolved problem.

All radio direction finders on the BROOKLYN class cruisers have been moved from a position immediately abaft the foremast to a position on the searchlight platform. The resultant improvement in operation has been gratifying.

Receiving antennae and correctors for direction finders have been moved to cut down or eliminate interference with anti-aircraft gunfire.

In a large number of ships the old type TAV is still the only portable radio equipment aboard and is inadequate for the use for which it was designed.

[13] Modernization of the radio installation on the NARWHAL, NAUTILUS and ARGONAUT were authorized. The LITCHFIELD will be equipped as a radio relay vessel with a complete new set of radio and sound equipment during its coming overhaul.

There is an urgent need for a voice transmitter, with a frequency range of 2000-18000 Kcs. in a large number of ships, particularly in flagships. This deficiency is being remedied by the Bureau of Ships procurement program.

One of the bottlenecks in outfitting new patrol plane squadrons has been the supply of radio equipment. The practice of making the radio installation after delivery of the plane by the contractor is being discontinued. The contractor will deliver the aircraft complete, and better radio installation may be expected.

Air station efficiency and usefulness to the Fleet have suffered due to poor delivery of essential communication apparatus.

(6) Security.

General:

A marked improvement in Fleet attitude toward security of communication occurred during the year. Senior officers, force, and type commanders evidenced more interest in, and a greater appreciation of the general principles and technical aspects of the subject. This was brought about less by purely communication considerations than by the general atmosphere of the times, by the continuation of the communication mobilization, and by the increasing emphasis which has been placed upon security of ship movements and naval information.

Considerable progress was made toward further reduction of administrative despatch traffic. However, there still exist many administrative procedures for which despatches are used to an excessive degree. These concern principally personnel matters and administration of material between shore activities and the forces afloat.

It has been noted that shore activities frequently send messages to ships with either a specific request, or an inference given by too high a precedence designation, that a radio reply be made immediately. In the case of an individual ship receiving such a message from a senior officer ashore, the radio reply is usually made, even though the importance of the matter involved may not actually warrant such reply. This situation is believed due to a combination of lack of concern by commands ashore with communication security afloat, and to the lack of regular line officer supervision of communications in the shore establishments.

In conformity with the requirement of the communication mobilization that radio traffic shall be reduced to a minimum, ships of the Pacific Fleet were directed to drastically reduce the number of administrative radio messages sent, and to give consideration to the use of mail in replying to despatches received from shore activities.

The presence of the Pacific Fleet in the Hawaiian Area, with attendant lack of rapid and frequent mail service, has caused the origination of many despatches which would otherwise have been unnecessary.

It is emphasized that the question of communication security is a basic one, involving the entire naval establishment. Adequate security requires extensive education and whole hearted cooperation of all hands, plus the setting of a proper example by high commands ashore and afloat.

The change from a "peacetime communication mobilization for training" to an "actual communication mobilization for threatened hostilities" effected on 12 May by Alnav 45, did not produce the desired result. Due principally to the fact that Alnav 45 authorized use of plain language for a number of categories of despatches, some of which have no place in any bona-fide mobilization set up, and at the same time directed reduction of radio traffic to a minimum, confusion inevitably resulted, and an increase of radio traffic (mostly plain language) occurred. Immediate steps were taken to reduce this traffic in the Pacific Fleet.

Cryptographic Security:

The abolition of NRC-3 on 1 April was a notable advance toward achievement of a satisfactory state of cryptographic security. However, this advance was in some measure nullified by certain of the plain language authorizations of Alnav 45.

[14] Cryptographic systems furnished the Fleet were inadequate, especially regarding: (1) Unsatisfactory call sign cipher, (2) Obsolescent contact and air-

craft codes, (3) No joint Army-Navy aircraft and lower command systems, (4) No detailed instructions for cryptographic security, (5) No rapid system for small units (ECM Mk. II is now in production), (6) Obsolete crypto-channel charts, (7) Lack of proper ROB and war reserve editions of all systems, (8) Unconcealed external indicators, (9) Unsatisfactory authenticator and radio Operator's Signal cipher, (10) No fire control code for landing operations.

Due to the large number of untrained communication personnel and the failure to provide the Fleet with proper instructions in cryptographic security, errors and delays increased. Stress was placed on the thorough training of coding boards to counteract these mistakes. No systems were considered compromised through misuse by the Fleet except in the case of the lowest restricted system which is inherently short-lived due to the large volume of traffic and nature of its text. No ROB edition for this cipher has yet been designated. In general, few ROB editions were available for replacement of compromised or out-lived codes and ciphers.

Radio Security:

The number of radio messages sent was materially reduced by increased use of mailgrams. The use of unnecessary information addresses in despatches was discouraged. However, the practice of sending despatches for information to all commands who could conceivably have an interest in the subject matter is a deep-rooted habit of long standing throughout the entire Naval Service. This practice greatly facilitates the process of traffic analysis and is highly detrimental to security. The Pacific Fleet has been directed to inform necessary information addressees by mailgram where practicable, omitting their call signs from radio headings.

Many plain language messages in the categories listed in Alnav 45 have, by their number, headings, and contents, disclosed classified information when taken in the aggregate, although individual messages did not appear to do so. This applies particularly to Class E. personnel, Navy Relief, and certain matériel messages, which have been a fruitful source of information on ship movements. The classification of movement reports as confidential is futile if the information contained therein is to be divulged through plain language messages on other subjects.

The desire of commanders afloat to insure that radio communication with their units unquestionably exists at all times during tactical exercises, has resulted in considerable "testing" and "lining up" of circuits at times when the condition of radio silence in effect actually prohibited such procedure. Consequently, radio security during tactical exercises cannot be said to have been satisfactory. It is obvious that security, and real wartime training in this regard, will not be obtained unless those in command are willing to sacrifice habitual clockwork precision in conducting peacetime training operations, with a view toward studying and analyzing failures in instant radio communication, which are certain to occur during prolonged periods of radio silence.

In Fleet tactical periods, stress was placed upon the use of authenticators and changing call signs.

Radio call signs:

The lack of a rapid, secure, compact and universal method of enciphering radio call signs is the most serious security deficiency in the Fleet today. The adoption of a numerical system of task organization designation, and the corresponding use of visual call signs (which were the only suitable ones available) rendered obsolete the radio call sign device then in effect. The cipher (in reserve status) subsequently issued for encrypting visual call signs is slow and cumbersome. A more rapid-call sign cipher has been developed and submitted to the Navy Department for consideration.

Coding Boards:

At the recommendation of the Commander-in-Chief, the use of reliable petty officers for coding board duties was authorized for all restricted despatches, as well as for confidential exercise traffic. This has been of inestimable value to the smaller ships. The number of enlisted men assigned to coding duties was limited within the Pacific Fleet to a maximum of four per ship.

It has been obvious from encrypted traffic examined that enlisted personnel and reserve officers assigned to coding duties have been insufficiently trained. Multitudes of inexcusable cryptographic errors, clearly covered by existing instructions, have been noted. The responsibility for this condition is directly that of regular line officer supervisor personnel. Steps have been taken to correct this situation although satisfactory results cannot be expected until the Fleet is furnished adequate instructions for cryptographic security.

[15] **Physical Security:**

The state of physical security of registered publications in the Pacific Fleet has been unsatisfactory. Many cases have occurred of registered publications being blown overboard, lost from aircraft, removed from staterooms, or otherwise found to be missing. Cases of probable compromise were few. However, nearly all the cases of loss indicated carelessness.

At the direction of the Commander-in-Chief, all registered publications except cryptographic aids and a few tactical publications necessary for training and operations were removed from submarines for the duration of the emergency.

(e) **DAMAGE CONTROL.**

The merits attained in Damage Control Practices held during the year were not high. This is believed due to a recognition of the necessity for realism, and the general tautening which resulted. Casualties listed in intelligence reports have been studied and solutions worked out. Exercises in shoring have been stressed; also in effecting repairs to carrier flight decks. Security measures dictated the curtailing of the underway portions of the practices toward the latter part of the year. In the older ships, inadequate ventilation when operating for extended periods under required conditions, adversely affects the efficiency of the personnel. Action has been initiated to correct this.

(f) **Aviation.**

(1) **Carriers and Carrier Aircraft.**

New and advanced types of planes, together with the large influx of inexperienced personnel, have resulted in necessity for careful scanning and standardization of carrier operating technique.

The newer types of planes are in general larger than their type predecessors. Difficulty of operating full carrier groups has increased due to this feature. Receipt of folding wing aircraft of all carrier types is expected to ease this difficulty in the future. While the number of accidents in carrier aviation has increased, this is largely due to the large increase in both number of pilots and total flying hours and it is considered that the ratio of accidents to number of pilots or to total flying hours is about the same as for the previous year.

The continuing and increasing flow of new personnel as the aviation expansion program develops has made it mandatory to provide some form of pre-fleet training to bridge the gap between primary qualification and responsible duty in active combat squadrons in the Fleet. Initial steps to fill this need, extending to development of carrier replacement groups, have been taken.

Two very important needs have clearly developed. Both must be met if our limited number of aircraft carriers is to remain sufficiently available for their primary mission of active duty with the Fleet. The first of these is converted merchant vessels for carrier flight deck training in connection with the pre-fleet indoctrination of new personnel. The second is the conversion as necessary of merchant or sea-train vessels for transportation of aircraft, for which duty regular aircraft carriers have, lacking other suitable means, been employed extensively during the past year.

(2) **Battleship and Cruiser Aircraft.**

The majority of the training effort in battleship and cruiser aircraft during the past year has been devoted to the training and indoctrination of green personnel. The aviation units have been largely drained of experienced pilots, radiomen, and maintenance personnel, and their places have been taken, in the main, by recent graduates from Pensacola and by inexperienced enlisted men. This has resulted in a tendency toward decrease in efficiency. Coincident with efforts to train flight personnel in strictly flying duties, much successful work has been accomplished toward the improvement of their water work and seamanship.

The training of green personnel can best be continued in the ships in which they are required to operate. It has recently become apparent, however, that the only satisfactory way in which to do this is to hold on board the personnel which they replace until the new personnel are suitably qualified for Fleet responsibilities. This must be done if adequate combat readiness is to be maintained.

[16] Increased attention has been directed toward instrument training and night flying. Flight time per pilot and per plane have been increased, and Fleet operating schedules have resulted in increasing the proportion of embarked operations, with consequent marked improvement in shipboard handling of aircraft incident to launching and recovery.

Although two or more squadrons were simultaneously shore-based temporarily at the Naval Air Stations, San Pedro and Pearl Harbor, for short periods, no squadron or wing concentration has been held and it has, therefore, been somewhat more difficult to coordinate the air training of the units. Night recoveries of aircraft have been conducted on one or more occasions by Cruisers, Scouting Force, and by each unit of Cruisers, Battle Force, except the ST. LOUIS, which joined late in the year and shortly thereafter went to the Navy Yard. Night recoveries are feasible, but only under medium sea and wind conditions. Training in navigational flights up to 200 miles has been conducted. Training of new personnel in navigational flights is continually underway. Communications have been generally satisfactory although continuous training must be stressed in view of the fact that new personnel are being received constantly.

The Battle Force and Scouting Force Aviation Repair Units attached to the U. S. S. MEDUSA and KINGFISHER, respectively, operating as one unit at Naval Air Station, Pearl Harbor, were invaluable in services rendered to the VO-VS units in the Hawaiian Area. Without their repair facilities it is doubtful whether the units would have been able to function properly due to the number of planes awaiting repairs, or engine and structural changes impossible of accomplishment aboard ship, or to the overloaded facilities of the Naval Air Station, Pearl Harbor.

The use of VO-VS aircraft for anti-submarine patrols has increased during the year and the cooperation of the submarine force has enabled them to receive exceedingly valuable training in actual bombing, with miniature bombs, of submarines at fully extended periscope depth.

Also, the use of VO-VS aircraft for training of A. A. batteries in all types of attacks—horizontal, dive bombing, and even torpedo plane attacks—has increased as has the service of towing of sleeves for machine gun practices.

(3) *Patrol Aircraft.*

There has been an unavoidable trend toward lowering of the state of training of patrol squadrons during the year as a result of reduction of the average experience level with transfers of experienced personnel to meet the demands of the expansion and training programs. The rapid shift of squadrons to other commands, the formation of new squadrons, the high turn-over of personnel and the necessary concentration of effort on the basic training of fresh personnel have all contributed to this.

Patrol squadrons are still functioning on the basis of single crews for flight and maintenance. Recently approved increased complements will eventually correct this deficiency and make it possible to obtain results more nearly approaching the potentialities of the planes.

Action has been initiated to provide for the training of pilot and flight crew personnel in sufficient numbers to meet demands resulting both from increased complements and increased numbers of patrol plane squadrons. Pre-fleet, or transition, training for all concerned is mandatory and requires considerable time for each individual if the patrol squadrons are to be able to perform required Fleet missions. More important than any other feature of the program is the provision of the necessary enlisted personnel in time for adequate training prior to deliveries of the planes they must man.

During the year, training and qualification of patrol plane commanders has been the major mission in Wings ONE, FOUR and SIX. Wing TWO has suffered less turn-over of personnel and consequently has been able to conduct its training more thoroughly, although a heavy patrol schedule in connection with the Fleet's presence in Hawaiian waters has caused some interference with the training program. Patrol ONE has conducted advance base operations from San Pedro. Advanced base operations have been conducted from Hilo, Wake, Midway, Johnston, Palmyra, French Frigate Shoals, Canton and Funafuti.

Patrol Wing FOUR resumed operations in Alaskan waters commencing March 31, with Patrol Squadron Forty-one basing at Sitka. Advanced base operations were conducted at San Diego, Tongue Point, San Francisco and Kodiak. Patrol Squadron Forty-Three transferred P2Y airplanes to Pensacola, with stops at Magdalena Bay, Acapulco, Carmen and Corpus Christi.

With the delivery of P2Y models to training activities at Pensacola via Mexico (Acapulco to Carmen), deliveries of new models and transfer of PBY models are currently being made in flights overland across the southwestern states.

(4) *Utility Wing.*

Utility Squadrons ONE and TWO provided considerably more services to the Fleet than in the past because of increased Fleet activity. Their services consisted of Towing antiaircraft targets, photographic flights for gunnery, torpedo

and experimental practices, aerial mapping, mail and rescue flights, recovery of torpedoes and transportation of passengers.

Utility Squadron THREE continued to provide most satisfactorily and increased volume of services assigned by special directives, the results of which have been covered in confidential reports. While operating from Maui airport this squadron has, in addition to providing services, supervised and administered the airport for the greater part of the year.

A detachment of two JRS-1 airplanes, plus two J2F airplanes with personnel from Utility Squadron TWO, continued basing at Norfolk, Virginia, for the purpose of rendering necessary services to Fleet Units based on the East Coast. This unit was designed as Utility Squadron FOUR in November, 1940, and jurisdiction was transferred to Commander Aircraft, Atlantic Fleet. A detachment of six to eight J2F airplanes with personnel from Utility Squadron TWO was based in the Hawaiian area to augment the services available in Utility Squadron ONE.

Utility Squadron TWO at San Diego was occupied in receiving PBV airplanes and training pilots and mechanics in this type. In addition, this squadron rendered services to Fleet Units in the San Diego Area. On June 20, 1941, four PBV type airplanes manned by Utility Squadron TWO personnel, were ferried from San Diego to Pearl Harbor. These planes will provide additional services to the Fleet. Besides the services rendered, every opportunity was taken to train pilots in instrument flying, night flying, and familiarization in the various types of planes.

(5) *Tenders.*

One modern AV (the CURTISS) was assigned in June to Aircraft, Scouting Force. As a newly commissioned vessel, her state of training is therefore not up to that of the rest of the Fleet.

The state of training of the WRIGHT, the AVD's and the AVP's, (all old ships) is very good considering the serious limitations of their age and general unsuitability of design. The well-known features of these types should need no elaboration. They are stop-gaps only, and need replacement.

In addition to providing services at normal and advanced bases, the AVP and AVD tenders have participated as plane guards on the overseas flights to and from Hawaii, and in the southbound flights to Pensacola across Mexico. In the Hawaiian area the tenders have been employed on a considerable scale in the advance base operations at outlying islands and in the transfers of VPB aircraft via air to Manila.

(6) *Aerology:*

Aerological services to the Fleet have been reorganized during the year by the establishment of a Fleet Weather Central located at Ford Island under Commander Patrol Wing TWO.

All Fleet weather and ballistic information emanates from this central. This information is augmented by the aerological units afloat through visual communications.

Aerological officers and enlisted aerographers assist in the operation and development of the Fleet Weather Central when the ships to which their units are attached are anchored in Pearl Harbor. This practice serves to educate personnel and develop the organization.

[18] All aerological reports from vessels of the Pacific Fleet have been limited to Naval addresses and encoded in Navy cipher for reasons of security of ships movements.

Every effort has been made to develop the aerological organization along the lines of complete mobilization of communications.

An exchange of coded analyzed weather maps has been established between the Fleet Weather Central and the weather central attached to the Twelfth Naval District. This exchange has been on a semi-weekly basis. Arrangements have been made to commence a daily exchange of such maps between the weather centrals at San Francisco, Pearl Harbor, and Cavite, P. I. These coded maps will be available to vessels of the Pacific Fleet by interception and will cover the entire North Pacific.

Preliminary arrangements have been made to obtain coded weather reports from South Pacific Islands, New Zealand and Australia. Weather codes have been exchanged between interested agencies, eventually a complete North and South Pacific map will be prepared daily by this Weather Central.

The installation of raysonde equipment on various islands of the north and south Pacific is contemplated in the near future, radio personnel qualified to operate such equipment have been trained and stationed.

The need for additional weather information from the Alaskan Area is marked. With the development of additional air stations in Alaska it is felt that the establishment of a weather central at Kodiak which will eventually exchange coded maps with the three centrals before mentioned, will furnish a detailed composite North Pacific map and thereby completely cover all possible areas of operation in the North Pacific.

(g) *Landing Force Operations.*

(1) *Army-Navy Joint Exercises.*

Units of the Pacific Fleet, Fourteenth Naval District, and all echelons of the Hawaiian Department participated in joint exercises during the period May 14-26, 1941. The exercises involved offense by fleet forces plans for Hawaii. Specific operations carried out by fleet units were air attacks; submarine attacks, including entrance to harbors; mining; bombardment; offensive blocking of channels; and landings, including simulated demolition of installations and capture of outlying airfields. The fleet forces employed in these exercises were Aircraft Carriers, 9 Cruisers, 13 Destroyers, 4 Minelayers, 5 Submarines, 4 Auxiliaries (simulating transports), and a Marine Air Group.

(2) *Pacific Fleet Landing Exercise Number One.*

Pacific Fleet Landing Exercise Number One was conducted in the San Clemente area during the period May 14-June 18, 1941. The exercise consisted of the approach of a Naval Attack Force to San Clemente which was defended by air, surface vessels, submarines, and land forces. Later, bombardment by heavy cruisers and destroyers, using service ammunition, was executed against shore targets. A landing from transports was to have been executed by the Second Marine Division but this had to be abandoned because of the departure of all transports and the Sixth Marines from the San Diego area. A token landing of one motor launch from each heavy cruiser was executed without incident. Despite the curtailment of the exercise, valuable training was obtained from joint staff work, planning, and the phases it was possible to execute.

(3) *Miscellaneous Landing Force Activities.*

(a) On November 7, 1940, Cruiser Division Four, Five and Six participated in an exercise which consisted of furnishing a marine landing force, boats and boats' crews, communication personnel, and simulated naval gunfire support for the landing.

(b) Patrol Wing One conducted elementary air infantry training with the First Battalion, Sixth Marines. Practicability of transporting air infantry by patrol aircraft was demonstrated.

(c) On May 29, 1941, aerial reconnaissance of an atoll, simulated bombardment, and landing for demolition at Johnston Island were conducted.

(d) As part of the Heavy Cruiser Main Battery Gunnery School, U. S. S. PORTLAND bombarded a shore objective at Pakini Military Reservation. This practice was marked by the great accuracy of fire.

[19] (e) Action has been taken to establish in Hawaii a reinforced regiment of the Second Marine Division, in order to advance all phases of landing force training and to have an amphibious force available in an emergency.

(f) The Second Marine Division has conducted field and landing training. Curtailment of efficiency and training activities has resulted from transfer of Sixth Regiment and all transports to the Atlantic area, from limitations on ammunition allowances, from lack of personnel and essential equipment, and from the necessity of maintaining one regiment at the Marine Corps Base, San Diego, for guard and police duties.

(h) *BASES.*

(1) *West Coast.*

During the year, the facilities of West Coast bases have been employed only for regularly scheduled Navy Yard overhauls, interim dockings, replenishment of ships present on recreation cruises and for special work such as degaussing, installation of King Board alterations, etc.

The San Pedro—San Diego area continues to offer the best facilities for peacetime training of the Fleet. Except for adequate shore-based A. A. defense (an Army responsibility), and with the completion of the underwater defenses now in process of installation, this area will be a satisfactory base for wartime use should a situation arise that would make its use desirable. It is hoped that continued emphasis on the relative susceptibility in the Army's material and training situation will result in marked improvement in the A. A. defenses.

San Diego.—The recently completed projects of providing four additional carrier berths, the expansion of the Destroyer Base, the air field on San Clemente and

additional outlying fields for the Naval Air Station have greatly added to the potential value of this base. Work on the new patrol plane base is in progress.

San Pedro.—Work on the breakwater extension the new drydock and the underwater defenses of this base is concurrently in progress. The installation of underwater defenses will result in some curtailment of berthing space, but, as the breakwater extension progresses, this situation will correct itself. Private shipbuilding and repair facilities have been more extensively utilized during the past year.

San Francisco.—The Naval Station at Alameda was commissioned November 1, 1940. The Oakland Supply Depot is still in progress of construction. Underwater defenses of the harbor are in process of installation. The acquisition, by the Navy, of Treasure Island, as a base for Local Defense Craft, and of the drydocks at Hunter's Point has added greatly to the value of San Francisco as a Fleet Base. Additions to the Naval Ammunition Depot, Mare Island, and the enlargement of the mine assembly plant and loading dock at that place, when completed, will materially improve the stowage and facilities for handling ammunition for the Fleet. Regardless of where the Fleet may be based in the Pacific, San Francisco is and will continue to be of major importance as a source and point of embarkation of supplies, men and material, and Mare Island will continue as an important overhaul yard for cruisers, destroyers, submarines, auxiliaries and smaller craft.

Puget Sound.—The Naval Air Station at Tongue Point, Oregon was commissioned December 10, 1940. It is uncompleted, but facilities for VPB operations are being provided. The facilities at the Naval Air Station, Seattle, are complete for normal operations, but there is need for more accessible ammunition stowage and re-arming arrangements. These are being provided under present projects. When underwater defenses at Port Townsend and Rich Passage are laid, a considerable portion of the Fleet could be based on this area if the necessity should arise.

Barracks and messing accommodations, at the navy yard, for crews of vessels undergoing overhaul are a present important deficiency. It is understood that this is being corrected by new construction.

(2) *Alaska.*

Sitka.—This air station is still in progress of construction. Due for completion about September 1941, it has been used for patrol plane operations and may be considered satisfactory for operations of one squadron at the present time.

[20] *Kodiak.*—This station is due for completion in September 1942. It includes a landplane field for emergency use and will, when completed, provide facilities for operation of 4 squadrons of patrol planes, as well as services to planes operating farther westward in the Aleutian chain. Last estimates received indicated that Kodiak would be useable to a certain degree as a base for one squadron as of May 1, 1941.

Uualaska.—Work on the Naval Air Station at Dutch Harbor is well underway and is being accelerated. It will eventually provide facilities for operation of one squadron of patrol planes. Last estimates received gave June 1, 1941, as the probable date of its being useable to some degree by a limited number of planes.

(3) *Hawaiian Area.*

Pearl Harbor.—Many of the deficiencies of this base, disclosed by the prolonged stay of the U. S. Pacific Fleet in this area, listed in last year's report either have been or are now in process of correction. The commissioning of the Naval Air Station, Kaneohe Bay, and the stationing of 3 patrol plane squadrons there has relieved the congestion, for planes of this type, at Ford Island. However, facilities for carrier groups are still inadequate and considerable congestion still exists. It is probable that this condition, while being ameliorated by progress of current projects at Ford Island, will not be completely satisfactory until completion of the work at Barber's Point—sometime in the future.

Work on additional shops, the new drydocks, the net depot and target repair base at Bishop's Point is continuing and being accelerated as fast as delivery of material and availability of workmen permit. It is expected that, with the completion of the additional workmen from the mainland, the industrial capacity of the yard will be materially increased.

Remaining deficiencies, on which satisfactory progress is not being made, are:

(a) Insufficiency in numbers and types of small craft to adequately service a large fleet, particularly in the supply of oil, gasoline, provisions, water, general stores and ammunition. Provision for augmented means for delivery of fresh water, made necessary by reduced capacity of ship's distilling plants due to contaminated waters of Pearl Harbor, is a present pressing need.

(b) Inadequate local defense forces to provide for the safety of the Fleet in harbor and for the important functions of shipping control and other require-

ments of the Fourteenth Naval District. Specifically, the situation in regard to such forces is as follows:

- (1) Insufficient patrol craft, particularly anti-submarine types.
- (2) District patrol and observation aircraft, though allocated in the aircraft expansion program, not yet available.
- (3) Insufficient army anti-aircraft guns actually available.
- (c) Provision of additional torpedo overhaul and storage facilities.

Kaneohe Bay.—The Naval Air Station Kaneohe was commissioned February 15, 1941. It is still uncompleted, but is in operating condition and three squadrons are now based thereon. Communications, ammunition stowage and handling, and provision for night flying are the principal present deficiencies.

Outlying Fields.—Outlying or auxiliary fields are in operating condition at Maui, Molokai, and Ewa.

Maui provides facilities for Utility Squadron Three and for semi-permanent operation of one carrier group. Widening and lengthening of runways is being accomplished by C. A. A. Molokai has limited facilities for day to day operation of one carrier group. Runways are being improved by C. A. A. Ewa has a partial cross runway 300' x 1800' and is in use, in an expeditionary status, by the Second Marine Air Group. Permanent runway and other minor improvements are being provided.

Development of Keahi lagoon as a civil air base has been started, with C. A. A. funds. When completed, this will provide an alternate operating base for VP planes and will be an important contribution to the defense of this area.

Outlying Fields.

Midway.—This station, as originally planned, is now nearing completion. Latest estimates give a date of November 1, 1941, with an additional 18–19 months for completion of the projected Submarine Base. It is useable for two patrol plane squadrons in emer- [21] gencies. A landing strip, now useable in emergency by carrier planes is nearing completion on Eastern Island. No other facilities for land planes are being provided. Shore defenses have been installed at Midway and a Defense Battalion established there. The Naval Air Station, Midway, is scheduled for commissioning on August 1, 1941.

Johnston.—This station is currently due for completion about January 1942. It is at present useable by one squadron, with tender. Shore defenses have been installed and nucleus Marine personnel established there. Magazines, fresh water distilling apparatus, housing and cold storage facilities for the defense garrison are being provided. A landing strip on Johnston Island has recently been removed from the augmented project for this station. It should be restored. The Naval Air Station, Johnston Island, is scheduled for commissioning on August 15, 1941.

Palmyra.—This station is currently due for completion about January 1942. It is useable at present by 6 VPB, with tender. Landplane runway is being provided. Shore defenses and nucleus of defense personnel have been established. The Naval Air Station Palmyra is scheduled for commissioning on August 15, 1941.

Wake.—Construction at Wake is now well underway and, although work is in initial stages, substantial progress is being made. Presently planned projects are due for completion about December 1942. Landplane runways are a part of the project. In emergency, one squadron, utilizing contractor's and P. A. A. facilities, can conduct limited operations from Wake at the present time. There is no useable channel for tenders into the lagoon at this time. It is contemplated that some shore defenses will soon be established there.

(5) *Samoa.*

Considerable expansion of the establishment at this station is now underway. Fuel oil, diesel and gasoline storage, net depot, seaplane facilities, landing field and barracks and mess hall for defense personnel are being provided. This work is currently estimated for completion January–March 1943. Samoa is not suitable for heavy load operations of VPB's, but is satisfactory for emergency landings and light load take-offs. Marine defenses and a Marine Defense Battalion are established there.

(6) *Guam.*

Some bomb-proofing, construction of fuel oil storage and harbor improvements are underway at Guam. Present projects are scheduled for completion in January 1943.

(C) *TACTICAL PUBLICATIONS.*

(a) The following publications were newly issued or revised and reissued within the Fleet during the year:

- (1) By Commander Battleships, Battle Force:
Bulletin of Tactical Information 1-40 (Analysis of Tactical Advantage in Battle Line Engagements).
Bulletin of Tactical Information 2-40 (Instructions Regarding Methods of Changing Battle Line Formation Axis).
Bulletin of Tactical Information 1-41 (Measures to Decrease the Effectiveness of Enemy Air Attacks).
- (2) By Commander Aircraft, Battle Force:
U. S. F. 74 }
U. S. F. 75 } Current Tactical Orders and Doctrine, U. S. Fleet Aircraft and
U. S. F. 77 } Aircraft Carriers.
U. S. F. 78 }
- (3) By Commander Destroyers, Battle Force:
U. S. F. 32 (Revised)—Destroyer Tactical Instructions.
U. S. F. 33 (Revised)—Destroyer Doctrine.
[22] D. T. B. 2-40—Night Search and Attack (revised).
D. T. B. 1-41—Joint Operations of Patrol Planes and Destroyers (new).
- (4) By Commander Cruisers, Scouting Force, and Commander Cruisers, Battle Force:
U. S. F. 20—Cruisers Tactical Orders.
U. S. F. 21—Cruisers Doctrine.
- (5) By all types:
Revised Training Exercises.
- (b) The following publications were in course of preparation at the end of the year:
 - (1) By Commander Destroyers, Battle Force:
D. T. B. 2-41—Gunnery Doctrine and Fire Control Procedures (5" 38 Gun Destroyers) (Revised).
D. T. B. 3-41—Destroyer Smoke Screen Tactics (New).
 - (c) Fleet Tactical Boards are currently studying the following problems with a view to establishing doctrines and standard procedures:
 - (1) Fleet Air Defense.
 - (2) Coordinated Cruiser—Destroyer Action in Night Search and Attack.
 - (d) Tentative Revised General Tactical Instructions (F. T. P. 183 and 188) have been in effect since 15 September, 1940. These publications are a great improvement over those they replaced, but numerous modifications and corrections are required before final printing. Recommendations in the premises are in preparation.
 - (e) Revision of War Instructions, 1934, should be printed and distributed at the earliest practicable date. Comments and recommendations covering the proposed revision were forwarded on 25 January, 1941.

[23]

PART III—MATERIAL

(A) CHARACTERISTICS AND MATERIAL CONDITION OF SHIPS.

GENERAL—The material condition of the ships of the Fleet is very good. The principal deficiencies are the lack of RADAR equipment, the increased displacement, the inadequate ventilation, and the unsatisfactory facilities for fighting fires under conditions of battle damage. The first two items apply to all ships. The latter two to the older ships.

Degaussing gear either temporary or permanent, has been installed on all ships. Replacement of temporary with permanent gear is proceeding. Work to reduce missile hazards is proceeding. A discussion of important items by forces follows:

(a) BATTLE FORCE.

Battleships:

- (a) Sky lookout stations installed.
- (b) Accommodations for additional crew provided.
- (c) Airports at ends of ships welded closed.
- (d) Regunned main batteries NEW MEXICO, PENNSYLVANIA, MARYLAND; Secondary batteries MARYLAND and NEVADA.
- (e) Blisters completed on MARYLAND.
- (f) Radar (search) installed on CALIFORNIA.

(g) All ships except ARIZONA and NEVADA had four 3' 50 A.A. guns installed pending the availability of 1.1" machine guns. Two 5' 51 broadside guns were removed to permit this.

(h) Splinter protection was installed around all A.A. gun mounts.

(i) The inability of the electric drive battleships to maintain full power under tropical conditions is a serious matter. It has been taken up in previous correspondence.

Cruisers:

(a) Splinter protection provided around A.A. guns.

(b) Certain airports have been welded closed.

(c) Difficulty experienced with turbo generators BROOKLYN, PHILADELPHIA and HONOLULU. Corrective action is underway.

Carriers:

(a) Radar installed in the YORKTOWN.

(b) Bow arresting gear installed in SARATOGA and flight area increased at bow and stern.

DESTROYERS:

(a) There have been about thirty cases of cracked shell plating in the 1500-ton destroyers during the year, indicating structural weaknesses. Action by the Bureau of Ships to correct this has been initiated.

(b) *SCOUTING FORCE.*

Cruisers:

(a) Splinter protection for A.A. guns has been or will soon be completed on all ships.

(b) Sky lookout stations installed on all but three ships.

(c) Certain airports welded closed.

(d) Cafeteria system and accommodations for additional crew completed on nine ships. Will soon be completed on other three.

[24] (e) Ballistic protection of armored spaces improved.

(f) Renewing of reduction gears NEW ORLEANS Class, completed except for NEW ORLEANS which will get new gears during forthcoming overhaul.

(g) Radars (search) installed on four ships.

(h) Four 3' 50 A.A. guns temporarily installed in CHICAGO, PORTLAND, LOUISVILLE, and SAN FRANCISCO. 1.1" mount foundations were installed in SALT LAKE CITY, PENSACOLA and NORTHAMPTON.

(i) Mark XIX Directors modified.

Submarines:

(a) Air conditioning equipment which must be installed before the S Class submarines can be considered ready for war patrol in tropical waters has been authorized and will be completed about December 1941.

(b) Correction of the defective air conditioning system in the ARGONAUT and NARWHAL has been completed. Some work has been accomplished on the DOLPHIN'S system. This should be completed early in October 1941.

(c) ARGONAUT sustained surface speed of 8.9 knots is not satisfactory. This condition will obtain until the ship is reengineed.

(d) Plane fueling facilities have been completed in NARWHAL. These facilities will shortly be completed in ARGONAUT.

(e) The use of contract lubricating oils in submarine main engines has not been satisfactory. Special oils have been resorted to in all H.O.R. engines, and are being experimented with on one set of Winton engines.

(C) *BASE FORCE.*

Oilers:

(a) All oilers have been equipped for fueling heavy ships at sea.

(b) The newly acquired Fleet oilers have certain defects for Naval purposes, most of which will be corrected when conversion is undertaken. The most serious of these is the lack of sufficient evaporator capacity to be self sustaining in fresh water. The matter of exposed ship and cargo control wiring and piping not at present included in conversion items has been taken up in separate correspondence.

(c) The slow speed and antiquated machinery installation of the older ships of the Base Force will seriously handicap the supply of services to Fleet under war conditions.

Mine Vessels:

(a) All ships of the Mine Squadron TWO (formerly Mine Squadron THREE) have been equipped or are now equipped with magnetic sweeping gear.

(b) The lack of depth charge equipment and listening gear in the AMs, DMs and DMSs is a serious defect. Corrective measures have been recommended.

(B) OVERHAULS.

Regular overhauls were carried out as scheduled by the Department. A new and more satisfactory basis for future overhauls was worked out between the Commander-in-Chief and the Department. This reduced the length of overhauls, and limited the numbers of combatant ships of each type permitted to be under overhaul at any one time.

Regular overhauls have been handicapped due to lack of opportunity for advance planning and the difficulty of obtaining deliveries of material for alterations. Improvement in this situation is expected as a result of recent correspondence.

In addition to regular overhauls, wide use of restricted availabilities at Pearl Harbor has been resorted to in order to accomplish in a minimum of time, many alterations of great military importance. It is expected that this procedure will find wide use in the future.

[25] (C) ADVANCE BASE AND EXPEDITIONARY FORCE EQUIPMENT.

The present war has demonstrated the urgent need for advance base and expeditionary force equipment in modern warfare. The situation in the Pacific demands not only a large volume of such equipment but also that it be the most modern and the latest kind procurable.

The general situation as to advance base and expeditionary equipment in the Pacific area is most unsatisfactory. Specific deficiencies contributing to this situation are:

(a) Material for advance bases is being assembled in the Twelfth Naval District and an Advance Base Depot with warehouse is in process of development. An exercise for the testing of advance base material has been directed but the amount of material on hand has so far been too small to warrant conducting the exercise. However, improvement in the unsatisfactory delivery situation is expected in the near future.

(b) Aeronautical advance base and expeditionary force equipment was requisitioned about one year ago but has not been received to date. The Bureau of Aeronautics has advised that this equipment is on schedule.

(c) There are no transports now in the Pacific capable of being combat unit loaded. This situation will be relieved, in part, by November 1941, but sufficient transports and cargo vessels should be made available to move the Second Marine Division and at least one Defense Battalion.

(d) All destroyer transports have been transferred from the Pacific area.

(e) No hospital ship is now available to this Fleet. A mobile hospital unit will arrive in the near future, but further steps to relieve the hospitalization situation must be taken.

(f) Landing boats, artillery lighters, tank lighters, amphibian tractors, and rubber boats are not yet available, or are of such insufficient numbers as not to meet even training requirements.

(g) There are serious deficiencies in the equipment and armament of the Second Marine Division, particularly in vehicles and weapons.

(h) Bombardment projectiles are not on hand at mobilization bases in sufficient quantities to meet war plan requirements.

(i) Antisubmarine nets and netlaying vessels for providing adequate defense for advance bases are not yet available in sufficient quantity.

(j) Floating drydocks for light force vessels are a particular necessity.

(k) Portable A. A. guns and fire control equipment must be provided in greater numbers.

(l) Equipment for rapid construction of landing fields should be developed and procured.

(m) Base oilers, provision and ammunition lighters, etc., should be made available.

(n) Distilling ships and distilling units for fresh water for troops are required to maintain troops and air operating personnel in localities where the potable water supply is undeveloped or entirely lacking.

(D) AVIATION.**(a) Tactical Developments.**

Excellent progress has been made in aircraft tactical development as a result of almost continuous tactical exercises with the Fleet or Task Forces thereof. Reports of current war operations have formed a fertile basis for testing and developing new ideas and procedures and there has been general improvement in terms of reduced artificiality and increased realism. In addition, good advance has been made in inter-type tactics between aircraft and surface types, including

submarines, and valuable training has been had in the various forms of coordination along this line that will be essential in action.

The use of aircraft in combination with the Radar for Fleet defense has become a subject of major importance and its further development will be intensively carried on.

War reports have indicated the increasing importance of adequate aerial photographic reconnaissance and its development has been stressed throughout the year. Progress is hampered by the time factor with respect to both material and personnel. Satisfactory results are contingent on the assistance that the Department is able to render.

[26] Aircraft tactics of all kinds must continue to be influenced by the current status of armament and protection of Fleet aircraft. As these characteristics improve with the delivery of newer aircraft, the tactics of aircraft employment can be made more effective.

The Fleet Aircraft Tactical Unit has continued its valuable work, both directly in connection with aircraft tactics and indirectly by its compilations from war reports of aircraft tactical information.

(b) *New Airplanes.*

Although considerable improvement is more immediately in sight, the situation still remains similar to that reported last year in that too few modern or modernized Fleet aircraft have been delivered and the numbers of spare parts and spare planes for those on hand, in all categories, are too few. It is realized that diversions of deliveries to other destinations have necessarily interfered with the program for Fleet aircraft and that various phases of manufacturing priorities have been beyond the Department's control. It cannot be repeated too often, however, that the readiness of Fleet squadrons should not be jeopardized.

It is realized that many replacement planes now being delivered are not intended to be the final word in improvement and that more satisfactory planes are scheduled to replace them shortly. This plan must not be lost sight of, for many of the new airplanes with armament and protection built into designs already existing, have lost thereby altogether too much in the way of performance.

(c) *Material Conditions.*

The material condition of Fleet aircraft is, on the whole, far from satisfactory. The faults are due either to obsolescence and accumulative wear of types not yet replaced or to serious defects that have too frequently become apparent in new types after their exposure to actual service conditions.

The most important examples of the foregoing are:

(1) Failure of the R-1280-32 and 40 engine main bearing and seals which required a major disassembly of the engines to correct.

(2) Failure of rivets in the SBD wings in way of the wheel wells and wing fairing at the fuselage. This necessitated the return to the contractor of those airplanes which were already delivered to west coast units.

(3) Failure of the F2A landing gear struts. This required reworking and strengthening of all F2A main landing gear struts. These failures persist and are currently being experienced regardless of the reinforcements.

(4) Displacement of the wing bulkhead in the F2A airplanes to which landing gear main strut hinges are attached. This failure is progressive and prevents the landing gear from housing and causes failures in the wings. It was found necessary to suspend these airplanes from carrier operations pending correction of this trouble inasmuch as carrier landings aggravated the situation.

(5) Failure of some of the F2A aileron control rods incident to the contractor having installed non-heat treated rods.

(6) Discovery of numerous instances wherein foreign objects such as riveter's bars were left in sealed compartments. This resulted in a few near crashes due to jammed controls and necessitated much labor in opening sealed compartments for inspection.

(7) Elongated wing attachment bolts in numerous SBD airplanes. This trouble required the inspection and replacement of approximately 20,000 bolts.

(8) Nose section failure of the engines of new PBV-5 airplanes. This, unless and until corrected, is extremely serious.

(9) Weakness of main floats and wingtip float struts of OS2U (battleship) aircraft caused numerous failures in operations at sea. New and strengthened floats and struts will, it is hoped, correct this defect.

(10) The extreme obsolescence of SOC, SON (cruiser aircraft), both in terms of material condition and battle suitability. Deliveries of replacement planes have been greatly delayed. The highest priority for these deliveries is none too

good, for the characteristics of aircraft now carried in cruisers will be a serious liability in action.

[27] Perhaps the most serious matter of all has been the concentration on manufacture and delivery of new aircraft, for the sake of total numbers produced, at the expense of concurrent provision of spare parts and spare accessories that are manifestly essential for continued effective operation. Until the Department is able to alter this policy, the readiness of Fleet aviation will be far more apparent than real.

(r) *Overhaul.*

There has been a gratifying increase in total overhaul facilities available. The overhaul situation in the Hawaiian area, however, remains far from satisfactory. As has frequently been stated, it is an unsound and potentially dangerous situation for Pacific Fleet aircraft, other than patrol planes, to have to be overhauled almost entirely on the mainland as a result of current overhaul facilities at Naval Air Station, Pearl Harbor being limited to the amount necessary for patrol plane overhaul. Transportation for overhaul now necessary between Pearl Harbor and the mainland, in addition to the mis-use of aircraft carriers that is periodically necessitated for this purpose, results in dead-time that, in effect, reduces an already meager supply of spare aircraft. Under war conditions it is altogether too apparent that this transportation for overhaul might be impracticable.

(e) *Miscellaneous Equipment.*

No comment.

(f) *Experimental Development and Tests.*

There have continued to be numerous tests in the various Fleet aircraft units of new equipment, as well as tests for determination of causes and remedies of material troubles. An excellent step toward relief of operating units from a major portion of this load has been the recent establishment of the Acceptance, Test and Training Unit under Commander Aircraft, Scouting Force.

The following items, both test and experimental, are of interest:

- (1) Exhaust de-icers.
- (2) Extension of oil draining interval.
- (3) True airspeed meters.
- (4) Solar heating units.
- (5) Camouflage.
- (6) Propeller and engine vibration tests.
- (7) Fuel tank and armor protection.
- (8) Oxygen equipment.
- (9) Blind landing equipment.
- (10) Tractors.
- (11) Parachutes.
- (12) Fuel jettisoning.
- (13) Night photography using flare bombs.
- (14) Numerous other photographic tests and developments, including the development of films while in flight.
- (15) Improved flight clothing.
- (16) Further progress in night recovery of cruiser airplanes.
- (17) Various improvements in hoisting arrangements for ship-based aircraft.

(g) *Aerology.*

Additional raysonde equipment is needed for installation on outlying Pacific Islands as well as regular aerological equipment for four such stations. Preliminary steps have been taken to procure this material and it is expected to be delivered shortly after the commissioning of the air stations at Midway, Wake, Palmyra, and Johnston Islands.

Raysonde equipment was temporarily removed from the U. S. S. INDIAN-APOLIS for installation at Kaneohe, where a complete aerological unit has been set up during the year. Necessary radio equipment and instruments needed for the expanding operation of the Fleet Weather Central have been requested but not yet received.

[28] The complete equipment of the aerological unit assigned to Cruisers, Battle Force was removed from the Pacific Fleet due to the transfer of the U. S. S. BROOKLYN to the Atlantic Fleet. Replacement equipment has been requested.

(E) *SUPPLY ACTIVITIES.*

The past year has presented exceptional opportunities for improvement in the logistic support of the Fleet. Conditions closely akin to war time supplanted

those of years gone by. The inadequacy of auxiliary vessels of all classifications became quickly apparent.

(a) *Provisions.* The problem of subsisting the Fleet in the Hawaiian Area was attended by greater difficulties than ever before encountered due to:

- (1) Inadequacy of provision stores ships.
- (2) Lack of cold storage facilities at Pearl Harbor.
- (3) Inadequacy of commercial cold storage facilities at Honolulu.
- (4) Inadequacy of refrigerated cargo space in commercial ships serving the Hawaiian Area.

(5) Inadequacy of locally produced meats, vegetables, fruits, and dairy products for the needs of the civilian population, and Army and Navy personnel. Solution was found in the completion of the cold storage plant at Merry Point, Navy Yard, Pearl Harbor, on 1 June 1940, in furnishing to prospective contractors of guaranteed estimates of purchases to be made, and in the stocking of the cold storage plant at Merry Point means of commercial shipments, and by two shipments in the ALDEBARAN.

Formerly provision stores ships were loaded by totaling individual ship requisitions submitted months in advance. There are now standard loadings controlled by the Fleet Supply Officer. Requisitions are required from the individual ships ten days in advance of the arrival of the provision stores ship in order to prorate the cargo.

The standard loadings of provision ships has worked out advantageously from every angle. The Navy Purchasing Office is given more time in which to contract for requirements. Lengthy radio dispatches are eliminated, and flexibility to meet changes necessitated by turning over stocks at Pearl Harbor and by unscheduled movements of ships is provided for. Even under the difficulties raised by unexpected ship movements it has been possible to operate with less than 4' of error.

To accomplish these results continuous collaboration and cooperation between the Supply Officer, Pearl Harbor and the Fleet Supply Officer were essential. The excellent results obtained are evidence of the collaboration and cooperation which existed.

For many years it had been the rule to require ships to receive from provision ships any excesses remaining after provisioning the Fleet. In theory this was to prevent loss, but in practice it amounted in most cases to a dispersion of surveys of provisions unfit for use among the ships of the Fleet rather than have a large survey which might look bad for the provision ship. This subterfuge fooled no one, and required additional and unnecessary labor and correspondence. Since the rule served no good purpose it was abolished. No forced issues were necessary, nor were any large surveys required. In a few cases transfer of excesses to the cold storage plant at Merry Point prevented loss which might otherwise have occurred.

The need for more provision ships is worthy of serious consideration. There were many times when the disablement of one of the two provision ships assigned to the Base Force would have required the withdrawal of a portion of the Fleet to the Mainland. Had the Fleet operated beyond Pearl Harbor, many of the ships would have had to subsist on dry stores solely, after the first three weeks.

At the close of the period covered by this report the tentative future assignment of provision ships for the Base Force was ARCTIC, BOREAS, ALDEBARAN and POLARIS, the BRIDGE being transferred to the Atlantic Fleet. Based on a Fleet complement of 60,000 officers and men, each of the four ships could carry supplies sufficient to last the Fleet for twenty-three days. It is believed, however, that the ALDEBARAN and POLARIS will be found by experience to have at least 15', greater capacity. The planned operation of these ships presupposed one under overhaul during the next nine months. It was planned to keep one ship at Pearl Harbor at all times, each ship remaining three weeks. This plan would have made a provision ship at once available for an extended cruise if required, would have permitted combatant ships to keep loaded with provisions to 75', of capacity, and would have allowed each ship six weeks for going to and coming from San Francisco, loading and upkeep.

[29] Mention should be made of the approaching need for supplying provisions to Midway, Wake, Guam, Johnston, Palmyra, and Samoa. Such a task could not be accomplished by the Base Force with only three provisions ships in operation, and with the Fleet complement of 60,000 officers and men.

The Hawaiian Islands could be self-sustaining as to many items and provide for Army and Navy needs. This condition will not, however, be met unless sub-

stantial encouragement is received from the military forces. An excellent grade of potato of fine flavor is being raised by the Oahu Sugar Plantation. It will mature about March. At that time the potatoes available on the Coast are in poor condition, and a considerable portion is lost due to shrivelling, sprouting, dry rot and susceptibility to decay in open storage after being kept in chilled storage. The Oahu potatoes are firm, free from imperfections, thin skinned, and of good keeping quality in open storage. Under these conditions the disparity in price, approximately .015 against .025, is not as great as the figures indicate. Mr. Hans L'Orange, Manager of the Oahu Sugar Co., intends to experiment with a potato of greater yield with a view to reducing the price.

Many sugar plantations due to sugar quotas now have land not required for cane planting, but they are loathe to go into the potato business unless assured of a local market. If the Navy agreed to buy a given tonnage of island grown potatoes at a price not to exceed a specified figure during the months of March, April, and May, there would be a response from the sugar plantations. The subject merits investigation.

(b) *Fuel.*

The fiscal year of 1941 has seen many changes in the fueling tasks, fueling facilities, and fueling points of the Base Force. The year commenced with inadequate equipment, stocks at low points, and reliance on commercial oilers to meet all the fuel needs of the Fleet. The fuel situation is now satisfactory and well in hand. A few minor desirable improvements remain to be made as time permits.

Early in fiscal year 1941 four hundred thousand barrels of fuel oil per month were required for Fleet use at Pearl Harbor. During the period the major portion of the Fleet concentrated in Pearl Harbor the seven Base Force oilers were not adequate to meet this demand and also replenish the depleted fuel stocks at Pearl Harbor. Commercial deliveries of fuel oil were contracted for with difficulty and during the period July to December \$41,800 barrels of fuel were delivered in commercial bottoms to Pearl Harbor stowage. The price of fuel oil delivered into Pearl Harbor dropped from \$1.44 per barrel in July to \$0.96 per barrel in December. The contract price for Navy fuel oil in Los Angeles Harbor averaged \$0.65 per barrel and \$0.30 per barrel is considered a fair price for transporting fuel oil from Los Angeles to Pearl Harbor. The excess price paid by the Navy for the transportation of oil was due to a world wide demand to increase fuel stocks in storage coincident with German Victories in Europe.

In addition to the reserve stock of fuel oil at Pearl Harbor, (3,495,478 barrels which cannot be used without Presidential authority), there is space available for approximately 500,000 barrels of fuel oil. It was not necessary to use any of the reserve stocks of fuel oil, although at the end of July 1940 there was only 2,165 barrels of fuel oil available for immediate issue to the Fleet. The reserve stock of fuel oil consists of 2,804,540 barrels of Navy fuel oil, and 690,928 barrels of topped crude, a long time storage oil. Arrangements have been completed to deliver an additional 300,000 barrels of topped crude into storage during the months of May and June 1941. It is understood that when the first units of the new underground storage at Pearl Harbor are completed they will be filled with topped crude from present stocks.

During the second quarter, the major part of the Fleet returned to West Coast bases for a two weeks leave and liberty period, and prolonged its stay for well over a month for installation of degaussing equipment and drydocking. While the Fleet was away from Pearl Harbor, issues decreased, and fuel stocks were increased to maximum capacity. At this time word was received that four high speed national defense oilers of the CIMARRON Class would be on the West Coast and available to Base Force by December 1940. Additional Commercial deliveries of fuel oil to Pearl Harbor were not needed as these four new tankers gave Base Force sufficient capacity to provide all fuels required.

By the end of January the major portion of the Fleet was again concentrated in Pearl Harbor. A new Fleet operating policy was instituted whereby half of the Fleet was underway all the time and fuel issues jumped to over 600,000 barrels per month. 703,036 barrels were issued during the month of March. Base Force had no difficulty in keeping pace with the increased fuel demands, although the oilers of the CIMARRON class were required to make the trips from the West Coast to Pearl Harbor in six days instead of the usual seven days, and upkeep periods were [30] omitted. The assignment of the RAMAPO and SEPULGA will not permit Base Force to meet the increased demands for fuel and also assign proper upkeep periods to the high speed oilers,

There are seven oilers of the CIMARRON class assigned to Base Force. Each of these has been assigned a period of final conversion. The CIMARRON returned to Philadelphia in September 1940, and was expected to return to the West Coast prior to the NEOSHO entering the Navy Yard Puget Sound on 1 April. The return of the CIMARRON has been delayed because of delays in receipt of materials, will enter Navy Yard Puget Sound on 15 July. The NEOSHO has encountered difficulties and her return to the Fleet is not expected until after 1 August.

Oilers of the BRAZOS class plus the TIPPECANOE have been used to deliver fuel oil to Pearl Harbor, as well as maintain the full stocks at San Diego and Puget Sound. In addition, the CUYAMA delivered 21,000 barrels of fuel oil to Palmyra both in December and in March for use of the contractor's dredge. The NECHES delivered 20,000 barrels of fuel oil to Dutch Harbor, Alaska for the Coast Guard, and the KANAWHA delivered 20,000 barrels to Navy storage at Wake in May. The fuel oil requirements of the outlying islands, the Alaskan stations and the Canal Zone will probably develop into a full time job for the oilers of the BRAZOS class. The SANGAMON accompanied to Samoa the four cruisers and nine destroyers visiting Australian and New Zealand ports.

The fuel oil requirements at the Canal Zone have been met by oilers transitting the canal. The CIMARRON replenished stocks at Balboa and Cristobal on her trip to Philadelphia, and will again replenish these stocks on her return to the West Coast. The KASKASKIA, SABINE, SANTEE, and SANGAMON filled the Navy storage in Canal Zone to capacity when they transitted in December 1940.

Large combatant ships going to Navy Yard Puget Sound for overhaul from Long Beach have filled to capacity with fuel oil prior to departure and delivered fuel oil into storage at the yard. Fuel oil issues at Puget Sound have increased over 30%, and more frequent trips of oilers to Puget Sound have been required. It is planned to keep fuel stocks at Puget Sound at not less than 80% of capacity by oilers making Alaskan trips discharging available fuel oil to Puget Sound on return, as well as by the large oilers going to the Navy Yard for overhaul.

Base Force oilers have executed many assigned tasks not involving fuel during the course of the year. The PLATTE escorted the floating drydock YFD-2, towed by CAPELLA and NAVAJO, from Balboa to Pearl Harbor. Large quantities of freight have been transported in oilers from Mainland to Pearl Harbor as well as to outlying islands and Alaskan ports. The oilers have towed lighters and oil barges from California to Hawaiian Area and likewise have escorted small craft able to make the trip under their own power. The PLATTE made a special trip from San Diego to Puget Sound in May to transport two artillery lighters. The increase in Navy personnel has resulted in the oilers being filled to capacity with both officers and enlisted men as passengers on every trip.

The distribution of fuel oil at Pearl Harbor was accomplished with difficulty early in the year. One oil barge, the YO-21, was used to capacity but it could not meet the needs of the Fleet. Oilers were used to fuel large combatant ships and destroyers were fueled at Merry Point dock. Ships at Navy Yard piers were fueled by yard lines at every opportunity. This arrangement required a great deal of supervision and caused many inconveniences to the ships being fueled. As time went along and it became apparent that the Fleet would remain in the Hawaiian Area, the three oil barges from San Pedro and one from San Diego were transferred to Pearl Harbor. The five fuel oil barges meet the requirements of the Fleet at the present time, but often have to work twelve to sixteen hours a day. A rapid fueling of the Fleet would necessitate many cruisers, and all destroyers fueling from Navy Yard piers. Each barge has a capacity of 3,500 barrels and 28,000 barrels of fuel oil can be delivered during an eight hour day. Four barges are kept working each day, and one barge is assigned an upkeep period. There is a real need for barges of 10,000 barrel capacity, as the small barges use 62½% of their time on a fueling job going and coming from fuel docks and re-loading. When practicable, barges fuel from oilers at anchor in Pearl Harbor. This procedure shortens the fueling time as oilers can fill the barges in a shorter time than the shore activity, and the barges have a shorter distance to travel.

Commander Base Force is responsible for the scheduling and delivery of fuels to the Fleet at Pearl Harbor. An arrangement whereby the Navy Yard, Pearl Harbor assumed the responsibility for these functions was tried for a week, and then rejected.

Base Force is responsible for the delivery of aviation gasoline to Canal Zone, Pearl Harbor, and Kaneohe Bay, Oahu, T. H. It is expected that Base Force will be assigned the responsibility of maintenance of aviation gasoline stocks in

Alaska. Aviation gasoline storage is being constructed on the outlying islands and these points will be filled and replenished by Base Force [31] oilers. Sufficient gasoline space has been available in oilers to meet the operating needs of the Fleet, the short activities as well as the new storage at Naval Air Stations, Pearl Harbor and Kanoche Bay. During the months of January, February, and March 1941, Base Force oilers transported 5,050,469 gallons of aviation gasoline from San Pedro to Pearl Harbor. There was space available for transportation of three times this amount.

The distribution of aviation gasoline at Pearl Harbor was quite unsatisfactory at the beginning of this fiscal year. Commander Base Force had available for duty two old gasoline delivery boats with gasoline bowsters. These boats would often incur material failures at times when delivery schedules were heavy. Gasoline was delivered by gasoline truck to ships at piers. Large oilers would gas ships when alongside for delivery of fuel oil.

The YO-43, a self-propelled barge with a capacity of 150,000 gallons of gasoline and 50,000 gallons of diesel oil, was completed by Navy Yard and made available to Base Force on 1 March 1941. At the same time, the YO-44 (same as YO-43) was transferred to the Hawaiian Area from San Diego. These two gasoline diesel barges have simplified the gasoline distribution problem. In addition they are being used to fill the new gasoline storage at Kanoche Bay. At the present time they are the only means of delivering bulk gasoline to Kanoche other than by truck. Early in April the YO-44 was sent to Johnston Island to deliver 200,000 gallons of diesel oil in order that the contractor could continue dredging work. The gasoline tanks of the YO-44 were filled with diesel oil in order that the desired quantity would be delivered. Some difficulty was experienced in cleaning the gasoline tank of all traces of diesel oil. Another barge similar to the YO-43 will be needed in the Hawaiian Area within the next twelve months to permit proper upkeep of the YO-43 and YO-44, deliver gasoline and diesel oil to the Fleet, and also make deliveries of gasoline and diesel oil to the outlying islands.

No difficulty has been encountered in the transportation of diesel oil to the Canal Zone and Pearl Harbor, but the distribution of diesel oil in Pearl Harbor was unsatisfactory until the YO-43 and YO-44 reported for duty. Diesel oil issues at Pearl Harbor have increased over 50% because of the increase in number of diesel burning ships, the diesel oil burning equipment of contractors and the near completion of dieselization of small boats program. No requests for the delivery of motor gasoline to large ships have been received since January 1941.

To meet fully and expeditiously the needs of the Fleet, as constituted during the past year, and island bases the following ships are required: (1) one base oiler of about 300,000 gallons minimum capacity of aviation gasoline, similar to SAN DIEGAN, the acquisition of which has been previously requested; (2) five 10,000 barrel Fleet oil barges, self-propelled at a speed of ten knots; and (3) two additional oilers of the CIMARRON type as a reserve for casualties, and to provide for a widely scattered disposition of Fleet units.

(c) GENERAL STORES.

The value of stores issue ships to the Fleet was made plain during the past year. This was however little more than a token; indication of what could be done with an adequate number of stores ships of adequate size.

The size and construction of the ANTARES, the sole stores issue ship assigned to the Base Force, her retention in the Hawaiian Area for use as relief flagship for the Base Force, and her diversion to island bases, interfere with the usefulness of the ANTARES to the Fleet. Until the ships of the Fleet can be assured of regular dependable service from stores issue ships, they will continue to rely on Mainland sources of supply.

The planned operation of stores issue ships in time of peace is: (1) to stock bulky items which combatant ships cannot carry in quantity and (2) to stock small items for retail issue to top off the ships of the Fleet to prevent depletion of their stocks below a six month's supply. The first mission has not yet been fulfilled. Ships continue to submit requisitions to Mainland supply points, and to draw from the ANTARES as well. Under these conditions ANTARES has been unable to determine a normal cargo of bulky items or to increase the bin space in order to better provide for retail issues. Even under the above handicaps the ANTARES did increase its efficiency. The number of items carried for general issue was increased from five hundred to seven hundred.

The preparation of stores issue ships to meet their wartime mission will play an important part in enabling the Fleet to perform its task. Without supplies for operation, maintenance and repair, the Fleet would be quickly hamstrung. The

supply, shipment, and delivery of individual ship's requisitions in wartime is not possible. On the other hand, the supply of bulk cargoes to stores issue ships is definitely possible. The supply of all ship's needs of general stores. [32] from stores issue ships, and the replenishment of stores issue ship's stock by bulk shipments in cargo carriers, is the solution.

The Base Force is in immediate need of two modern cargo ships to replenish the stock of stores issue ships, to transport the varied cargoes which the Base Force is called upon to handle in constantly increasing quantity, to do the various odd jobs which have been assigned to the ANTARES in the past, and to transport advance base material.

[33]

PART IV—PERSONNEL.

(A) COMMISSIONED.

(a) Allowances.

In general surface ships have been provided with officers sufficient in numbers but insufficient in training and experience. Regular officers have been and continue to be replaced by reserves of relative inexperience. The rapid turnover of experienced personnel coupled with inexperienced reserve replacement officers has served to lower combat efficiency. Such replacement reserve officers are being trained insofar as possible in one specialty billet in which the individual shows aptitude, thus the beneficial effects of training will be realized much earlier. In time, as such training progresses, it is expected that the above condition will gradually improve and as reserve officers gain in experience, allowances will be adequate in terms of efficiency.

The harmful effect of the withdrawal of a good portion of the experienced gunnery officers from the Fleet for duties ashore to meet the production demands is gradually being overcome by intensive training through the medium of gunnery schools.

Insufficient officers are assigned to submarines from the viewpoint of training to meet the needs of the expanding submarine force. At least six officers should be attached to each fleet type submarine to provide necessary trained submarine officers for war patrols and reserve crews. Reserve officers are being ordered direct from engineering schools to submarines without the benefit of instruction in the Submarine School. This provides numerical relief but delays the state of training of qualified submarine personnel. Additional junior line officers should be ordered to the submarine service after prescribed school instruction in order to provide an adequate supply of young officers qualified for command.

Insufficient Naval Aviators are assigned all types of squadrons from both the point of view of continuous war operations and to meet the requirements of the expansion program. An eight to one expansion in patrol plane personnel is planned within the next several years, which is indicative of the acute need for training of additional officers. Existing deficiencies will not be made good for many months. This situation has been the subject of separate correspondence.

(b) Training.

The Naval building and expansion program will require that additional experienced officer personnel continue to be removed from operating units. Inexperienced reserves must serve as replacements, consequently strong emphasis has been placed upon the training of reserve officers with the end in view of having each experienced officer instruct an understudy along the line of his particular duties, looking to his eventual replacement when he is needed elsewhere in the expansion program. Type gunnery schools were conducted stressing fundamental training and including extensive instructional firings.

Type gunnery schools for the forthcoming year have started and will continue over a longer period than in past years. Officers attending these type gunnery schools are not allowed to be absent from their ships while the ships are underway. This system tends to prolong the school session but it satisfies all conditions of the emergency and, in the long run, it is believed greater benefit will result therefrom.

With an influx of a large number of inexperienced reserve officers, the necessity of more intensive training of junior officers has developed. Some types have prepared syllabi of training for the various duties within departments, and junior officers are required to pursue these courses. Reserve ensigns are trained for duty in one department only.

Although training strives to keep apace with expansion and modern trends, it has been seriously handicapped in some instances because of the rather steady reduction in the number of officers qualified to supervise the inexperienced offi-

cers. Tactical training is emphasized during exercises at sea and tactical schools are held in part.

A school for Prospective Commanding Officers is conducted in each submarine squadron to train the second officer of each submarine for command duties and to serve as a refresher course for officers already qualified for command who have been separated from the submarine service. Junior officers have been required, under the immediate supervision of commanding officers, to handle submarines under all conditions of submerged and surface operations.

In the Patrol Wings, in order to maintain the barest minimum of patrol plane commanders essential for operation of the planes assigned, as well as to train additional pilots it has been [34] necessary to assign first priority to pilot training in Patrol Wings One, Four, and Six. Such action was necessitated by the diversion of a considerable number of qualified patrol plane commanders to duty away from the above named wings.

(c) *Assignments.*

Permanency of personnel has not been in evidence during the past year. There has been considerable shifting of personnel which, in turn, has a tendency to lower efficiency.

The recent establishment by the Bureau of Navigation of a policy whereby each ship maintains an up-to-date list in the Bureau showing the order in which Commanding Officers desire that officers should be detached when and if it becomes necessary, will assist in the future, to retain key personnel on board. It is expected that such a move toward permanency will markedly benefit the Fleet.

In destroyers, a comparatively large number of commanding and executive officers were detached and replaced with more junior officers, which meant the loss of experienced destroyer officers to other types. In addition, a large number of experienced gunnery and engineer officers have been ordered out of destroyers to other duties afloat and ashore.

Insofar as practicable officers are assigned to duties wherein full utilization of their special training is obtained. An abnormal number of changes in assignments of officers have been required in Patrol Wings One, Four, and Six in order to maintain an equitable distribution of officers in those wings, incident to the depletion of officer personnel as mentioned before.

(B) *ENLISTED*

(a) *Allowances.*

Special personnel studies during the past year indicate that allowances are inadequate. The Fleet Personnel Board report as approved by the Commander-in-Chief, indicated need for increased allowances to meet war-time demands in all Types. Such an increase in allowance as recommended would accelerate training and would serve to alleviate the situation of impermanency of assignments. In addition to increasing the allowances, requests have been made to the Bureau of Navigation to provide additional personnel for training to meet the demands of new construction over and above that required to properly man the ships. Actual conditions at the end of the fiscal year find all types seriously undermanned. From this inadequate source huge demands have been and are being made upon the Pacific Fleet. A most critical condition of affairs will soon result unless positive action is quickly taken to furnish the Fleet with men in sufficient numbers who can be started on a training program at a time early enough to anticipate the expansion program demands for trained personnel. The Commander-in-Chief has repeatedly pointed out to the Navy Department the urgent need for men in order to get them at least partially trained for needs elsewhere in the expansion program.

The current lack of raw personnel material to train, for both the ship building program and the expanding aeronautical facilities is considered to be the most obvious and dangerous deficiency in the Navy expansion program. The Naval establishment will find itself confronted with a condition of having ships and planes without sufficient trained personnel to operate the equipment unless early and adequate recruits are provided. The result of such a condition will be that not only new construction will be inadequately manned but trained personnel will have been withdrawn from operating vessels to such an extent that their effectiveness will be unacceptably reduced.

The situation in regard to training the aviation and submarine personnel is especially marked and has been the subject of separate correspondence.

During the past year, in order to more expeditiously handle personnel coming into the Naval Organization and to make a more rapid distribution of this per-

sonnel, the Fleet Personnel Officer moved to the Headquarters, Eleventh Naval District in November, 1940. In order to coordinate with the activities of the Commander Base Force Subordinate Command, the Fleet Personnel Officer moved, in June, 1941, to Headquarters, Twelfth Naval District. These moves accomplished the desired results in reducing the loss of time involved in the handling of incoming and outgoing drafts and reducing radio traffic.

Beginning with January, 1941, the demands for personnel to fill new construction, acquired and converted vessels, newly established shore and outlying stations, were considerably increased over the first six months of the fiscal year. Since January 1, 1941, the Pacific Fleet Personnel Officer was called upon to supply 7,233 men for these activities. Most of these men were rated men. The following table gives some idea of how these men were spread among the various demands:

[35]	To Combatant vessels (new BBs, DDs).....	1172
	To Auxiliaries (New, converted, and acquired).....	2710
	To shore stations.....	1679
	To outlying stations.....	1672

The following table shows the number of recruits received in the Pacific Fleet by quarters for the fiscal year:

	1st	2nd	3rd	4th	Total
School Grad.....	332	1,077	846	1,246	3,501
Gen. Service.....	3,750	10,527	6,190	3,401	23,868

It will be noted that in the 4th quarter the number of recruits fell off very badly.

In October, 1940, complements were made effective in lieu of allowances for all vessels of the U. S. Fleet. On March 31, 1941, new complements were put into effect which were greater than previously. The following table is furnished for information:

	June 1940		December 1940		April 1941 (latest available figures)	
	Allow- ance	On Board	Comple- ment	On Board	Comple- ment	On Board
BATSHIPS.....	13,931	13,180	17,664	17,515	18,566	17,589
AIRBATFOR.....	7,113	6,645	8,309	8,141	8,525	8,256
MINBATFOR.....	962	974	1,673	1,573	1,676	1,675
CRUBATFOR.....	5,698	5,702	10,640	10,752	10,489	9,469
CRUSCOFOR.....	8,105	7,972	8,234	7,927	11,066	10,016
DESBATFOR.....	14,813	13,686	17,718	16,672	17,472	16,519
SUBSCOFOR.....	4,749	4,498	7,455	6,667	3,414	3,596
AIRSCOFOR ¹	2,110	3,015	1,522	1,673	1,378	1,490
PATWING 2.....	1,210	1,218	1,033	1,078	1,527	1,649
BASEFOR.....	6,183	6,237	7,679	7,379	9,908	9,328
Totals.....	68,874	63,167	81,927	79,377	84,021	79,587

¹ Does not include Patrol Wing TWO.

Whenever possible, men on general detail and otherwise becoming available to the Fleet Personnel Officer have been utilized to fill demands for new construction, acquired and converted vessels, etc., but when the limiting date which would permit arrival at their respective destinations approached, it was of course, necessary for the Fleet Personnel Officer to go to the Fleet and make demands upon Type Commanders.

(b) *Training.*

(1) *General.*

The expansion of the Fleet and the increase in personnel has opened up large numbers of ratings. The heavy drain on the Fleet for new construction, recommissioning and conversions, has resulted in a strenuous training program to provide the needed rates without loss of efficiency.

Eligibility for advancement in certain ratings (CRM, CTM, CEM, CFM, CCStd, and CAerog) includes the requirement that the candidates be graduates of certain service schools. Since quotas for these schools are limited, advancement in these

ratings does not keep pace with other unrestricted ratings, and results in considerable hardship to personnel in these ratings.

A serious shortage exists in the fire controlman ratings. Recommendation is being made that class "A" schools lay the ground work for this rating for certain selected recruits before their transfer to the Fleet.

Even though insufficient recruits have been furnished, school training facilities are being utilized fully in order to keep the school organizations intact. Decided handicap has been in evidence due to the Bureau of Navigation ordering away to new construction partially trained seamen when nearly ready for petty officer ratings. The result has been that these men must in effect commence training again on a new ship and thereby lose the benefit of that which has been obtained previously. It has been recommended that new recruits be utilized insofar as possible for such transfer.

[36] (2) *Service Schools.*

The following Fleet schools are being conducted at the Destroyer Base, San Diego, under the administration of Commander Base Force.

Elementary firecontrol school.

Torpedo school (elementary and advanced).

Diesel school.

Visual signalling.

Welding school (elementary and advanced).

Radio striker school.

Requests in excess of the quota are received for all schools except the advanced courses in torpedoes and welding.

Additional torpedo schools (elementary) are at Submarine Base, Pearl Harbor, T. H.; Naval Torpedo Station, Newport, R. I.; and at the Naval Torpedo Station, Keyport, Washington. The latter is being organized and is not yet in operation.

(3) *Special Schools.*

Special schools, such as Minecraft Mine School, have been conducted within types. Special Patrol Wing radio schools have proved to be valuable source of training both elementary and as additional instruction for slower members of the Class "A" radio schools.

(4) *Ships' Schools.*

Systematic schooling to train men in specialist duties and for advancement in rating has been conducted in all ships of the various types. Excessive transfers do not permit the requisite training of sufficient personnel to fill key ratings, in spite of the accelerated program.

(5) *Bureau of Navigation Training Courses.*

Bureau of Navigation Training Courses are satisfactory but courses are lacking for some ratings. To be of value they must be kept revised to date, particularly now when conditions are changing rapidly and large numbers of new men must be trained. Recommendations have been submitted in separate correspondence to bring these courses up to date. The demand for these courses has been heavy. They continue to be most satisfactory for use in training men for advancement in rating. In spite of increased demands, the Bureau of Navigation and its issuing agencies have managed to keep abreast of the number of request.

(C) *ATHLETICS.*

(a) The athletic facilities in the Pearl Harbor—Aiea area (Hawaii) have been greatly increased during the fiscal year ending 30 June 1941. The following facilities are available to the enlisted personnel of the Fleet:

5 Baseball diamonds

17 Softball fields

5 Basketball courts

10 Tennis courts

6 Handball courts

2 Volleyball courts

4 Swimming pools

Golf course at Navy Yard

In addition to the above, a large number of men in swimming parties and overnight camping parties has been accommodated in Camp Andrews, Nanakuli, T. H.

The following facilities are available to officers:

7 Tennis courts

1 Badminton court

1 Paddle Tennis court

2 Handball courts

2 Swimming pools

[37] (b) On 30 June 1941 the enlisted men's pool and clubhouse at Aiea was ready for opening. The new athletic development at Aiea has done much to increase the athletic facilities available, and has proved to be very popular with the men in the Fleet. It is anticipated that the Fleet Recreation Center will be completed about the middle of August 1941. The Fleet Recreation Center consists of an arena and an enlisted men's clubhouse. The arena will seat approximately 6,000 people. It is planned to use the arena for motion pictures, boxing matches and theatricals. The enlisted men's clubhouse, adjoining the arena, contains reading rooms, writing rooms, canteen, pool tables, and ten bowling alleys.

(c) A project is underway to develop a swimming beach with bathhouse, at Barber's Point Territory of Hawaii for officers and enlisted men. The capacity of Camp Andrews, T. H., is being increased and more modern facilities are being installed.

(d) The Fleet Recreation and Morale Officer reported for duty on 21 May 1941. He is charged with the allocation, maintenance and upkeep of the athletic fields. He is also responsible for arranging swimming meets, boxing matches, and theatricals with the Fleet.

(e) The Fleet athletic policy has been to continue the competitions in various sports within each type in-so-far as operating schedules permit. Every effort is made to get the maximum number of men on the athletic fields.

(f) In the Fall of 1940, three separate Task Forces were sent to the Coast for recreation and liberty. This resulted in athletic schedules being slightly modified. Athletic competitions were handicapped somewhat when the Pacific Fleet was operating as two Task Forces, one Task Force being at sea all the time. This condition is improved now that the Fleet is operating as three separate Task Forces.

(g) During the past year, three athletic groups were established for the purpose of allocating available athletic facilities. This plan has been successful and has tended to provide a more equitable allocation and permit greater use of facilities available.

(D) *CHAPLAINS' ACTIVITIES AND WELFARE.*

The duties of the Fleet Chaplains have been considerably augmented by the Fleet basing in Hawaiian waters.

Demands have increased for rendering personal services in addition to the religious ones. These have been handled most successfully, and have been a considerable factor in maintaining a high morale.

The usual collateral duties of the Chaplains, such as welfare, recreation, Navy Relief, and Red Cross liaison, have been successfully performed in all worthy cases.

(E) *HEALTH & HYGIENE.*

With the exception of sharp outbreaks in Measles and Mumps incidental to increased numbers of recruits lacking in "Mass Immunization", an epidemic of Catarrhal Fever and sporadic mild occurrences of gastrointestinal upsets in the Fleet, it is considered the general health has been at normal levels.

The injury rates, and venereal incidence have both decreased perceptibly.

The exanthemata have been reduced to a slightly above normal admission rate which should be stabilized at this level depending always on influx of new personnel. At no time was the situation such as to cause alarm nor require measures prejudicial to the training schedules. However, there was a marked outbreak of Catarrhal Fever in the Fleet which reached its peaks in September and January. This was concomitant with a national situation which unquestionably was the source of our infection. No serious complications appeared except in a few isolated cases. The mortality in these was practically nil. In one instance a battleship was forced to remain at anchor in Lahaina Roads for a few days incidental to the large sick list. Efficient drastic steps were taken in the instance and the schedule was readily resumed.

Various gastrointestinal upsets, mostly of unknown origin, were noted. These were traced in a few instances to food handlers, shore-side foods of questionable quality, et cetera, but as a [38] rule, no definite cause could be detected. The water supply has been suspected wrongly—in all but one case. The repeated weekly and tri-weekly analysis of barge water failed to substantiate any such accusation. Water distilled aboard has been carefully checked especially while in Pearl Harbor. Further precautions were taken in some ships by not distilling drinking water in port, and by chlorination. Several cases were periodically transferred to the Naval Hospital for

thorough study especially whenever the diagnosis of DYSENTERY, BACILLARY, was considered advisable, or indicated by the finding of Paratyphoid Shigilla in the stools.

One theory advanced was the droplet contamination of vegetables transported in spray splashed boats from source of supply to ships. Another was the existence of a "droplet" contamination causing a condition which appeared in Los Angeles epidemically during May and June, also in Honolulu during June and July. The latter has been reported in Los Angeles—1939. Other instances appeared in Denmark—1935, England—1936. Milwaukee reported 120,000 cases in 1936. The symptomatology is practically identical.

However, in the Fleet no deaths occurred, very few cases were severe and though disabling for 2 to 5 days, recovery took place with usual routine treatments. Dehydration and high fevers were the important features in the more severe cases. No one group of ships was affected nor were the instances of localities under suspicion. Breaks in the technique at the dishwashing area, principally low temperature of water and the presence of "carriers" have accounted for many difficulties of this type. Sporadic increases in "sore throats" were traced to defective sterilization or care of scuttlebutts, also to the ubiquitous common drinking cups in some parts of ships.

The injury rates have decreased noticeably and this can only be attributed to the added interest and publicity in prevention by thorough study of each accident followed by remedial steps where possible.

An outstanding improvement has been the lowered venereal disease incidence. This has been truly remarkable. In June, 1939, the rate per 1,000 was 82; in 1940 it was 72. These figures apply to the U. S. Fleet (less Fleet Marine Force and Asiatic Fleet). For the first 5 months of this year the Pacific Fleet showed an admission rate of 41 per 1000 for venereal admissions.

The location of ships has materially affected these statistics, especially when there were sojourns in some of our less supervised Coast ports. Many features concur in the lowering and raising of venereal rates, such as lectures aboard ships, but the excellent measures, supervision and cooperation of the authorities in Honolulu must be given just dues and be pointed out as worthy of attempted emulation by some of our coastal confreres.

There have been very few cases of "food poisoning" per se in the Fleet this year. Only one of moment where over 600 appeared on the "COLORADO" during a gunnery practice. This was traced to a "carrier" of entero-toxic staphylococci in a food handler. No complicated case appeared and the situation fortunately responded to routine medical aid. The necessity for readily available hand washing facilities for food handlers cannot be stressed too much. This is applicable in controlling the fresh water curtailments or "water hours" which manifestly preclude availability to more than a favored portion of the personnel. Efficiency competitions are commendable only until they jeopardize health and comfort.

The increased personnel aboard ships of all types brings problems of sanitation which require constant surveillance, energetic remedial or preventive measures and justifiable concern for the presence of any possible epidemic. This is applicable to the air borne and contaminated food diseases.

Ventilation must be and is being constantly considered, especially in the avoidance of protracted periods of gas attack and other drills. These problems have been given due consideration during the past year with commendatory results. Expediency and necessity in an emergency necessarily control factors in a manner dissimilar to those of placid times. Hygiene and sanitation standards have been modified but have been more carefully watched by that token.

The procurement of drinking fountains at "strategic" areas continues and is relieving a situation which made for problems of sanitation. The sooner our common drinking cups—coffee and otherwise—disappear from their many storerooms, firerooms and the like, the greater will be the decrease of upper respiratory diseases. Most ships have taken substantial steps in this direction.

A dishwashing machine of small restaurant type such as seen in the many "hamburger stands" is urgently needed in officers' pantries. The dishwashing method in these instances has not changed in over thirty years.

[39] Garbage disposal in port remains a problem. Large accumulations over 24 hour periods are detrimental to proper sanitation and fly control. The "lighter" service should be carefully controlled to permit of no breaks, perhaps doubled in frequency.

All personnel have been blood typed excepting an occasional new arrival. The issuance of identification tags in the next few weeks will afford a ready means of information at all times.

Landing Force exercises provided much needed training for the Medical Department personnel and have pointed to some outstanding necessities in equipment and supplies. These latter are applicable to preparation and provisions for casualties more especially in the service of supply and transporting of injured from field of action to evacuating area or ship.

Hospital facilities have been adequate to date. The absence of a hospital ship has thrown a patient increase on the hospital at Pearl Harbor where it has been absorbed efficiently and expeditiously. It now has a bed capacity of 1,000. A mobile hospital of 500 bed capacity is on its way for installation. This is in the area chosen for the erection of a new Naval Hospital at a strategic distance from the industrial and military activities of the Yard. Provided no obstacles arise, this unit should be functioning shortly and furnish components available for installations, if needed, at distant points. The hospital has a daily average patient complement of about 600, leaving a good margin of safety, when the mobile unit and its 500 beds are added. This should be further increased by the expeditious construction of the new permanent hospital. This already has been planned and appropriated for but not started. Possible major catastrophes or large scale casualties make this adjunct urgently needed. With the above situation in mind, a determined successful effort has been made to decrease transfers to hospitals and hospital ship for minor injuries, minor surgery and mild conditions. This accomplishes much towards indoctrination of Medical Department personnel, stimulates resourcefulness and maintains a crew intact while undergoing its scheduled training aboard combatant ships.

(F) DISCIPLINE AND MORALE.

The excellent character of Naval personnel continues to be self-evident.

The discipline and morale of the Fleet is considered excellent. This is particularly impressive in view of the existing rapid turn-over in personnel, distance of the Fleet Units from their home bases, and rigorous conditions under which the Fleet operates at sea.

In spite of the rapid personnel expansion program taking place during the year, there appears to have been no corresponding increase in breaches of discipline.

With increased recreational and housing facilities rapidly becoming available, it is anticipated that the present high morale will continue. The only primary unsatisfactory obstacles to morale are the increased cost of living for both officers and enlisted personnel with families, the more lucrative salaries offered civilian workers on "defense" projects, and the uncertainty as to the length of time personnel will be separated from dependents on the Mainland of the United States. This latter feature is compensated for partially by scheduled recreational visits to the West Coast of the United States.

[40]

PART V—INSPECTIONS

The prescribed inspections, military, material, medical supply, and surprise have been conducted in accordance with current instructions. They indicate that the Fleet has generally maintained satisfactory conditions as to material, discipline, efficiency, health, and morale. Wherever conditions requiring remedy were discovered, action was initiated leading to their correction.

The Secretary of the Navy, Frank Knox, accompanied by Captain M. L. Deyo, U. S. Navy, was present with the U. S. Fleet during the September, 1940, tactical period, and informally inspected various Fleet units, including a battleship, aircraft carrier, light and heavy cruisers, destroyers, and 14th Naval District