THE COAST GUARD AT WAR

AIDS TO NAVIGATION XV

PREPARED IN THE
HISTORICAL SECTION
PUBLIC INFORMATION DIVISION
U. S. COAST GUARD HEADQUARTERS
JULY 1, 1949

This edition is designed for service distribution and recipients are requested to forward corrections, criticisms, and comments to Commandant, Coast Guard Headquarters, Washington, D. C., Attention Historical Section, Public Information Division

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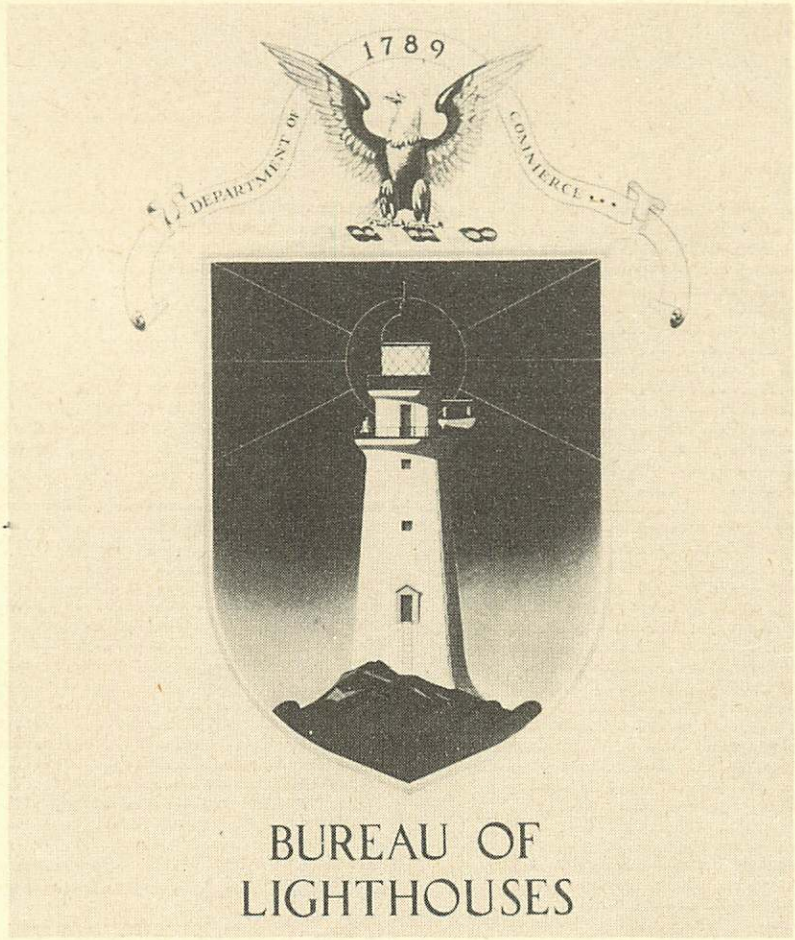


State of the Light Houses* erected on the headlands and islands of the United States

In what state	Where situated	Number	Superintendents	Keepers
New Hampshire	New Castle Island, near Portsmouth	One	Joseph Whipple	Titus Salter
Massashusetts	Nantucket Island	One	Benjamin Lincoln	Paul Pinkham
Ditto	Thatcher's Island	Two	Ditto	Joseph Soward
Ditto	Plumb Island, near Newbury Port	Two	Ditto	Abner Lowell
Ditto	Portland Head	One	Ditto	Joseph Greenleaf
Ditto	Light house Island, in Boston Bay	One	Ditto	Thomas Knox
Ditto	On the Gurnet, near Plymouth	1 with 2 lanterns	Ditto	John Thomas
Rhode Island	On Conaniut Island	One	William Ellery	William Martin
Connecticut	At the mouth of Thames River	One	Jedediah Huntington	Daniel Harris
New Jersey	Sandy Hook, New York Bay	One	Tho. Randall, of N.Y.	Matthew Ely
Delaware	Cape Henlopen, Delaware Bay	One	Wm. Allibone, of Ph.	Abraham Hargis
Virginia	Cape Henry, Chesapeak Bay	One	William Lindsay	Laban Goffigan
North Carolina	Cape Fear Island (nearly completed	One		
South Carolina	Middle Bay Island, near Charleston	One	Edward Blake	Thomas Hollingsby
Georgia	Tybee Island, near Savannah	One	John Habersham	

* N. B. These, and all the beacons, buoys, public piers, and stakeages for the protection and guidance of ships, are under the Superintendent of the Commissioner of the Revenue, in the department of the Treasury of the United States.

FIRST U. S. LIGHTHOUSES

THE LIGHTHOUSE SERVICE - 1789 - 1852

When first established in 1789 the Lighthouse Service was assigned to the Treasury Department and at first was under the direct control of the Secretary. With the increase in the number and scope of its duties, it was transferred to the Revenue Marine Bureau of the Treasury in 1845. For many years the collectors of customs had acted as local superintendents of lighthouses, the supply and inspection of lights being performed chiefly under contract. The establishment of lights was without much system, however, and the administration of the service very loose.

THE LIGHTHOUSE BOARD - 1852 - 1910

In 1851, a planning board was created for the purpose of making a report, which would serve as a guide for legislation. As a result of this report, Congress set up the Lighthouse Board in 1852. This body, being composed of officers of the Army and Navy and of civilian scientists, continued to function until 1910. Among its naval members at one time or another were Admirals Dewey, Evans, and Schley. Meade, General of the Union Forces at Gettysburg, performed duties on this Board, as did Rosencrans, Beauregard, and Semmes, who later commanded the confederate vessel ALABAMA, responsible for the famous "Alabama claims." Eminent civilian scientists who served on the board were Henry Morton, the first President of the Stevens Institute of Technology, and Joseph Henry of the Smithsonian Institution. The board established twelve districts, provided for their administration and inspection, instituted improvements in equipment, and fostered experimentation with new devices. To it belongs much of the credit for the excellence of our present day navigational aids. Attempts were made in 1862 and from 1882 to 1885 to transfer the Lighthouse establishment to the Navy, but these all failed. When the Department of Commerce and Labor was created in 1903, the Lighthouse Service was placed under it. However, it remained with the Department of Commerce when the Labor Department was later split off to be headed by a separate cabinet officer.

BUREAU OF LIGHTHOUSES 1910 - 1939

In 1910, the Lighthouse Board was superseded by the Bureau of Lighthouses in the Commerce Department. The districts were rearranged and the work consolidated, with major changes in organization, although functions and activities were not altered to any major extent in the new Lighthouse Service.

PREWAR ORGANIZATION GENERAL ADMINISTRATION

The Lighthouse Service was under the supervision of a Commissioner who was appointed by the President without senatorial confirmation and directly responsible to the Secretary of Commerce. A Deputy Commissioner, a Chief Constructing Engineer and a Superintendent of Naval Construction were all appointed in the same manner as the Commissioner. The central Washington office was known as the Bureau of Lighthouses and there were nineteen lighthouse district offices throughout the country. Administrative work of a general nature was conducted through the offices of the commissioner, deputy commissioner and chief clerk, under whom were the finance, law and property, personnel and files divisions.

ENGINEERING DIVISIONS

Three divisions at the central office were concerned with matters of engineering and operation. The Engineering Construction Division had general charge of the preparation of plans and specification for, and the construction of, structures on land. The Marine Engineering Division, in charge of the Superintendent of Naval Construction had general supervision over all matters involving marine engineering and the repair of vessels and other floating equipment. The Hydrographic Division handled all matters concerning the establishment, changes in, or discontinuance of, aids to navigation.

FIELD ESTABLISHMENT

The actual operation and maintenance of the aids to navigation was carried on by the Field Establishment. The nineteen districts provided for in the organic act of June 17, 1910 (later reduced to 17) were in charge of as many superintendents of lighthouses. In 1926 the Superintendents of the 13th, 14th and 15th districts, comprising the Mississippi and Ohio river areas, were officers of the Corps of Engineers of the Army, detailed to serve in that capacity. Each superintendent was in charge of all the work of the district to which he was assigned and he was responsible to the commissioner for the proper management of the light stations, fog signal stations, light ships, relief light ships, lighthouse tenders and depots.

DISTRICT SUPERINTENDENT

The superintendent's duties included the maintenance, repair and operation of all lighthouse craft permanently or temporarily located in his district. He supervised the construction of new aids and was responsible for the repair of all property in his district, for keeping ready for service upon immediate notice, all spare or relief moorings, buoys, and buoy appendages, and relief light ships. He directed the field force and work of the stations and vessels within his jurisdiction. He supervised the placement of light ships, the disposition of abandoned or partially destroyed aids, the restoration of damaged or displaced aids, and the arrangement with owners and agents of vessels for the repair of damages done by them to aids. He directed the removal of aids in winter and their replacement in the spring, the docking of vessels, and the movement of vessels to navy yards for repairs, supplies, stores and equipment. He issued local notices to mariners of casualty to, restoration of, or changes in aids to navigation. He made recommendations, upon application by maritime interests, for the establishment of lights, light ships and other aids to navigation and also acted on application to establish private aids. He investigated the proposed installation and directed preliminary surveys, prepared rough plans for new construction, including estimates of costs, and reported his findings to the commissioner. Under the commissioner's direction he negotiated for the acquisition of land for the establishment of aids, and obtained cession of jurisdiction from state authorities. He advertised for and accepted bids for the supply of equipment, materials, supplies and services.

LIGHT STATIONS

The light stations were the permanent stationary lighted aids. A completely equipped light station on a land site usually consisted of the light tower, oil house, fog signal building, keeper's dwelling, workshops, water supply and drainage systems, landing wharf, boathouses and ways, barns, sheds, etc. In some instances a single building served several purposes. On submarine sites the whole station was usually confined to one structure. Each station was in charge of a light keeper and from one to four assistant keepers, depending on the size and importance of the station. The keepers operated, cleaned and repaired the lights and fog signal apparatus. They maintained and repaired the buildings on the station reservation, and assisted working parties in construction and repair work. The keeper reported all cases of damage by shipping to aids to navigation or interference with aids, defects in, or displacements of, aids to navigation within his vision and all other information concerning new danger, etc. The light stations took charge of Coast Guard boats committed to their care by the Secretary of the Treasury and notified the Coast Guard of persons and vessels in distress. So far as their situation and equipment permitted, they lent aid to vessels and persons in distress and furnished provisions and clothing to shipwrecked persons.

LIGHT SHIPS

Light ships equipped with light, submarine bell and fog signal apparatus and radio were permanently moored at locations where it was impracticable to maintain stationary lights. The crews, in addition to caring for the vessel and operating, cleaning and repairing the lights and signals, performed certain incidental duties. They watched for defects on, or displacement of aids to navigation within their vicinity; and for new obstructions to navigation and for changes in channels. They notified Coast Guard cutters of ships and persons in distress, and themselves rendered aid as far as possible. They reported damage to or interference with, aids to navigation by vessels, defects or displacements of aids and the necessity of marking wrecks and obstructions or changes in channel.

LIGHTHOUSE TENDERS

The lighthouse tenders placed, replaced and moved all floating aids to navigation; delivered fuel, supplies and construction material to light stations and vessels and transported officers travelling on government business. While cruising in the performance of their duties, the tenders noted the condition and position of all floating aids to navigation, adjusting their positions when necessary. They removed or marked floating aids which had been abandoned or irreparably damaged. They noted and reported conditions of navigation which affected the accuracy of charts, Coast Pilots, sailing directions and other marine publications and records. They rendered assistance to light ships out of position and made such repairs as were possible to damaged aids, and to defective light apparatus at light stations and on light ships. They also performed certain police duties, assisting in the prevention of smuggling and the protection of government property.

BUOYS

Thousands of buoys had been placed in American waters to supplement the light houses and light ships. They were used to mark channels, shoals, wrecks and other submarine obstructions and in some cases to define anchorage grounds. They could be put in critical positions where it would not be feasible to erect a fixed light or beacon. They might, however, be torn from their moorings, dragged out of position or sunk on their stations. The earlier types of buoys were either solid wooden spars, or built up in various shapes of wooden staves, like barrels. Originally they were painted red, white or black, without any special system. In 1850 Congress passed an act providing for a systematic coloring and numbering of all buoys. Iron buoys were first put into service about this time. The buoys in use in 1939 were nun or can buoys of iron, and spar buoys of wood or iron. For warning in fog or mist, buoys were fitted with bells, whistles, and submarine bells, all operated by the motion of the sea. The bell buoys date from 1855 replacing the expensive and unsatisfactory bell boats then in use. They were used especially in harbors and inside waters where a sound signal was desired. Whistling buoys were first introduced in 1876. The sound produced was automatic depending on the motion of the waves. These were more efficient in rough outside waters. There were many lighted buoys. These had a lantern mounted on a short steel tower, like a miniature light house, with a lens and gas burner inside. Gas was stored in large flasks in the underwater portion of the buoy, and permitted the buoy light to burn without attention for several months. Electrically lighted buoys were also in use, the current being supplied by the dry cell stored in the base of the buoy.

RIVER LIGHTING

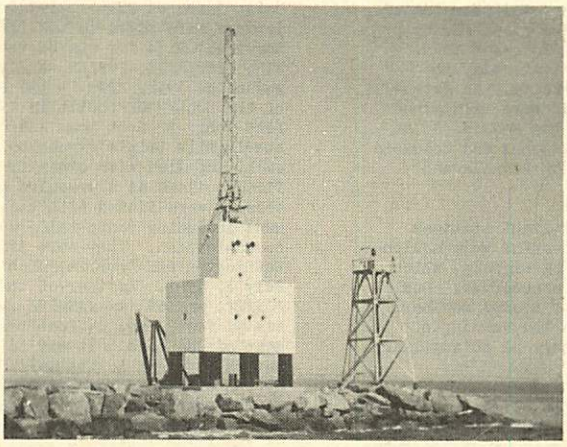
The lighting of rivers had first been authorized by the act of June 23, 1874. Three districts the 13th, 14th and 15th were engaged entirely in lighting the Mississippi river and its principal tributaries. The channels of these rivers generally follow concave banks, with crossings where the concavity shifts from one side of the river to the other. The lights were located so as to show the general shapes of the bends and the positions of the crossings. The lights were usually placed on the banks of the rivers and the crossings marked by two range lights, one ahead and the other astern. Where the crossing was crooked it was sometimes necessary to have a series of range lights, and during low water some of the lights were placed on sand bars or on small floats or rafts, the latter being known as float lights. Due to the shifting of river channels, the locations of the river lights were often changed.

POST LIGHTS

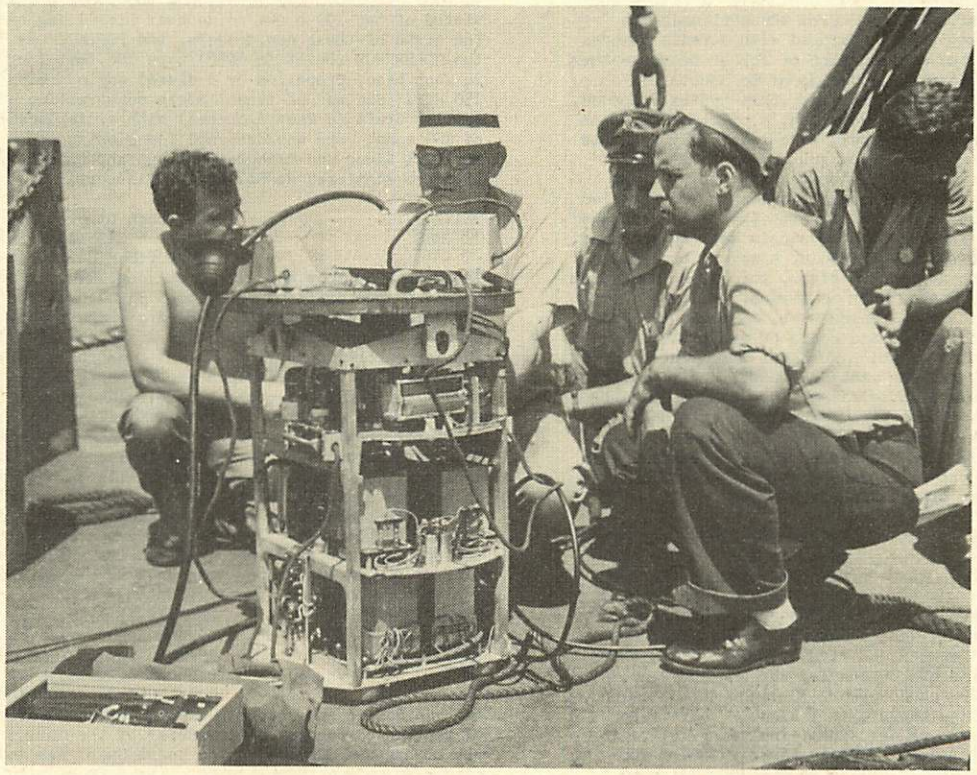
The lights in these three districts were simple in character and were generally known as post lights. In some cases they consisted of an ordinary 14 inch hand lantern, inclosed in a square or triangular tin case with plain glazed sides. There was also a specially designed post lantern with a one-inch flat wick and a pressed glass lens about 8 inches in diameter. The lights burned kerosene and as a rule were fixed white in character, although some were fitted with red globes or shades. The most complete type of structure on which post lights were placed consisted of a post with braces and steps with a lantern on top. Wings were attached to make an appropriate day mark. Many were of a temporary character due to changes in channel, with caving banks which made frequent shifting necessary. In some localities they were attached to trees. In the narrower and more crooked channels or where the ends of wing dams were to be marked, a special type of buoy was found desirable. These buoys had but a slight reserve buoyancy so that drift wood or other floating objects coming in contact with them would pass over them without displacing them.

LAMP LIGHTERS

The river lights were cared for by persons living in the neighborhood. The work required but a part of their time, and they



THE COAST GUARD'S NEW LONG BEACH HARBOR LIGHT
HAS GAINED FOR ITSELF THE NAME "ROBOT LIGHT"
A 36-INCH AIRWAY BEACON-TYPE LANTERN, PRODUCING 140,000 CANDLE POWER
WILL SHOW A FLASHING WHITE LIGHT AROUND THE HORIZON EVERY FIVE SECONDS
(1 SECOND FLASH, 4 SECONDS ECLIPSE) AND IN FOGGY WEATHER THE FOG-HORN ON
LONG ISLAND BEACH LIGHT WILL BLAST OUT ON DUAL TWO-TONE HORNS, AT THE SAME
TIME BROADCASTING A CLASS "D" RADIOBEACON SIGNAL WHICH SHIPS MAY FOLLOW BY
RADIO DIRECTION FINDER



THREE BANKS OF STORAGE BATTERIES, RESTING IN WATERTIGHT COMPARTMENTS
WITHIN THE BUOY, FURNISH THE POWER FOR THIS SUPER-RADIO TRANSMITTER WHICH
SENDS THE NECESSARY IMPULSES TO AN APPROACHING SHIP

were paid of the basis of the number of lights tended. In most cases a number of lights were cared for by one person, who usually used a boat to reach them. Where electric current was readily available, the river lights were lighted by electricity. An extensive system of lights and other aids were maintained on several other rivers, including the Hudson, Delaware, Potomac, James, Savannah, St. Johns and Columbia rivers. On some of these regular fog signals and range lights were operated.

FOG SIGNALS

Important light stations and light ships were equipped with fog signals, which started as soon as signs of fog were observed. Due to aberration in the transmission of sound, mariners were warned not to rely too much on the warning of the fog signals, but to regard it only as an auxiliary aid.

RADIO BEACONS

By 1925 the service was operating radio fog signals or radio beacons at thirteen stations, eleven of which were light ships. The transmitting apparatus in use was a commerical panel type spark transmitter set of about one kilowatt power. In addition to this set, a special automatic motor-driven timing signal, for producing the desired signal at regular intervals, was provided. The system of navigation by radio direction signals was based on the installation at selected lighthouses and light ships along the coasts of apparatus for sending radio signals of simple and definite characteristics. From these signals the navigator of any vessel equipped with a radio compass could, during the continuation of fog or heavy weather, take definite bearings to guide or to locate his ship, although no object was visible. This system afforded, for the first time in navigation, a practicable means by which the navigator could take reasonably accurate bearings on fixed beacons which were not visible. The navigator was able to locate his ship by cross bearings on two or more radio stations or by repeated bearings on the same station, with the distance logged between the bearings, or by a single bearing and dead reckoning. It was not probable, however, that, as a result of anything then in sight, the extensive system of sound fog signals, such as sirens, whistles, horns and bells could be dispensed with, as these were of great value to vessels and boats of every size and description, many of which were not likely soon to be equipped for receiving radio signals. Radio beacons are now recognized to be all-weather aids to navigation, instead of simply fog signals as originally suggested. They permit bearings to be taken on stations invisible either because of thick weather or distance, and they add tremendously to the effectiveness of systems of aids to navigation.

NUMBER OF AIDS JUNE 30, 1939

By June 30, 1939, the grand total of all aids to navigation operated by the Lighthouse Service had reached 29,606. The number had grown from 17,864 on June 30, 1925, and from 11, 713 on June 30, 1910. Included in the 1939 total were 9,862 lighted aids. Among these were 1801 lights of 200 candlepower and above, 6,180 lights below 200 candlepower, 30 light ship stations, and 1,881 lighted buoys of all kinds. There were 1,764 fog signals of all kinds, including 141 radio beacons, 570 sound fog signals (in air) and 9 submarine fog signals, 676 lighted and 368 unlighted buoys with whistles, bells, gongs or trumphets. Finally there were 13,468 silent and unlighted buoys and 5,188 daymarks.

NEW TENDERS SHOW IMPROVEMENTS

Just before the Lighthouse Service became part of the Coast Guard on July 1, 1939, nine new lighthouse tenders were added to the fleet of the Lighthouse Service. Bids for six of these the BIRCH, BLUEBONNET, FIR, MISTLETOE, POPLAR, and WALNUT had been opened in August of 1938. Two, - the FIR and the WALNUT, - were of the HOLLYHOCK (built in 1937) type and were 175 feet long, 32 foot beam and constructed entirely of steel. With triple expansion engines of 1000 H.P. each, supplied with steam from two water-tube oil fired boilers at a pressure of 200 pounds, these vessels were fitted with the latest navigating equipment including radio-telegraph and radio-telephone communication. They were stationed at Seattle, Washington and Detroit, Michigan, respectively, on July 1, 1941. Another of these tenders, the BLUEBONNET, was of the JASMINE (Built in 1935) type, and was 91 feet long, 25 foot beam, and had a displacement of 184 tons. It was to be used in the inside waters adjacent to the Gulf of Mexico and was powered by two diesel engines of 100 shaft horsepower each. It was stationed at Galveston, Texas on July 1, 1941. The MISTLETOE was 172 feet long, 32 foot beam and was of the LILAC (built in 1933) type, designed for outside service under favorable conditions. With a displacement of 770 tons, the power plant consisted of two triple expansion steam engines and oil-fired water tubed boilers of 1000 H.P. She was stationed at Portsmouth, Virginia, on July 1, 1941. The BIRCH was of the ELM(built in 1937) class and was 72 feet long, and 17 foot beam with a 4 foot draft and was designed for Hudson River duty but on July 1, 1941 was stationed at St. Petersburg, Florida. She was 76 tons displacement, steel, and the power plant consisted of two 150 brake horsepower Diesel engines. The sixth of these new tenders, the POPLAR, was of the GOLDENROD (built in 1938) type 104 feet long and 24 foot bean, propelled by 2 diesel engines each 150 H.P. She was of tunnel stern construction and shallow draft (4 feet 2 inches) with a displacement of 193 tons. She was designed for Mississippi, Missouri River and tributary waters and on July 1, 1941 was stationed at St. Louis, Missouri.

HEAVY DUTY TENDERS

The three other tenders were the ZINNIA, NARCISSUS and MAPLE. Built somewhat later in 1939 they were 122 feet long, 27 foot beam, 6 foot 6 inch draft and displaced 342 tons. They were each powered with 400 H.P. diesel twin screw engines and on July 1, 1941 were stationed at Edgemoor, Delaware, Portsmouth Virginia and Ogdensburg, New York, respectively. The principal improvements of this design of tenders over the preceding design were in seaworthiness, derrick capacity, stability, size of buoy deck, power of propulsion, and maneuverability. This was accomplished by a moderate increase in dimensions, the use of greater power with twin screws in lieu of a single screw, the substitution of pipe struts for the derrick mast, in place of wire rope rigging. These newer designed tenders were well equipped to take over the rugged duties which the war, already raging in Europe, when they were commissioned, was soon to demand of them.

CONSOLIDATION WITH COAST GUARD 1939

On July 1, 1939, the Lighthouse Service, under Reorganization Plan II, was consolidated with the Coast Guard. A further reorganization embraced all of the combined activities of the two services. The transfer of the duties from the Lighthouse Service to the Coast Guard was made mainly to reduce expenditures. The former 9 divisions and 13 districts of the Coast Guard and the 17 districts of the Lighthouse Service, were now combined into 13 districts, including, in addition to the 9 Coast Guard divisions, new districts for Puerto Rico, Hawaii, Alaska and the interior rivers of the United States. The separate field organization of the former

life saving activities was, at the same time, integrated with other functions of the Coast Guard. The grouping of shore stations, including life-boat and light stations, and certain bases, which was put into effect at this time, proved of practical value a few years later when the Coast Guard was given the task of organizing the Beach Patrol in 1942.[1] This integrated system of shore establishments then became the key to our entire coastal defense system.

PERSONNEL INTEGRATION

There was a natural reluctance of personnel to change from the long established Lighthouse Bureau to another service. To overcome this hesitation, the transfer was effected by avoiding discharges wherever possible. By not filling vacancies, which were in effect at the time of the transfer, most necessary cuts in the personnel were accomplished. The Secretary of the Treasury authorized the induction into the Coast Guard of officers and crew of tenders and light ships, keepers of lighthouses and depots, light attendants, radio electricians, examiners and maintenance supervisors, as the duties of those positions were comparable with duties performed in the military service of the Coast Guard. In addition to those positions, there was a large group of positions analogous to those held by civilian employees of the Coast Guard, such as draftsmen, mechanics, laborers, watchmen, messengers, all in the sub-professional and custodial classifications, as well as various positions in the clerical administrative and fiscal service. This latter group continued exactly as before and incumbents received promotions and increase in pay in the same manner as other civilian employees of the Coast Guard. Personnel of the former Lighthouse Service were inducted into the military grades and rating of the Coast Guard on the same basis as those in the same grades and ratings in the Coast Guard with respect to promotion and pay increase. Because of physical defects, some Lighthouse Service personnel were not inducted but were given every consideration when assignments, promotions and pay increases were made. Some, who did not desire induction into the military service retained their current civil service status and were transferred to positions in the civil establishment, either within the Coast Guard or some other department of the Government, as rapidly as vacancies occurred.

CHIEF PETTY OFFICER STATUS

Some of the officers of the Lighthouse Service, having been classed as officers in their own service, objected to being placed in an enlisted status as chief petty officer in the Coast Guard. This objection, however, arose from a misconception of the duties and status of chief petty officer. These officers averaged about 14 years Coast Guard or Naval service, had been trained in military responsibilities and were highly proficient in their specialties. As all warrant officers were selected from the grade of chief petty officer, they were in direct line for promotion, and, since the number of warrant and chief warrant officers was more than half that of the chief petty officers, their opportunities for promotion were excellent. Thus personnel of the Lighthouse Service, who accepted military appointments in the Coast Guard were placed in a very favorable position. They not only retained their higher pay status, but they became eligible for promotions, increases in pay and other benefits accorded similar Coast Guard personnel.

AVOIDANCE OF DUPLICATION

Superintendents of the former Lighthouse Districts became assistants to the District Commanders of the new Coast Guard Districts, for the administration and operation of Lighthouse functions. Since, in many cases, the office of the District Commander, and that of the Lighthouse Superintendent were in different localities, problems both of administration and operation resulted. Consequently, whenever possible, these administrative offices were combined. The objective was to increase efficiency through coordinated use of personnel, vessels, boats, ships and supplies. Economy in operation was sought through a reallocation of facilities to avoid duplication.

AIDS TO NAVIGATION INCREASE

The duty of establishing and maintaining aids to navigation now became one of the principal duties of the Coast Guard. For many years, prior to 1939, there had been a continuing demand for new establishments due, in major part, to the improvement and extension of navigable channels by the Corps of Engineers, U. S. Army, and, in part, to the constantly increasing activity in navigation of small craft requiring aids for their protection in waters hitherto not marked. During the fiscal year 1940, therefore, 1581 new aids were established by the Coast Guard and 767 aids were discontinued, leaving a net increase of 814 aids, and bringing the total close to 30,420. By June 30, 1946, this total of all aids had been increased to 36,879.

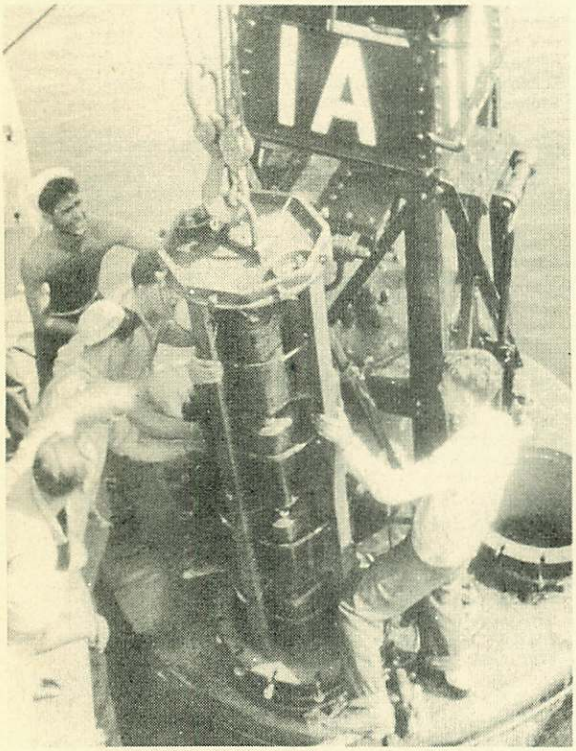
WORLD WAR I AND WORLD WAR II

At the beginning of World War II the work of maintaining the aids to navigation was proceeding normally. The number of aids was showing a steady increase, following a trend of many years, and new developments were keeping pace with those in other engineering fields. Many personnel and administrative changes were still in process of being made, but this was not seriously affecting the efficiency of the service as a whole. The advent of war created a situation quite different from that prevailing at our entry in World War I, 24 years before. In 1917-19 certain changes in the aids to navigation, such as extinguishment of lights and removal of buoys were made at the request of the military authorities, but these were far less extensive than was in prospect in 1941. A number of lighthouse tenders were taken over by the military authorities during World War I, but this number was not great enough to cripple absolutely necessary maintenance operations.

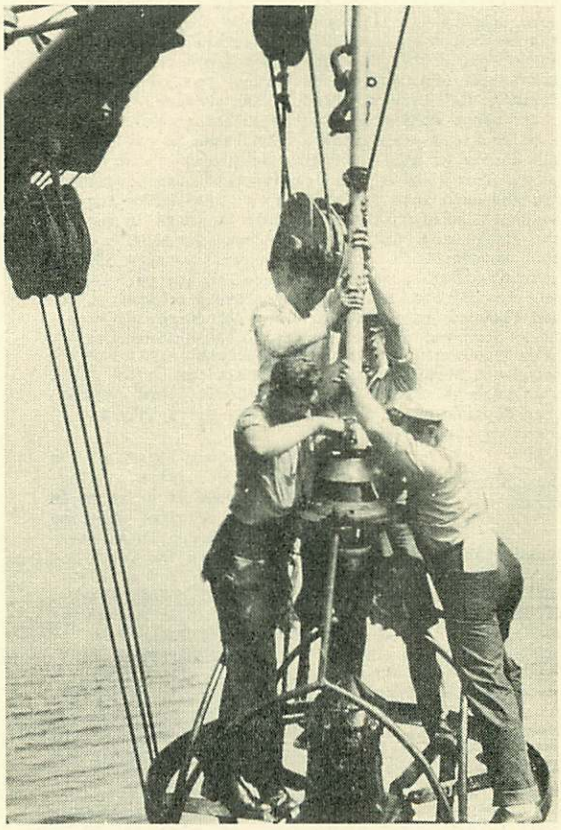
WORLD WAR II DEVELOPMENTS

Entering World War II, the Coast Guard, with its aids to navigation responsibilities and other more pressing military responsibilities, was faced with an entirely different situation. The first of these differences, immediately felt, was the need for the patrol of a large part of our continental coast line to guard against landings of all possible types In the establishment of this patrol, the many lighthouses and the personnel engaged in aids to navigation work, were utilized to the full. Another major difference from the conditions of World War I was the obvious need for extensive military operations in widely scattered parts of the world, some of which had at no time been adequately marked with aids to navigation and were not even well charted. Third of the major factors affecting the operation of the aids to navigation in World War II was the developments in the field of electronics. Discoveries and inventions in the field of television and other electronic devices were quickly directed toward the immediate military problems. The result was the development of several systems of electronics signals applicable to air and sea navigation and to the detection of objects such as approaching aircraft and ships before

1. See "Coast Guard at War - Beach Patrol - XVII"



INSTALLING THE BATTERIES-RADIO. BEACON THESE COAST GUARDSMEN ARE INSTALLING THE STORAGE BATTERIES IN A RADIO BEACON LIGHTED BELL BUOY LOCATED IN LONG ISLAND SOUND, NEW YORK



INSTALLING THE ANTENNA ON RADIO BEACON THE ANTENNA OF THE RADIO BEACON, WHICH LOOKS SO FRAGILE AND WHIP-LIKE AT A DISTANCE, IS IN FACT A SIZEABLE THOUGH FLEXIBLE ROD, REACHING MANY FEET ABOVE THE SURFACE OF THE WATER

they became visible to the naked eye or through telescopes. As the practicability of these new electronic devices was demonstrated, it became, to a large extent, the duty of the Coast Guard to install and maintain equipment where such equipment was to be located at fixed points.

RADIO BEACONS

One of these developments, already in use, was the radiobeacon. A radiobeacon broadcasted no spoken words but sent out an assigned dot and dash signal, which was repeated over and over again. When a vessel heard this definite combination of dots and dashes, the master could immediately tell which lighthouse or light ship was heard. By using a radio direction finder, which was a specially designed radio receiving set, he could also tell from exactly what direction the signal was coming. With these facts he could, while within range of two or more radiobeacons, plot his position on the chart, even though he might be so far away that land or even the most powerful lights could not be seen. Carrying 100 miles or more, these signals were particularly valuable in fog. A vessel might steer for the radiobeacon even when everything was shut from view by fog.

MARINE RADIO BEACON DEVELOPMENT

Marine radiobeacons had first been placed in commission on May 1, 1921, when three installations were placed in operation in the vicinity of New York Harbor on Ambrose Channel Light Ship, Fire Island Light Ship and Sea Girt Light Station. Between that date and 1948 the system has been operated by the Lighthouse Service, and its successor the Coast Guard, and a total of 197 installations have been made. Not all of these are now in operation, as discontinuances and changes have been made from time to time to meet the needs of maritime traffic.

LOCATIONS, NUMBER AND USE

The most northerly and westerly radio-beacon in 1946 was on St. Paul Island, Alaska. The furthest east was on Chacachacare Island between South America and the Island of Trinidad at the entrance to the Gulf of Paria; the most southerly was that at Cristobal Mole, Canal Zone. Of the 185 installations in operation in 1948. 154 were located at shore stations, 29 aboard light ships and two in lighted buoys. 166 were attended and operated on prescribed schedules while 19 operated continuously as automatic unattended aids to navigation. Marine radiobeacons were available for, and considerably used by, aircraft on over-water routes, thus affording joint air and surface craft use of the same radio aid to the elimination of need for separate aerophares and aircraft radiobeacons in a presently crowded radio frequency spectr .

CLASSES

The four basic power outputs of the United States radiobeacon system are classified as class A, B, C, and D with reliable average ranges of 200, 100, 20, and 10 miles respectively. Two radiobeacons in the system have a power output greater than class A to give a reliable average range of 250 miles. 125 Coast Guard radiobeacons give coverage over the tide waters while 60 installations cover the fresh waters of the Great Lakes.

CANADIAN AND UNITED STATES SYSTEMS

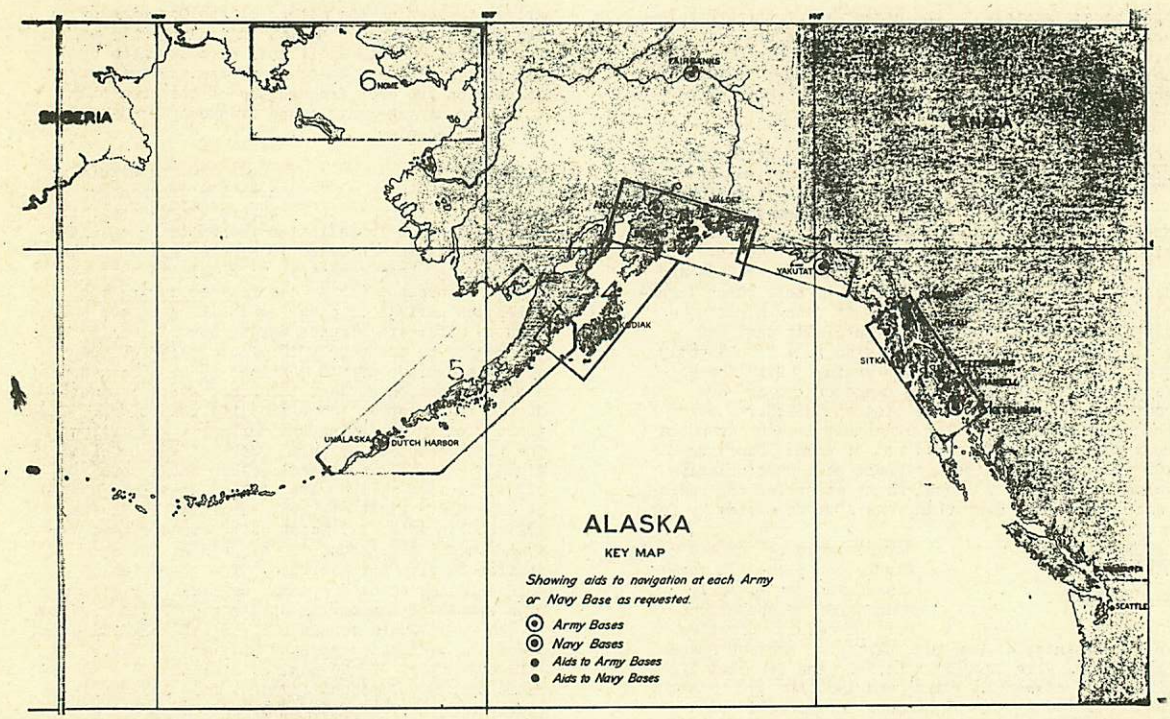
The Canadian and United States radiobeacon systems are closely coordinated. Methods of operation are practically the same in all respects so that a mariner traversing the waters of the Dominion of Canada and the United States interchangeably utilizes the service of both as if they were operated by a single agency. Radiobeacons of the two systems operate on the even frequencies of the presently allocated marine radiobeacon frequency band of 285 to 315 kilocycles.

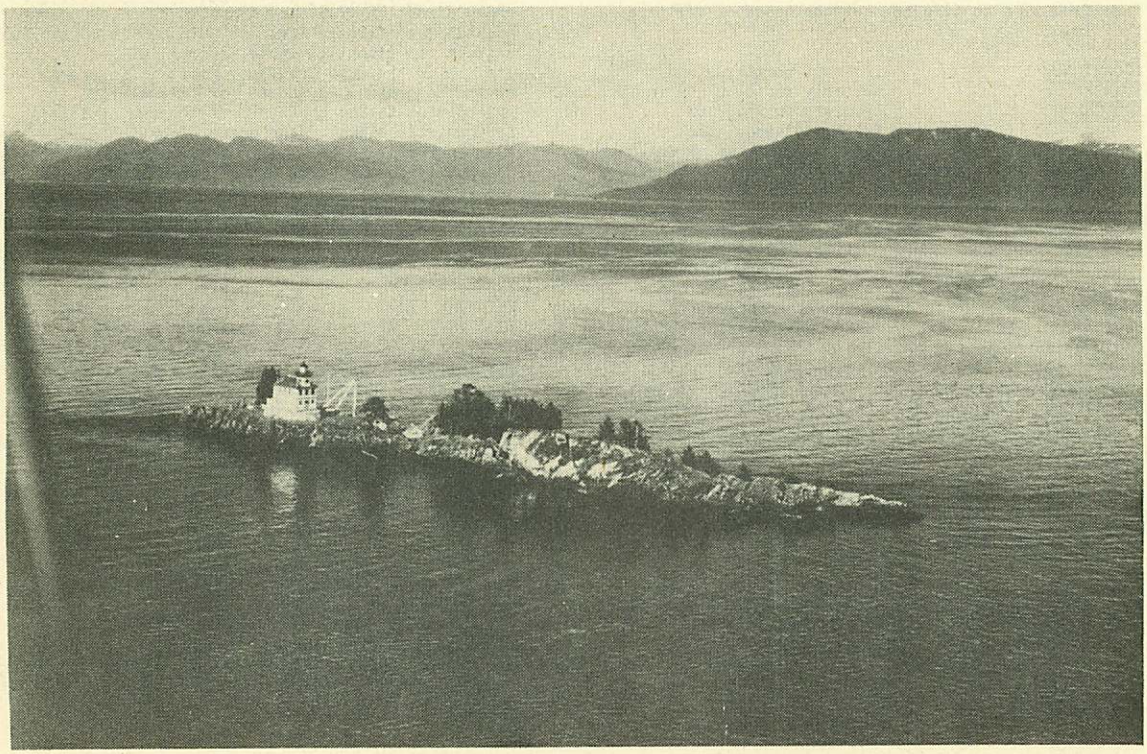
OPERATION

Installations within an area are grouped by threes wherever practicable with each installation transmitting on alternate minutes in scheduled 10 minute periods of each hour during clear weather. This permits a three point radiobeacon fix by the mariner during the scheduled periods in clear weather. Repeated operation on alternate minutes during low visibility without regard to the hourly 10 minute clear weather scheduled periods permit bearings to be obtained on a single station no less than once every 3 minutes during fog or other low visibility conditions. Distance finding employing the mariner's comparison of the time reception by aural means of synchronized signals emitted from a radiobeacon and a sound fog signal located at the same station, was inaugurated at Cape Henry Light Station, Virginia, in February 1929 and in 1948, 111 Coast Guard radiobeacons were synchronized with sound fog signals at the same station to give this service. The operation of marine radiobeacons are under constant surveillance by a system of monitoring utilization radio stations in the Coast Guard communications net work and a few specially designated monitor stations at favorably situated units. These monitor stations make systematic checks for signal failure, frequency variance, faulty signals, emission of signals beyond the tolerable limits of designated operating minutes, strength of signal, speed of transmission, etc. United States marine radiobeacons also operate for radio direction finder calibration purposes on request. Transmission for such purposes is continuous without the silent 2 minute interval unless another station in the same frequency group is in operation at the same time. Requests for this service are made direct to the station by telephone, telegraph, or a whistle signal. The names, locations and operation characteristics of the U. S. marine radiobeacons are published in "Light Lists" put out by the Government Printing Office, Superintendent of Documents and in Navy Publication H. O. 205. Similar data is shown on the three radiobeacon charts issued by the Coast Guard.

AIDS INSTALLED AT NAVAL BASES

During the years 1940-41 arrangements had been instituted for the installation of aids to navigation and the laying of anti-submarine nets authorized in connection with naval bases in numerous localities. In the continental United States such installations were made on the Atlantic coast at Squantum, Mass; Quonset, R. I.; Charleston, S. C.; Jacksonville and Banana River, Fla.; Corpus Christi, Tex. Outside the continental United States on the Atlantic side they were installed at San Juan and Vieques Sound, Puerto Rico; and at the newly acquired bases leased from Great Britain at Newfoundland, Bermuda, Antigua, Lucia, Trinidad and Jamaica, British West Indies; and British Guiana. On the Pacific coast of the United States such installations were made at San Pedro, San Diego, San Francisco and Oakland, Calif.; at Kodiak, Alaska; at Kaneohoe Bay, T. H.; and at Wake Island, Palmyra Island, Johnston Island, Guam and Samoa in the Pacific. Already by this time an extensive system of aids had been installed at Midway Island in the Pacific for the Navy.





FIVE FINGER LIGHT, ALASKA

GREATLY EXPANDED GEOGRAPHICAL SCOPE

These new establishments needed all types of navigational aids, from daymarks to lights. They all had to be maintained and serviced and this meant, because of their widely extended geographical locations, increased work for the new heavy duty tender class type of cutter which had been added to the service during 1939. The war in Europe was already raging and, during 1940 and early 1941, progressive steps were being taken to meet any emergency. This early participation of the Coast Guard in helping equip naval defense establishments even before becoming part of the Navy on November 1, 1941, was the service's first contact with many far flung areas outside our borders. These activities were a prelude to the work which tender class cutters were to be assigned to in the Pacific as we slowly advanced, taking island after island base from the Japanese, from Guadalcanal through the various Pacific invasions to Tokyo. The need for marking and lighting channels in the newly acquired Pacific bases was essential. The Coast Guard with its wide experience in the field was the logical service for the Navy to turn to. From its prewar activities, therefore, of providing naval bases with aids to navigation, the Coast Guard naturally fell into the work of installing such aids at the various Pacific island war bases as they were captured.

ALASKAN DEFENSE

Early in 1941 joint conferences between the Navy Commander of the Alaskan Sector of the 13 ND, the Commanding General of Alaska and the District Coast Guard Officer of the Ketchikan District had mapped out plans for Alaskan defense. In addition to plans for feeding the civilian population in the event of war; for the evacuation of dependents of Navy and military personnel in southeast Alaska; and for the evacuation of civilian populations, the decision was taken to develop and protect the Inside Passage of Southeastern Alaska. This was to be the main artery of communications with the United States. The plan was to make that system of inland waterways not feasible of entry by submarines through the locatior of minefields or by surface patrols at strategic points on, or prior to, M-day. To do this it was necessary to develop and install such secret aids as might be necessary, contingent upon the location of minefields, in order to afford friendly shipping safe transit through minefields planted at the entrances from seaward. This involved submitting to Headquarters, early in 1941, suitable requisitions for spare aids to navigation in order that an adequate supply would be readily available, when, and if, required on short notice. Plans were developed for the suppression of coastal aids when not required for our uses in order to deny them to the enemy as assistance in his navigation. And, finally, it was decided to utilize the light stations as coastal observation posts and to furnish them with suitable automatic weapons in order to give them some means of protection against local minor attacks and establish such other outposts as might be necessary. Soon after November 1, 1941, the light stations in the Alaskan Sector (of the 13 ND) and outposts were doubled in strength for 24 hour lookout, signal and communication watches, and special lookouts were placed to check on suspicious vessels, persons and activities. On December 7, 1941, Scotch Cap and Cape Sarichef lights, fog signals and radiobeacons were discontinued. A total blackout for four hours was ordered throughout Southeast Alaska and buoy and other lights were extinguished. On December 8, 1941, the aids in the vicinity of Kodiak, Sitka and Dutch Harbor were extinguished. By December 30, 1941, aids to navigation in the Inside Passage had been relit, however, as these waters were extremely dangerous and aids were found necessary for the safety of the vessels.

ORGANIZATION - WORLD WAR II

The chief administrative officer for maintenance of aids to navigation, during World War II, was the Commandant of the Coast Guard, with headquarters at Washington, D. C. Under his direction the functions of establishment, construction, maintenance and operation of aids to navigation were carried on through administrative and engineering divisions in Washington, and by the various district offices. Because of the wide geographic distribution of aids to navigation on the sea coasts, the Great Lakes, and navigable rivers of the United States, as well as the duty of establishing and maintaining aids in many newly captured islands in the Pacific, the field work was carried on by district organizations. During the war there were 15 districts carrying on lighthouse work, as well as other functions of the Coast Guard. Each district was under the supervision of a District Coast Guard Officer (DCGO), who in turn served under the Naval Commander of the District. The DCGO was assisted by a suitable engineering and administrative force, and equipped with the necessary supply and buoy depots, and with suitable vessels for the maintenance of the navigational aids.

KINDS OF AIDS

The principal types of aids to navigation include light stations, lights, minor lights, light ships, radiobeacons, marker radiobeacons, fog signal stations, echo boards, lighted and unlighted buoys and daybeacons. During the war three important new types of aids were developed. Loran, (coined from the words LOng Range Aids to Navigation) a pulse system of electronic signals, designed to furnish reliable longitude and latitude positions over greater areas than those covered by radio systems, was operated from some 49 stations in eleven chains, extending from Greenland to Tokyo.[1] Radar Beacons were fixed frequency transponders, which provided a coded response to radar interrogation on the proper frequency, giving a navigational fix by means of simultaneous display of both range and bearing information, and enabling craft, adequately equipped, to navigate in all weather conditions within the limitation of their range. 45 of these stations were operated during the war. Finally Anrac was a radio control system transmitting specially coded ultra high frequency signals to a special receiver mounted on buoys or other aids which operated relays to open and close gas valves and extinguish or relight gas lights or turn off or on other types of aids by remote control.

WAR IMPACT

The consolidation of the Lighthouse Service with the Coast Guard added some 5000 personnel to that service. The national emergency, followed by the outbreak of war, coming soon afterwards, prevented the fullest realization of the aims of the consolidation. The war itself, however, became a classroom, and the navigational and combat areas, a labratory in which tasks were assigned, theories demonstrated, and lessons learned, many touching directly on the safety of shipping which is the prime purpose of any system of navigational aids. Active sailing experience in all classes of vessels was gained by thousands of Coast Guard regular officers who were to remain in the service and give it the full value of their training, experience and understanding of a great range of maritime problems. While there was a curtailment of

1. See "C.G. at War - Loran - IV - Volumes I & II."

expansion in aids to navigation during World War II, where not directly essential to the war effort, the war itself necessitated many increases, as in the newly developed channels of the intra-coastal waterway, the convoy courses along the coasts, the advanced bases outside the continental limits of the United States, and the new channels set up and marked as a safety measure in all principal harbor approaches.

BLACKOUT AND DIMOUT

The elaborate plans which had been made for air raid preparedness, even before the commencement of hostilities, had included a study of appropriate means for extinguishing or dimming the various lighted aids to marine navigation. The attack on Pearl Harbor resulted in an immediate demand for action of this type. Blackout and dimout operations were therefore about the first wartime activity affecting the work of maintaining aids to navigation. To this was added the problem of removing such of the lightships as might be damaged or sunk by submarine action, one light ship having been shelled and sunk by a German submarine during World War I. During 1940-41 study had been made with respect to remote control of the lighting and darkening of aids to navigation and all during this period tests were being made of lighting apparatus, for use on buoys and at stations, of such design as to be of added value to our aircraft without detriment to the service to marine traffic. Probably the most important reason for the dimming of seacoast lighthouses and lighted buoys was the fact that these lights silhouetted passing ships and made them clearly visible even when the ships themselves carried no lights. There was considerable evidence that German submarines took advantage of this silhouetting. Further discussion of the blackout and dimout problems in each district is included in PART II.

WARTIME RESTRICTIONS

The war thus greatly restricted the usefulness of the system of aids. Not only were large numbers of aids blacked out for considerable periods following Pearl Harbor, but candlepower was reduced and baffles introduced to reduce visibility to aircraft and otherwise avoid rendering a service to the enemy. The Mississippi River lights were at one time thought to offer a lighted path from New Orleans to the Great Lakes for any aircraft able to come within flying distance of the Gulf Coast. This was before North Africa was secured and Dakar eliminated as a potential base of enemy air operations. Radiobeacons operated under reduced power and in a few cases were off the air altogether for several months, all depending on the military situation in the particular area. The Great Lakes and interior river areas, were little affected, except that the traffic served became more important and voluminous. In those areas, safety measures affecting aids to navigation were finally, despite earlier alarms, hardly applied at all. The most important change was the withdrawal of a large group of the more exposed lightships along the coasts, which might have been destroyed by enemy activities. The following table shows the entent to which wartime restrictions were applied:

Major lights extinguished	19
Major lights reduced in candlepower	91
Light ships removed from station	16
Minor lights extinguished	1227
Lighted buoys entinguished	155
Lighted buoys replaced by unlighted buoys	282

Further reductions were rendered unnecessary because of careful measures set up in each district for accomplishing prompt blackout in an emergency requiring such action.

RESTORATION OF AIDS

As the war progressed, aids temporarily darkened or reduced in power, were restored and a condition of normal operation again approached. By August 1944 the discontinuance of all temporary measures and resumption of traffic on regular routes with normal markings was being looked forward to as not far distant, especially on the East and Gulf Coasts.

MAINTENANCE DIFFICULTIES

Normal maintenance of aids during the war period had not been possible for a variety of reasons. Tenders normally engaged continuously for attending aids had to be extensively used in transporting material and personnel for defense works, for salvage operations, for marking many new wrecks, for adjusting aids to mark special areas, and to maintain harbor portection such as submarine nets. This led to some neglect of usual servicing, especially in the early days of the war. As the war progressed and new vessels were commissioned for all special Navy needs the maintenance of aids received more nearly normal attention. The continued cooperation of mariners in promptly reporting outages or misplacement of aids, was emphasized. This was essential in view of the vast number of aids and their wide dispersion. Long before VJ-day servicing of aids in most areas was back to normal.

PEACETIME USE OF WAR DEVELOPMENTS

Many developments of war found their widest application after the return to peacetime conditions. Among these Loran, Radar Beacons, Radar Reflectors and Anrac are the most impressive. Due to these war time developments both air and surface craft are not only able to ascertain their positions more quickly and accurately in all weathers, but remote control in the lighting and extinguishing of lighted aids has proven economical, in both time and manpower. Electronically controlled aids had thus opened up whole new vistas in the field of maritime safety.

RADAR BEACONS AND REFLECTORS

"It was found during World War II" says one observer,[1] "that specially prepared radar charts made navigation through tortuous channels under blackout conditions practicable. This was done with radars considerably poorer in definition than those now (1947) available to the mariner xxx. With regard to buoys, it has been found that large metal buoys present good radar targets, particularly for the 3 cm radars, and that normally no additional marking is needed. xxx when channels are marked by buoys which are directly opposite each other, the navigator finds it a comparatively simple matter to properly lay his course. xxx Various forms of radar aids to navigation have been examined and it was found that corner reflectors have many advantages to recommend their application for marking certain buoys, low lying land and for other objects not in themselves good radar targets. To overcome the limitations of reflectors it is also, in some cases, necessary to use powered radar beacons. The Ramark constitutes a practicable solution to the latter problem, requires a minimum change to the shipboard radar and adequately assists the mariner in orienting himself."

LORAN

"At the conclusion of the war" says Captain Lawrence M. Harding, USCG[2] "Loran was released for use by merchant ships, primarily

1. Lt. Comdr. Guy L. Ottinger, USCG, "Utilization of Radar Beacons & Reflectors" 1947-International Meeting of Marine Radio Aids to Navigation, New York
2. In "Practical Progress in Loran for Marine Navigation" 1947-International Meeting of Marine Radio Aids to Navigation, New York

with a view that it would be used at long distances, to supplement the use of radiobeacons and shipboard direction finders. Somewhat surprisingly, Loran equipment has been purchased and installed on small fishing ships of the trawler class which are only about 100 feet long. xxx a typical trawler can save considerable time and money in locating the desired fishing ground or bank by use of Loran." Rear Admiral Earl G. Rose, USCG, in his paper "Progress in Radio Navigational Aids," read before the International Meeting of Marine Radio Aids to Navigation (New York, April 28 - May 8, 1947) sums up the situation as follows: "In summary, a world Loran system is in existence; the war has provided many of us with experience and training on how to use this system; engineering and technical knowledge, if not already on hand is available for the asking; there is already in existence equipment for reorientation and readjustment of the system for peacetime use; and a great part of the world is already charted for use of Loran."

IMPROVED EQUIPMENT

The material equipment of the service, necessary to carry out its functions in the field of aids to navigation, did not suffer greatly as a result of the war and in many cases was far better at its close than ever before. Buoys were standardized and large numbers acquired; many for special purposes, which were later available for general use. New cutters[1] of the tender class, capable of handling the heaviest buoys, operating under severe ice conditions, and cruising over extended areas, were built in considerably numbers, making it possible to replace many of the older and more obsolete vessels of this class. In 1948 there was one 230 foot, five 189 foot, thirty nine 180 foot, eight 133 foot, and eight 100 foot (buoy tender) cutters of this class all built between 1942 and 1944. Five of shorter lengths from 73 to 114 feet and five river type buoy tenders from 80 to 114 feet in length were also acquired during those years. Other important items of maintenance equipment, provided for war needs, became available for increasing the utility of bases and facilitating maintenance generally.

STANDARDIZATION OF EQUIPMENT

Improvements went forward, in spite of the war, in standardization of equipment, operating procedures and characteristics of aids. All of this has made for more ready recognition of these aids, and hence their greater usefulness. Extension of standardization across international border lines generally was a worthwhile objective. The thorough coordination of practices with respect to the operation of radiobeacons and characteristics of the buoyage system which exists between Canada and the United States is a noteworthy example.

SUMMARY OF WAR OPERATIONS FISCAL YEAR 1942

During the fiscal year ending June 30, 1942, war operations made necessary the withdrawal of certain light vessels from their stations and putting then to other use. Immediately after the war started, a program of dimout and blackout of aids including the operation of radiobeacons, was initiated in cooperation with the Army and Navy on the coasts, the Great Lakes, and the Mississippi River system. In the development of offshore bases by the Navy and for other military operations, including the marking of mine fields, defense and restricted areas, large numbers of aids to navigation were provided, established and placed, especially buoys for new harbor channels, swept channels and convoy routes. The weekly publication of Notice to Mariners of the Coast Guard for the coasts and for the Great Lakes were consolidated with those of the Hydrographic Office of the Navy for the duration of the war. The western end of the Intracoastal Waterway from Matagorda Bay to Aransas Bay, Texas, was completed and marked with aids to navigation during the fiscal year.

MARKING PACIFIC BASES

During 1942 and even before the outbreak of World War II, the function of aids to navigation was translated into a very important war effort. This was brought about because of the necessity for special marking of Army and Navy bases established in Alaska, the Pacific Islands, Puerto Rico and the newly acquired bases in Newfoundland, the West Indies and South America, which had been leased from Great Britain, and also on all the coasts of the United States. Special preparations were completed in connection with prospective blackouts. Coast Guard cutters of the tender type proved to be one of the most useful of auxiliary vessels for naval use in connection with the establishment of submarine nets and other harbor and coastal protective devices and the maintenance of secret channels, mine fields, etc. The war operations in the early part of 1942, particularly when enemy submarines were so active off the United States coasts, made necessary the discontinuance of many aids to navigation.

EXTENSION OF BUOYAGE FISCAL YEAR 1943

During the fiscal year ending June 30, 1943, the number of aids to navigation reached 33,557, a net increase of 1120 over those in operation at the mid-1942 period. These aids met the wartime needs of shipping in improved marking of the Intracoastal Waterway along the Atlantic and Gulf Coasts, in marking swept channels, convoy routes, mine fields, defense and restricted areas, approaches to military establishments, etc. A program of dimouts and blackouts was organized to thwart the movements of enemy vessels and at the same time aid friendly shipping. The buoyage system of the Mississippi River and its tributaries was expanded to assure safe and expeditious movement of military craft over these waterways. Many of these craft were being built on the Great Lakes and along the great inland river waterway system of the country and then moved down the Illinois Waterway and Mississippi Rivers to seaboard at New Orleans; via the New York State Barge Canal to New York; and via the Welland Canal and St. Lawrence River to the seacoast.

GREENLAND AIDS FISCAL YEAR 1944

During the fiscal year 1944 aids to navigation were installed in Greenland,[1] at outlying bases and in combat areas abroad. Loran stations were also established on our coasts and in combat areas which enabled navigators of air and surface craft to fix their positions under all weather conditions. Markings of the transit channels in the Mississippi River Basin continued in order to meet increased war shipping needs, as were those on the intra-coastal waterways. The improved war situation along out coasts permitted relaxation of the dimout and blackout of aids to navigation, with a return to practically normal operation.

ACCELERATION IN PROVISION OF PACIFIC AIDS - FISCAL YEAR 1945

There was a net increase of 2286 aids during the fiscal year 1945 as the total reached 36,540 by

1. Ship's histories of such of these cutters as served on the forward areas in the Pacific and in Alaska are included in PART III.

1. See "C.G. at War - Greenland Patrol - II"

mid-1945. Cessation of hostilities in the Atlantic following VE-day resulted in the removal of aids used primarily for war purposes in that area, but the demand for aids to navigation throughout the Pacific area more than counterbalanced this. Light ships, which had been removed during the war, were returned to their former stations on the Atlantic coast. The blackout and dimout of aids on the Atlantic coast was discontinued and they were being restored to fully lighted condition as fast as practicable. At the end of the 1945 fiscal year, the Loran system extending from Greenland to Iwo Jima, comprised a total of 64 fixed stations and 17 mobile stations, 45 radar beacons stations on the Atlantic and Pacific coasts, and in Hawaii and Alaska were effective within 120 miles in enabling craft to navigate under all weather conditions if they were fitted with interrogation equipment. Anrac was being installed at Coast Guard units within safe operating limits for controlling the lighting and extinguishing of lights and the operation of fog signals.

WORLD STANDARDIZATION

"Up to the present time international standardization of aids to navigation has not been a particularly pressing problem" said Captain C. H. Peterson, USCG, Chief, Aids to Navigation Division, Coast Guard Headquarters, on October 16, 1947, "as all aids, with the exception of radiobeacons, are available to the user without installations of special shipboard equipment. In the case of marine radiobeacons, standardization has already been accomplished. The medium frequency radio direction finder, a requirement on certain class vessels in the interest of safety of life and property at sea, and voluntarily installed on a great number of ships, can utilize all marine radiobeacons for position finding. In the introduction of new electronic devises, world standardization is necessary. The electronic aids developed during the war require special shipboard installations to utilize these special aids. New devices do not immediately make obsolete all devices, now in use, but, paradoxically enough, the rapidity of electronic developments makes any new device obsolescent, almost as soon as it is placed in use. We all hope that the perfect device will be forthcoming, but until that happens we should adopt for standardization the best device available, make installations, expand as necessary, and constantly strive for improvement."

oOo

THE KEEPER RETURNS
AFTER HIS MONTHLY COMPENSATORY
LEAVE ASHORE, COAST GUARD MOTOR
MACHINIST'S MATE LINWOOD GAMMON,
KEEPER OF EGG ROCK LIGHTHOUSE
OFF THE COAST OF MAINE,
RETURNS WITH PROVISIONS

SHOULD THE POWER FAIL
CHIEF BOATSWAIN'S MATE GEORGE
M. WOODWARD, COAST GUARD KEEPER
OF OWL'S HEAD LIGHTHOUSE, MAINE,
GIVES A FINAL LIGHT TOUCH TO THE
CLEANING OF AN EMERGENCY KEROSENE
LAMP KEPT IN THE LIGHT TOWER

AIDS TO NAVIGATION

PART II

DISTRICT HISTORIES

FIRST NAVAL DISTRICT

GEOGRAPHIC NATURE OF THE DISTRICT

The First Naval District embraces all of New England except Connecticut. The District shoreline is characterized by numerous islands and many bays and promontories, and the combined length of all shores is 2,228 miles. There are three ports of major importance to shipping, Boston, Portland, and Providence. Smaller ports are used chiefly by fishermen. The coastline of the District comprises areas with extensive sandy shoals in the south-eastern portion, and large areas of broken ground with dangerous rocks, troublesome currents and intricate channels, particularly in Maine. Therefore, the geographical nature of the District is such that a considerable concentration of aids to navigation of virtually all types is necessary to afford shipping effective assistance in navigating its waters. Aids to navigation are more numerous in New England than in any other comparable area in the United States and its possessions. Thus, the activity was highly important in District operations. New aids to navigation were established from time to time, and old ones discontinued or altered, so that the number and types varied prewar and during wartime. However, the following figures give an approximation of the aids in the First Naval District during the period 1939 to 1945.

Lighthouses	100
Lightships	13
Lighted Buoys	257
Unlighted Buoys	2332
Lighted Fixed Aids	157
Unlighted Fixed Aids	240

PREWAR PERIOD

CONSOLIDATION

By authority vested in him by the Act of 3 April, 1939, the President consolidated the Bureau of Lighthouses and the Coast Guard. The Act dated 9 May, 1939, provided in part that:

> "The Bureau of Lighthouses in the Department of Commerce and its functions are hereby transferred to and shall be consolidated with and administered as a part of the Coast Guard in the Department of the Treasury."

Previous to amalgamation with the Coast Guard, effective 1 July, 1939, the Lighthouse Service had been divided into districts with a superintendent in complete charge of each. The First Lighthouse District comprised the coasts of Maine and New Hampshire; the Second Lighthouse District took in the entire coasts of Massachusetts and Rhode Island as far as Block Island Sound. Upon consolidation, these two Districts were combined with the Boston Coast Guard District (during the war, the First Naval District). In October, 1939, other aids in Block Island Sound as far as, and including, Watch Hill, Rhode Island, were transferred from the New York District to the Boston District.

AIDS TO NAVIGATION OFFICER

Under the direction and supervision of the Assistant DCGO, the Aids to Navigation Officer was delegated to assist in the administration of aids to navigation within the District. This entailed the location, installation, operation and service of fixed and floating aids, and implied maintenance of an adequate system for the effective use of personnel and facilities.

MILITARIZATION OF PERSONNEL

At the time of the amalgamation, the officials of the Lighthouse Service were given an opportunity to join the Coast Guard if they successfully passed physical and oral interviews and examinations. Most officials joined this military organization shortly afterward. According to the terms of the Reorganization Act. the employees at bases were not eligible for induction. Eventually, but not coincidentally, the officers and crews of the tenders and lightships were inducted. Individuals who could not or did not wish to join the Coast Guard were assigned to bases. Many are still employed at the bases in a civilian capacity. A few lighthouses were immediately militarized for special reasons, but the induction of lighthouse keepers, in most instances, took place gradually.

PERSONNEL PROBLEM

The result in the transition period, was a mixture of military and civilian authority. Civilians came under the military, and military personnel were subordinate to civilians on board lightships and tenders and at Light Stations. This condition resulted in a not too satisfactory situation due, primarily, to the fact that civilian personnel and military personnel were governed by different laws involving pay, emoluments, leave retirement and conduct. The attitude of many former Lighthouse Service employees, even after induction into the military establishment of the Coast Guard, was influenced by these anomalous conditions. The majority of lighthouse personnel, however, performed their duties in a commendable manner. Being excellent seamen, they became quite proficient as tender officers in a short period of time. The whole process of militarization, nevertheless, was accompanied by a period of personnel readjustment involving in some cases displacement of experienced men by men unfamiliar with, and currently disinterested in, the particular work assigned to them.

ADMINISTRATION

Within the Aids to Navigation Section, virtually no administrative reorganization was required to meet the needs of the period before Pearl Harbor. The Coast Guard, having acquired the Lighthouse Service, continued the system of maintaining aids to navigation which was already in effective operation. The only change of and consequence in the administration of this activity was the placing of tenders directly under the DCGO[1], rather than under the Aids to Navigation

1. District Coast Guard Officer.

Officer. There were no difficult or persistent problems of materiel, procurement, or finance. The Supply Officer purchased buoyage and equipment on the basis of needs as outlined in requisitions submitted by commanding officers of the bases.

OPERATIONS — In the prewar period, there were three bases and two depots within the District: South Portland, Chelsea, and Woods Hole Bases, and Southwest Harbor and Bristol Depots. These were directly responsible to the DCGO for duties performed in connection with the operational aspects of aids to navigation. The commanding officers of the tenders received their orders directly from the DCGO, using the bases only as supply sources. There were 7 tenders in the District. These were assigned to bases as follows:

Woods Hole	ANEMONE, ARBUTUS
Chelsea	LOTUS, SHRUB
South Portland	HIBISCUS, ILEX, PINE

The Aids to Navigation Officer was responsible for establishing those command relationships in the operational field which would assure the accomplishment of routine aids to navigation activities such as relieving and servicing buoys, light stations and lightships, and establishment, discontinuance or relocation of buoys. The ADCGO always had authority to direct the movements of tenders when emergencies arose. Surveys of navigable channels were made by Army Engineers, and a report of their findings was forwarded to the DCGO. Buoyage in the channels was then adjusted to serve best the needs of mariners. The Army Engineers also dredged channels, and in this connection, the Coast Guard made the required new establishments and changes in buoyage.

OPERATIONS AT ARGENTIA — Only once in the months previous to the war were additional duties assumed. In July, 1941, the tender LOTUS, by order of the DCGO, was directed to load certain buoys and other equipment and report to Commander-in-Chief Atlantic Fleet for duty. She assisted in laying anti-submarine nets and planting buoys at the Naval Operating Base at Argentia, Newfoundland. In addition, the Argentia Approach was buoyed by the LOTUS. In December, 1941, the tender HIBISCUS departed Boston to relocate and replant such buoys in the Argentia area as had dragged from their original positions, and to inspect moorings on all buoys. These buoys were relieved twice during the war by the COWSLIP - in August, 1944 and in July, 1945.

THE WAR PERIOD

ADMINISTRATION — During the period of hostilities, the nature and scope of operational activities and problems in aids to navigation were essentially the same as in peacetime. The Aids to Navigation Officer had the same administrative responsibilities, with the added duties related to Loran and Radar. The DCGO letter of 22 June, 1943, placed operational control of the tenders under the commanding officers of the three bases at South Portland, Chelsea and Woods Hole. The assignment of tenders to bases was then made by the Aids to Navigation Officer, but the DCGO or the SCGO could still divert tenders for emergency or rescue work.

MODERATE EXPANSION — The Aids to Navigation District Office required an increase in the number of personnel. At the peak, office personnel included two officers in addition to the Aids to Navigation Officer, five yeomen strikers (Spars), and three quartermasters or quartermaster strikers (Spars). To facilitate administration of wartime duties, the office was expanded to include a chart room, the function of which was to provide:

a. Charts and publications to District offices and vessels;

b. Adequate records or irregularities in aids to navigation;

c. Chart sections and tracings;

d. Monthly summary of changes in aids to navigation;

e. Mailing of local Notices to Mariners;

f. File of all Notice to Mariners and Hydrographic Office memoranda;

g. Reference in regard to charts and publications for all District offices and craft.

CHANGES IN AIDS — Many operational changes were made to meet wartime conditions. Several lightships were discontinued or withdrawn to need, and lights and buoys temporarily replaced or extinguished. Changes made in 1942 in aids to navigation are summarized as follows:

a. Lights temporarily extinguished at light stations	6
b. Unattended lights temporarily extinguished	17
c. Lights temporarily reduced in candlepower	54
d. Fog signals temporarily discontinued	2
e. Lighted buoys replaced with unlighted buoys	34
f. Buoys temporarily discontinued	10

Lightships discontinued were:

NANTUCKET SHOALS,	No. 112
POLLOCK RIP,	No. 110
PORTLAND,	No. 90
BOSTON,	No. 81

LIGHTSHIP OPERATIONS — The status of the lightships which were withdrawn from their normal Coast Guard duties in the First Naval District during the war is summarized:

BOSTON LIGHTSHIP No. 81 Withdrawn from Boston Lightship Station on 9 January, 1942. On 20 April, 1942, this vessel was turned over to the Navy, and the Coast Guard crew replaced by a Navy crew; the lightship then proceeded on 23 April, 1942, to Rockland, Maine, to serve there as a temporary Section Base. On 27 April, 1942, 4 days later, she was ordered to return to Boston, and a Coast Guard crew relieved the Navy crew. She departed Boston on 11 May, 1942, to report to the DCGO, Fifth Naval District, where she was used to mark the entrance to Cape Hatteras Protected Anchorage Area. On 12 July, 1945, Boston Lightship No. 81 permanently resumed her place on the Boston Lightship Station.

1. Assistant District Coast Guard Officer.

PORTLAND LIGHTSHIP No. 90. Withdrawn from Portland Lightship Station on 10 January, 1942. She was transferred to the DCGO, Seventh Naval District, on 15 May, 1942. The vessel returned to the DCGO, First Naval District, on 12 October, 1944, and was used as a Relief Lightship until 28 September, 1945, when she resumed her post on Portland Lightship Station.

POLLOCK RIP LIGHTSHIP No. 110. Withdrawn from Pollock Rip Lightship Station 12 January, 1942. On 13 April, 1942, she was placed in operation at the entrance to Argentia Outer Harbor, Newfoundland, for the purpose of providing a radiobeacon until the radiobeacon was established at Fox Island Light Station. This lightship completed duty at Argentia, arrived in Boston 3 September, 1942, and served as a Relief Lightship until 9 June, 1945. She was then placed on duty at Pollock Rip Lightship Station.

LIGHTSHIP No. 85. Ordered to report to Portland, Maine, on 12 March, 1942, for duty as Examination Vessel under the Portland Section Inshore Patrol. On 27 April, 1942, she was relieved of examination duty and transferred to the DCGO, Sixth Naval District, for special duty. The vessel returned to the DCGO, First Naval District, on 26 November, 1942, and was designated as a Relief Lightship.

LIGHTSHIP No. 106. Assigned to Outer Examination duty off The Graves, Boston Harbor, April, 1942. She remained on examination duty until 4 June, 1945. On 30 June, 1945, she was temporarily placed on Nantucket Shoals Lightship Station, and withdrawn on 23 August, 1945. The ship was then placed in Relief Lightship status.

NANTUCKET SHOALS LIGHTSHIP No. 112. After assignment to Bar Harbor, Maine, the Coast Guard crew was returned to the vessel in April, 1942, and she became the Examination Vessel for Portland Harbor. On 23 August, 1945, she resumed her station as Nantucket Shoals Lightship.

LIGHTSHIP No. 54. On 9 September, 1943, this vessel took up the Boston Lightship Station in a new position, Latitude 42-21-26 North, Longitude 70-43-12 West, in line with the Boston Harbor Approach Buoys which marked the swept channel. On 12 July, 1945, she was permanently replaced by Lightship No. 81, and designated as a Relief Lightship.

The other lightships in this District remained on station during the war period, and were relieved at regular intervals for repairs and overhaul. These were:

STONE HORSE SHOAL	No. 53
HENS AND CHICKENS	No. 86
VINEYARD SOUND(LATER, 87)	No. 73
CROSS RIP	No. 96
HANDKERCHIEF	No. 98
BRENTON REEF	No.102

LIGHTSHIP No. 116 served as Guard Vessel at the Eastern Entrance of the Cape Cod Canal from 20 December, 1942, to 4 June, 1945. On that date the Guard Vessel was discontinued, and this vessel was transferred to the DCGO, Fifth Naval District.

LOSS OF LIGHTSHIP

In the hurricane of 14 September, 1944, which vented its full fury in the Vineyard Sound area, VINEYARD SOUND LIGHTSHIP No. 73, was swept at her mooring by mountainous waves. Her superstructure was swept off, and this vessel foundered with the loss of all hands. Thereafter, LIGHTSHIP No. 87 was permanently assigned as a replacement for the sunken No. 73.

OPERATIONS OF TENDERS

It was found necessary to supplement some Navy net tenders with Coast Guard tenders. As a result, the Coast Guard tenders ILEX and ANEMONE were assigned to Naval net duty. Despite a great need for additional tenders in the First Naval District, the DCGO did not request Headquarters for an assignment of tenders from other districts, because Coast Guard tenders were employed by the Navy in all Districts, and shortage of tenders was general. On the whole, the planning on the number of tenders for aids to navigation work alone proved adequate. During the war, the following tenders were attached to the DCGO, First Naval District: ANEMONE, CACTUS, (arrived DCGO, 17 April, 1942), COWSLIP, HIBISCUS, HORNBEAM (arrived DCGI, 5 July, 1944), KICKAPOO, PINE, PHLOX, SHRUB, and SPAR (arrived DCGO, 1 October, 1944). The tenders in this District assisted materially in rescue and salvage work. In the period August, 1940, to the fall of 1945, the following wreck buoys were established in the First Naval District:

Stanford Wreck Lighted Bell Buoy 3A
Navy Barge Wreck Lighted Bell Buoy
Mary Arnold and Progress Wreck Buoy
Mary E. O'Hara Wreck Lighted Bell Buoy
Dixie Sword Wreck Lighted Bell Buoy
Tug Onward Wreck Buoy
Santa Rita Wreck Lighted Bell Buoy
Blanche and Ida Wreck Lighted Buoy
Cullen Barge Wreck Lighted Bell Buoy
Exminster Wreck Lighted Buoy
Ronald and Dorothy Wreck Lighted Bell Buoy
Queen Wreck Buoy
Alva Wreck Lighted Buoy
Vineyard Sound Lightship Wreck Lighted Bell Buoy
YF-357 Wreck Lighted Buoy
North Channel Wreck Lighted Buoy
Providence River Wreck Lighted Buoy
Chelsea River Obstruction Buoy
Gloucester Harbor Wreck Buoy
Barge Manakin Wreck Lighted Buoy
Buzzards Bay Wreck Lighted Buoy
Off Westport Harbor Wreck Buoy
Town River Bay Obstruction Buoy

Each winter, tenders were engaged in ice-breaking. All the tenders except the PHLOX, PINE, and SHRUB were at some time used for such work. In the winters of 1941-1942, 1942-1943, and 1943-1944, the greatest amount of ice was in Maine, but in the winter of 1944-1945, weather conditions were so severe that ice-breaking was required in harbors and rivers throughout the District, with the most crucial conditions in Buzzards Bay, Massachusetts. None of the new tenders sustained any damage beyond the unavoidable damage to propellors which always occurs in ice-breaking. During wartime, the Coast Guard established temporary special buoys. These numbered approximately 87 for lighted buoys and 128 for unlighted buoys, for such Naval projects as:

1. Nets and booms in Boston and Portland Harbors;
2. Quonset Air Station Channel;
3. Submarine Outline Target off Orleans, Mass.;
4. Restricted areas - at Provincetown, Monomoy, Lucas Shoal, Middle Ground Shoal;
5. Magnetic Channel - at Boston and Portland;
6. Swept Channel - in Casco Bay, Boston Harbor, Block Island Sound, Narragansett Bay Approach;
7. Moorings.

LORAN AND RADAR

In 1942, the National Defense Research Committee started the construction of the Northwest Atlantic Loran Chain and completed it in early 1943. After a short period of test operation the chain, stretching from Fenwick, Delaware, to Fredricksdal, Greenland, was turned over to Coast Guard jurisdiction except for three stations located in Nova Scotia. These were under jurisdiction of the Canadian Government. The Northwest Atlantic chain gave Loran coverage in the daytime approximately 600 miles from the continental limits and about 1,400 miles at night. This included coverage of Davis Strait. Originally, no coverage was provided for the Gulf of St. Lawrence. The DCGO, First Naval District, assumed responsibility for the operation and maintenance of the following stations: one in Greenland, one in Labrador, three in Newfoundland, and two within the continental limits of the First Naval District. In 1944, plans were made to establish two additional units in Newfoundland to cover the Gulf of St. Lawrence. One station was commissioned early in 1945, and the other in the fall of 1945.

In 1944, the Chief of Naval Operations directed that the Coast Guard assume responsibility for the operation and maintenance of certain navigational equipment and stations which had been Navy-operated. Accordingly, Headquarters directed the DCGO, First Naval District, to assume jurisdiction of the Radar beacons at the Naval Air Stations at Quonset, Rhode Island, South Weymouth, Massachusetts, and Brunswick, Maine. Arrangements were made whereby the DCGO commenced operating and maintaining these stations in 1945. The purpose of these stations was to furnish navigational aid to radar-equipped aircraft attached to the various air stations. In 1945, the Radar beacon at Argentia, Newfoundland, also was placed under the jurisdiction of the Coast Guard. The DCGO assumed responsibility for this station in the fall of 1945. However, due to its location, operational control was retained by the Commandant, Naval Operating Base, Argentia, at the request of the DCGO. From a practical standpoint, Coast Guard operation of Radar beacons at Naval Air Stations does not appear desirable unless it is the intent of Headquarters to seek legislation placing all aids to aerial navigation under the Coast Guard. So far as is known, Coast Guard and Naval personnel at the stations offered no particular problem. The administrative relationships were satisfactory.

CHANGE AT END OF WAR

After 8 May, 1945, VE-day, steps were taken to restore all aids to navigation to their prewar status. On 1 September, 1945, in agreement with the District Finance and Supply Officer and the District Civil Engineer Officer, the administration of aids to navigation funds for the purchase of buoys and appendages was turned over to the Aids to Navigation Officer. This was done so that the proper items in proper quantities might always be on hand to meet requirements. Through quarterly inventories, the Aids to Navigation Officer was able to check supplies at the bases and thus expend the funds efficiently and insure proper stocks. The funds appropriated for this purpose were those under General Expenses, Coast Guard Sub-head 01-50-1, 2, 3. The Aids to Navigation Officer, therefore, was in complete control of the accounts. All requisitions for buoys and appendages were approved by him and forwarded to the Supply Officer for final purchase.

PERSONNEL PROBLEMS

The personnel problems at Light Stations and Lightships constituted the major wartime difficulty for Aids to Navigation. Personnel not qualified to operate the equipment were assigned to this duty. It resulted in operational failures of lights, fog signals, and radiobeacon apparatus. Early in 1942, operation of many Light Stations became difficult because many men assigned to isolated locations were unsuited to this type of duty. They lacked sufficient interest in the work to maintain the stations in a clean and good operating condition. In June, 1944, the DCGO (through the Civilian Personnel Office) made an analysis of this problem and developed a plan of reorganization. An effort was made to distribute the experienced and efficient keepers among the various stations in order to provide stability. Wherever possible, limited-service men or men over 38 replaced general duty men. General duty personnel were transferred to ships or given other assignments. A training course was established at Chelsea Base for new and inexperienced personnel. In order to give men with the longest and most efficient service proper consideration for advancement to the best stations, a rotation program was inaugurated. A new system of relief keepers permitted regular keepers to take leave, provided emergency relief for all stations, and served as a replacement pool for keepers transferred to other duty. A material contribution to the morale of personnel was made by moving keepers' families to the Light Stations wherever conditions permitted. The result of this reorganization was a marked improvement in conditions at Light Stations, better morale, and greater efficiency, with consequent assurance of adequate operation.

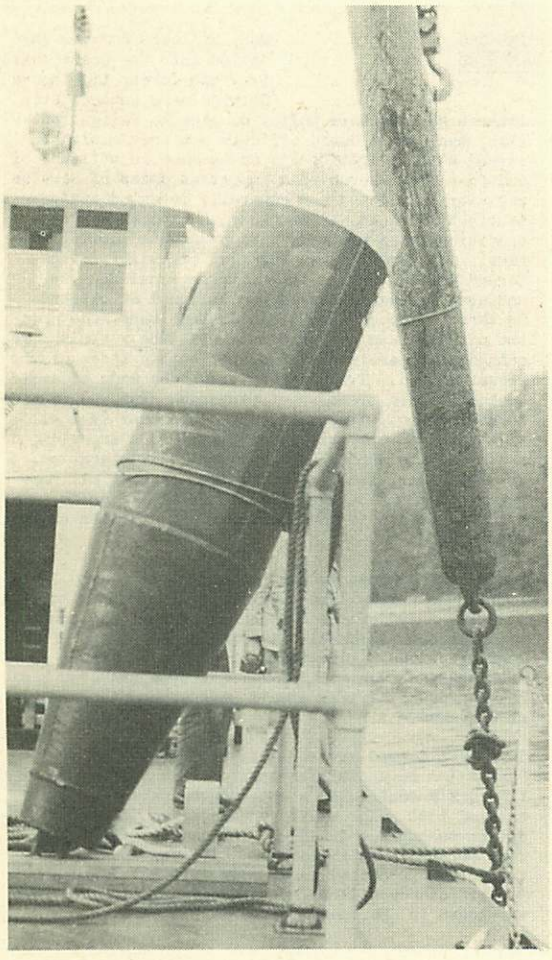
LESSONS LEARNED

Many officers and men inducted into the Coast Guard from the former Lighthouse Service were antagonistic towards Headquarters policy on Aids to Navigation. Also, many Coast Guard officers not previously concerned with navigational aids assumed an attitude of indifference towards this important phase of Service activity. Enlisted men generally resented assignment to Light Stations, Lightships, and tenders. These conditions were probably more pronounced during wartime. Officers and men were, of necessity, transferred without regard for their personal desires, and usually regardless of professional attributes. On tenders especially, great demands were made upon the officers and men at a time when the vessels were manned with personnel less capable than those of the prewar period. Every effort should be made to avoid indiscriminate transfer of personnel assigned to Aids to Navigation. It is extremely important that all aids function properly at all times, and experienced personnel are needed to insure reliable operation. It would seem vital, also, to impress upon all Service personnel the significant position Aids to Navigation occupies in the basic organization of the Coast Guard.

Personnel assigned to tenders, Lightships, and Light Stations might well be distributed so that no more than one-third of the complement of any unit consist of untrained personnel. A certain percentage of regular officers with the rank of Ensign should be assigned each year to the largest type tenders, but only one such officer should be assigned to a tender at one time.

It is not deemed advisable to reestablish Aids to Navigation on a civilian basis. This service is frequently confronted with emergencies which can be handled best under military discipline. The consolidation took place in 1939. The time and effort of many persons were immediately directed toward one end - to save the taxpayer money without decreasing the efficiency of the two services. Two months later, war began in Europe with the result that the

CGC SUMAC UNDERWAY ON OHIO RIVER NEAR JOPPA LIGHT



THE OLEANDER
HOOKS ONTO A HEAVY SPAR BUOY

activities of the service were forced into other channels. The Neutrality Patrol and Port Security activities received top priority. As the war progressed, these activities increased in scope. Furthermore, the Navy command was not directed toward development of these aspects of the Service. The result was that the Service had little opportunity to effect proper coordination of activities formerly performed by the Lighthouse Service with the normal activities of the Coast Guard.

SECOND NAVAL DISTRICT
(ST. LOUIS)

U. S. LIGHTHOUSE SERVICE

The history of aids to navigation in the Second Naval District dates back to the 15th Lighthouse District of the Bureau of Lighthouses, Department of Commerce. The office of the Superintendent of Lighthouses, 15th Lighthouse District was at 1006 New Federal Building, 12th and Market Streets, St. Louis, Missouri. This office was responsible for the administration of aids to navigation on the Inland Rivers as presently maintained by the Coast Guard.

On 9 May, 1939, the President conveyed, with a special message to Congress, his Reorganization Plan II, effective 1 July, 1939, Part 1, Section 2(a), reading as follows: "The Bureau of Lighthouses in the Department of Commerce and its functions are hereby transferred to and shall be consolidated with and administered as a part of the Coast Guard, in the Department of the Treasury." Accordingly, at the close of 30 June, 1939, the Bureau of Lighthouses ceased to exist, and the office of the 15th Lighthouse District became the office of the St. Louis District, U. S. Coast Guard.

The Superintendent of Lighthouses, 15th Lighthouse District, Mr. Walter G. Will, was commissioned a Commander in the Coast Guard and was designated as District Commander, St. Louis District, serving in this capacity until relieved in the spring of 1940 by Captain W. F. Towle. The Assistant Superintendent of Lighthouses, Mr. E. L. Caldwell, was unable to receive a commission by reason of physical disability, and is now serving as assistant to the District Aids to Navigation Officer, U. S. Coast Guard. Mr. Glen Fitzsimmons, Chief Clerk, is presently serving as Civilian Personnel Officer of the Second Coast District. The other Lighthouse employees, about 10 in number, were assigned duties in the Coast Guard commensurate with their various qualifications.

From 1 July, 1939, the aids to navigation operations and maintenance were carried on first by the former Lighthouse Service administrative personnel and later by various officers in the Coast Guard. Notices to Mariners and hydrographic office duties were carried out by a hydrographic office. Buoys and batteries were handled by one officer in Marine Engineering Section, new aids and developments by another officer in the Communications Engineering Section.

In April, 1943, an Aids to Navigation Section was organized and Lieutenant Commander R. M. Freeman assigned by HQ as Aids to Navigation Officer. Under the Aids to Navigation Section have been gathered the administration of the aids on 5200 miles of navigable inland waters. Stocks of materials and equipment are maintained at depots, operations of cutters are administered in conjunction with the Operations Section; establishments, discontinuances, and new aids as well as the development and use of new equipment; the administration, control, and inspection of private aids and bridge lighting regulations; contacts and liaison between the Coast Guard and commercial river operators, U. S. Engineers, U. S. Weather Bureau, Tennessee Valley Authority, and others are the duties of this section. Notices to Mariners, preliminary, general, and steering directions or channel reports are originated, published, and distributed by the Aids to Navigation Section. Personnel at depots, and deck forces of the cutters are subject to study and recommendations by the Aids to Navigation Officer. Training of personnel in servicing of lighted aids is accomplished at the direction of the Aids to Navigation Officer.

The first Coast Guard officer assigned to the old 15th Lighthouse District was Captain (then Lieutenant Commander) H. J. Bradbury, who was assigned as Chief of Staff, and who continued in that capacity until relieved on 15 March, 1940, by Commodore (then Lieutenant Commander) B. Jordan. Lieutenant Commander (then Chief Pay Clerk) V. L. McLean was the first Pay and Supply Officer. Lieutenant Commander (then Chief Machinist) L. L. Whittemore was one of the first officers assigned for marine engineering duty.

FIELD UNITS

The field units taken over from the Lighthouse Service were as follows:

Depots

St. Louis, Mo.	Gasconade, Mo.
Fountain City, Wisc.	Point Pleasant, W. Va.
Sewickley, Pa.	Sheffield, Ala.
Florence, Nebr.	Memphis, Tenn.

All of the above depots were operated and manned at the time of the consolidation. The vessels taken over from the Lighthouse Service were:

WILLOW	GOLDENROD
WAKEROBIN	POPLAR
GREENBRIER	COTTONWOOD

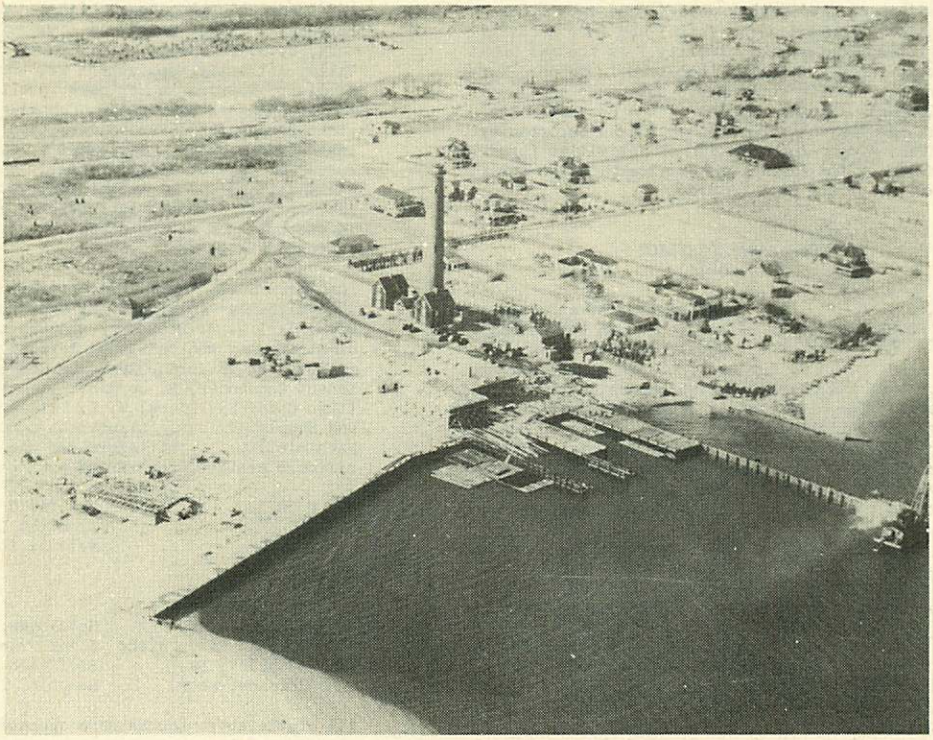
Buoy Boats 513, 514, 515 (now the CG-52004-D, 52005-D, 52007-D)

The WAKEROBIN worked the Upper Mississippi River from St. Louis to Minneapolis; the WILLOW, the Lower Mississippi River from Cairo, Illinois to New Orleans, while the COTTONWOOD worked the Upper Mississippi from Cairo, Illinois to St. Louis. The GREENBRIER patrolled the entire Ohio River plus the Allegheny, Monongahela, and Kanawha Rivers. The POPLAR and the GOLDENROD patrolled the Missouri River from Omaha, Nebraska to its mouth. One each of the buoys boats was stationed at Sewickley Depot, Point Pleasant Depot, and Sheffield Depot.

Since the field facilities of the former Lighthouse Service could not accomplish projects requiring lifting of heavy weights, the heavier buoyage work was accomplished by the U. S. Engineer Department in accordance with a reimbursement basis developed between the Lighthouse Service and the U.S.E.D.

U. S. COAST GUARD

Upon the consolidation of the former Lighthouse Service with the Coast Guard, the latter began to expand personnel and field units for more proper accomplishment of the work. Based upon the performance of the cutters POPLAR and GOLDENROD, the cutters SYCAMORE and DOGWOOD were designated by Coast Guard Headquarters after conference with the St. Louis Coast Guard officer. The SYCAMORE and DOGWOOD were finished and on duty in the summer of 1941. Meanwhile the cutter OLEANDER had been



SHINNECOCK LIGHT AND NEW SURF STATION CONSTRUCTION

MONTAUK POINT LIGHTHOUSE
MONTAUK POINT LIGHT WAS ESTABLISHED IN 1797 AND IS TYPICAL
OF THE NUMEROUS LIGHTS MAINTAINED BY THE COAST GUARD ALONG THE ATLANTIC COAST

designed by Coast Guard Headquarters and this vessel was delivered and in operation by the close of 1941. The cutter FORSYTHIA was under construction about this time and assumed duty in the Pittsburgh area in 1942. The cutter FERN became available in the summer of 1942, being especially constructed for ice breaking, which it accomplished during the several winters of the war. The cutters LANTANA and SUMAC were among the last cutters delivered, the SUMAC assuming duty on the Ohio River in the fall of 1944. The FOXGLOVE is the last of the modern diesel cutters delivered, being commissioned in the fall of 1945, and will relieve the CGC AZALEA which will then be decommissioned in the later part of April or early in May, 1946.

Between 1 July, 1939 and the present, the number of vessels in the service increased from six tenders and three buoy boats to 14 cutters and four buoy boats. At this writing three additional 65-foot buoy boats are under construction with anticipated delivery date in June, 1946. These three boats with two 52-foot buoy boats now in service will take over servicing all aids on the entire Cumberland and Tennessee Rivers, at which time the CGC COTTONWOOD will be decommissioned. All of the 1939 fleet is still in service, except the CGC WILLOW which was decommissioned in 1945. The several depots were further developed and more adequately manned.

Changes in the total number of navigational aids since 1 July, 1939, are shown in the following tabulation as of 1 July, 1939, and as of March, 1946:

1 July, 1939	7568
1 March, 1946	8678

The total number of lighted aids has not appreciably increased, but a shift has occurred from oil lights to battery-operated lights in recent years, in accordance with the modern practice of using automatic and electric equipment in lieu of the old type oil lights. This principle of modernization, initiated in 1933, has been followed and further developed by the Coast Guard. Exemplary of this trend is the complete marking of the Tennessee River with battery-operated aids since 8 February, 1935, and the newly developed plan, for accomplishment in the summer of 1946, of showing only modern battery-operated electric lights over the entire Illinois River, and similar complete usage of battery-operated electric lights on the Upper Mississippi River between St. Paul, Minnesota and Dam 24, Mile 273.4.

Use of commercial electricity, inaugurated several years ago to energize certain aids on the Ohio River when commercial energy was economically available, has been extended by the Coast Guard and shows an appreciable increase in the number of conversions, oil lights or battery lights, to commercial electricity. Such conversions are now made upon all rivers whenever the energy is economically available.

Buoyage under the Coast Guard has followed standard practices of buoyage in the waters of the United States. Buoys adopted as standard for the District are the 15-inch, 18-inch, 19-inch, and third class special buoys. A few third class unlighted buoys are used on the Allegheny River, and 20 second class unlighted buoys have been requisitioned for use in the wide expanses of deep water in the Kentucky Pool in the Tennessee River. Use of oil-lighted buoys has been discontinued. The 3-1/2 FE and 5 FE buoys, as well as a few old 3/IV and 3/V lighted buoys comprise the type of electric lighted buoys in use in the District.

The traffic during the war years demanded an increase of buoyage to insure safe conduct of war vessels to tide water, resulting in a considerable increase in the number of buoys maintained. There is tabulated below the number of buoy stations maintained by the Coast Guard as of 1 July of the years 1942 to 1945, inclusive:

1 July, 1942	4870
1943	4946
1944	5744
1945	5844

Use of reflex (reflector) signals was started many years ago on aids which seemed to demand this added facility as a compromise between lighted and unlighted aids. In 1944 a policy was adopted to have every aid in the St. Louis District show reflex (reflector) signals. Accordingly, all fixed shore aids and all floating aids both lighted and unlighted now show some type of reflector. Corning glass, Stimsonite plastic, National Colortype Fireball buttons, and Minnesota Mining Co. "Scotchlite" reflectors are in use.

Within recent years, types W and SA range lanterns, developed by the General Railway Signal Company, have become available upon Coast Guard contracts and are now being used separately to define axes of channels or to show strong directional beams in conjunction with the customary 360° fresnel lens indication where reaches of two, three, or more miles are controlled. This equipment is usually energized by batteries, but may be energized by batteries, but may be energized by commercial electricity through a transformer wherever available.

The Coast Guard policy toward aids to navigation in the Second Coast Guard District has been to furnish the navigators of the inland rivers with the best type of aids available and in quantities demanded by the navigators. The policy of welcoming suggestions and comments from navigators has been developed by assignment of two capable officers to transit the various streams on commercial craft to obtain first hand information as to the navigators' desires. The Aids to Navigation Section of the District Office screens navigators' suggestions and requests, and is operated on the principle of furnishing the navigator with the type and number of aids he needs and advising him through Notices to Mariners of changes in these aids.

THIRD NAVAL DISTRICT
(NEW YORK)

PURPOSE

The maintenance of aids to navigation was originated for the purpose of facilitating navigation and for the protection of life and property at sea. The Act of Congress of August 7, 1789, authorized the maintenance of aids to navigation which was carried on under the Treasury Department until July 1, 1903, when it was transferred to the Department of Commerce, and on July 1, 1939, was transferred to the Coast Guard under the Treasury Department.

ORGANIZATION

From September 1939 to December 1941, the operation and administration of aids to navigation was under the jurisdiction of the Commanding Officer, Coast Guard Depot, St. George Base, Staten Island, New York. The work in connection, therewith, was performed by the personnel of the Depot. An Aids to Navigation Command was created and placed under the jurisdiction of an Aids to Navigation Officer and the personnel were transferred to District Headquarters on 1 June, 1943, together with personnel

for procuring aids to navigation supplies and equipment and supervising construction and repair work. Subsequently, the procurement and construction personnel were transferred to the Finance Office and Civil Engineer Office. There was therefore no organization strictly performing only aids to navigation work prior to the war as compared to the present District Headquarters organization.

DUTIES — Aids to Navigation in the waters of Rhode Island, west of Watch Hill, Connecticut, New York, and New Jersey to Manasquan Inlet and tributary waters, also Lake Champlain and Lake Memphremagog, are operated and maintained under the jurisdiction of the District Coast Guard Office, New York.

DEPOTS AND BASES USED — The St. George and New London Depots have facilities for making practically all phases of repairs to aids to navigation equipment, storage space for buoys, chain, equipment, and supplies, battery charges, and also headquarters for tenders. The Depots at Portland, Conn.; Burlington, Vt.; Shrewsbury River, N.J.; and East Moriches, Fire Island, Watervliet and Turkey Point, all in New York, are small in size. They have only limited facilities for repair work, have storage space for buoys, chains, equipment and supplies, some have battery charges, and are also headquarters for buoy boats.

LIGHTSHIPS — Lightships assigned to this district are: AMBROSE (No. 111), CORNFIELD (No. 118) and RELIEF (No. 78). FIRE ISLAND and SCOTLAND lightships were withdrawn from their stations on 7 January, 1942, Both lightships were subsequently placed in use as guard ships and used by the Navy. They were manned by Coast Guard crews to operate the vessel and supplemented by Naval personnel to handle the communications with passing vessels and issue the necessary orders for H.E.C.P. They continued on guard duty until 1945. In 1945, the SCOTLAND was transferred to the First Naval District and FIRE ISLAND to the Fifth Naval District. Subsequently, the reestablishment of a lightship on Scotland Station was authorized and on 8 January, 1946, RELIEF was placed on that station until another was provided.

CUTTERS — The following cutters tender class in this district are the "ARBUTUS", "BEECH", "HAWTHORN","HICKORY", "MARIPOSA", "OAK", and "FIREBUSH". Tenders assisted on numerous occasions at launchings at the Brooklyn Navy Yard. On these occasions two (2) tenders were assigned with buoys and moorings aboard to mark the location of drag chains after the launching in case they could not be recovered and removed promptly. Tenders have also been engaged in ice breaking on the Hudson and Connecticut Rivers. Ice conditions on the Hudson River are reported daily via radio during the winter season by Stony Point, Rondout, Tarrytown, Esopus Meadows and Saugerties Light Stations and is published for the information of all Mariners.

HISTORY OF LOOKOUTS AT THIRTY (30) LIGHT STATIONS AND BEACH PATROLS AT SEA GIRT AND MONTAUK POINT LIGHT STATIONS

PURPOSE — Activity was originated to spot attacks by enemy vessels and planes. The reports include observations of specific activities such as the following:

A. Contacts with, or sighting of enemy or unknown

(1) Men-of-war, including submarines and minelayers; if the vessel or submarine carries a plane or planes, so report.

(2) Armed merchantmen or raiders. If they carry a plane or planes, so report.

(3) Mines, derelicts or other floating objects of a suspicious nature. Location of mines laid by airplanes.

B. Obtain other Coastal Informations:

(1) Suspicious activities of all vessels, including small craft and fishing boats such as:

(a) Unwarranted loitering offshore, or deviation from regular course.

(b) Activities not consistent with the alleged or apparent use in which the craft is supposed to be operated.

(c) Use of signaling devices such as flashing light, flags, etc.

(d) Two-way radio installations of more power than seems necessary.

(e) Activities which indicate possible contact with vessels offshore, or the giving of information to vessels offshore.

(f) Activity which indicates possible intent to sabotage navigation aids, port facilities, etc.

(g) The running or smuggling of individuals offshore, or bringing unknown and suspicious individuals ashore.

(2) Sinking or scuttling of vessels, or obstructions in channels, harbors, ports, or action in any way impairing port facilities.

(3) Disloyal services rendered by persons believed to be giving aid or information to enemy men-of-war, auxiliaries, raiders, aircraft in the Coastal Zone.

(4) The acquisition of motorboats by individuals whose loyalty might possibly be in question or by persons whose financial status is not in keeping with the type of craft purchased.

ORIGINATED — Coastal lookouts at lighthouse stations was originated in accordance with Coast Guard Headquarters Letter, 5 December, 1941.

ACTIVITIES — Constant watch was maintained at the thirty (30) light stations and where possible "flash" reports were made concering airplanes or other important events. Montauk Point, Fire Island and Sea Girt Light Stations also maintained a beach patrol. Any urgent information covering Combat or Coastal Intelligence was communicated immediately and directly to the Coastal Information Officer of the Inshore Patrol of the Third Naval District, 90 Church Street, New York City, and to the District Intelligence Officer of the Third Naval District. Other non-urgent information was forwarded to the same sources

by mail. All Coast Guard Stations in the New York District were instructed to cooperate with the Naval Zone Officers in charge of information locally (SEE "COASTAL LOOKOUT SYSTEM" incorporated in the first narrative pertaining to Operations).

OUTSTANDING INCIDENTS — Montauk Point Station spotted a plane crashed into the sea, and speedily a report was relayed to the nearby coastal picket base, which immediately dispatched their fastest standby boat to the scene. The Medical Department credits this fast action with saving the pilot's life. Coney Island Light Station found five mines washed ashore at the summer resort and guarded them until picked up by the authorities preventing the seashore crowd from endangering themselves. This station also confiscated considerable film from people photographing ships in the bay. There were several net buoys washed ashore and reported and they maintained the aircraft recognition lookout.

Orient Point Light Station spotted a car whose personnel had camera and guns. This car was held until the Army arrived and took over the car and occupants.

PROBLEMS — There was no difficulty encountered in procuring men or assigning them. However some Commanding Officers used this duty as a punishment for bad conduct. This was soon corrected. Morale, as a whole, was very poor, as men were on constant tedious duty.

Light stations, being small, had few means of communication. Telephones were installed where possible and radios were installed at all thirty (30) Lookout Stations. Three tier bunks had to be installed, along with showers, and toilet facilities modernized. Due to the lack of fresh water on many stations, the showers used salt water. Light stations depend on rain water for fresh water and the amount was insufficient for the increased personnel. Kerosene and electric refrigerators were installed for storage of perishable foods. It was proposed to install electric generators at five (5) stations and thus eliminate the fire hazard of oil lamps and lanterns. This was approved by Admiral Johnson, but the generators were never furnished by Headquarters and these stations were forced to use old fashioned and dangerous methods of lighting. (See Civil Engineer's Narrative).

SUMMATION — Men were sent to stations with letters written as to duties but in some instances lookouts were not properly maintained until station was visited by an inspecting officer. Thereafter, when a lookout was established, an officer was sent to see that it functioned properly, kept the men informed of their duties and supervised the watches.

DEVELOPMENTS — Loran was developed during the war as an aid to navigation, both for sea and air. The name means long range navigation. A station was erected at Montauk during the war but has since been eliminated.

Racon is another electronic device developed during the war and closely related to radar. It is an electronic beacon placed ashore at an elevated position to serve as an aid to navigation for surface ships and aircraft equipped with radar. The radar transmitter aboard the ship triggers the racon beacon which is automatically placed in operation and sends out a characteristic signal which enables the navigator to obtain an accurate fix. This is short range navigation for surface ships. A station was established at Floyd Bennett Field under the Navy but has since been turned over to the Coast Guard.

Anrac is another development for control of aids to navigation. It was first installed on buoys in order to black out the light on the buoy in case of an air raid. It has since been used to control remote and inaccessible fog signals. The remote control allows the fog signal to be operated only during fog, thus saving power and not annoying residents by the sound of the signal.

During blackouts all light station, lightships, tenders and light attendants were alerted to be ready to blackout or dimout the lights when so ordered. Several test blackouts were conducted to determine how long a blackout would take to consumate. The Coast Guard Auxiliary cooperated fully in this blackout organization. Coast Guard cutters, tender class, were used to set nets for submarine defense and to photograph underwater wrecks.

WORK ACCOMPLISHED — The amount of aids to navigation work accomplished during the war time period was heavy and varied. Special services or work done during World War II included temporary establishment and maintenance of nine (9) swept channel buoys off New York Harbor, seven (7) swept channel buoys off Block Island; ten (10) buoys for special purposes; seventy-eight (78) buoys for general navigation; the temporary discontinuance of sixty-seven (67) buoys which were not required in their peacetime locations due to re-routing of vessels but were required elsewhere for the same reason, establishment of twenty-seven (27) anchorage and mooring buoys; the discontinuance of two (2) lightships; the assignment of two (2) lightships as Guard Ships for Naval use; the temporary extinguishment of ninety-five (95) lights and buoys; the dimming of forty-five (45) lights and buoys, the establishment of nine (9) range lights; the equipment and establishment of thirty (30) lookout stations at lighthouses; the assignment of cutters tender class to perform work for the Navy from time to time as requested or ordered; and the establishment of two (2) radio beacons stations for calibration use.

On several occasions prior to Pearl Harbor, the tender class cutters assisted the Army in laying the mine fields off the entrance of New York Harbor, as the Army had no large mine laying craft of their own available at that time to put down some of the heavier moorings and to assist in the laying of elaborate net work of cables which electrically controlled this minefield.

THE HURRICANE OF 14 SEPTEMBER, 1944 CAUSED EXTENSIVE DAMAGE TO LIGHT STATION, OTHER UNITS AND EQUIPMENT AS ILLUSTRATED BY THE FOLLOWING REPORT:

AMBROSE LIGHTSHIP — This lightship was dragged off the station, and returned on 15 September, 1944. Many buoys in New York Bay were dragged; those in Ambrose Channel and Gedney Channel were replaced on 15 September, 1944, with the exception of the one at Sandy Hook.

MANASQUAN BREAKWATER LIGHTS — Both these lights were carried away. Temporary lights were placed in operation.

GREAT REDS LIGHT STATION — A 300mm lantern was broken and temporarily replaced with 150mm lanterns on 15 September, 1944; subsequently replaced with 300mm lantern. Four windows were blown out and one cracked; iron chimney blown overboard; generator box blown averboard; and the generator damaged by the rain.

COLD SPRING HARBOR LIGHT — The basement (which includes the kitchen) and the cistern were flooded with salt water. Both were pumped out by tender on 15 September and cistern filled with fresh water.

WHITESTONE LIGHT EAST RIVER — The electric current went off. An oil stand-by light was used.

PENFIELD REEF LIGHT STATION — A twenty foot (20') power boat was submerged for a period of five (5) hours, and was out of commission.

SAYBROOK BREAKWATER LIGHT STATION — The basement was half full of water and mud and three (3) windows were blown out in the engine room.

69TH STREET LIGHT — Electric lines were damaged and extinguished. Repairs were made and light replaced on 15 September.

THROGS NECK LIGHT STATION — Three large trees were blown down; the fense was damaged in places, but the dwelling and tower were undamaged.

NEW DORP LIGHT STATION — Light out, current failure, auxiliary light placed into operation, Fence went down and road washed away.

ELM TREE LIGHT — The light went out, due to commercial current failure. An auxiliary light was placed in operation and battery operated light was installed 16 September.

WEST BANK FRONT RANGE LIGHT AND STATEN ISLAND REAR RANGE LIGHT — Placed in operation during the daylight hours, 15 September, 1944, for guidance of ships through Ambrose Channel during displacement of buoys in this area.

PORT JEFFERSON EAST BREAKWATER LIGHT — Foundations of the watch house and tower undermined. Steps, box, coal bin and coal supplies were all washed away.

WILLETS POINT LIGHT — This light was upset, was temporarily righted and light restored.

MONTAUK EAST JETTY LIGHT — This light was carried away and was replaced 22 September, 1944.

NAVESINK LIGHT STATION — Electric current off; was restored 17 September. Stand-by lamp in use in meantime.

NAVESINK LIGHT STATION SHREWSBURY RIVER DOCK — Water three (3) foot deep in boat house and eighteen (18) inches over dock; buoys not lashed down washed away and later recovered; Navesink River Beacon bent to 45°; ay Navesink Light Station, trees, fence, grape arbor and electric wires down.

MATTITUCK BREAKWATER LIGHT — This light was carried away. A temporary light was established on 20 September, 1944.

LATIMER REEF LIGHT — Two boats were lost. Electric current failure; 10V lamp in use. Rip rap shifted. Dock railing damaged. Toilet wast pipe demolished. Four (4) lights, glass broken in galley. Refrigerator chimney broken. Furnace and pump in cellar may be damaged.

FORT WADSWORTH LIGHT — Electric current failure; 10V lamp in use; 100 w. generator installed to operate radio beacon. There was five (5) inches of water in cellar; the electric current was restored on 18 September, 1944. The kitchens and chimney leaked.

TARRYTOWN LIGHT — The landing steps were washed away. Rotary converter and refrigerator motor submerged in salt water. Buoy racks were broken and twisted.

FIRE ISLAND INLET LIGHT 13 — This light was washed out. The temporary light was installed on 15 September, 1944.

RACE ROCK LIGHT — Boat crane foundation undermined. Rocks in slip; dangerous.

SOUTHWEST LEDGE LIGHT — Boat 16055, two (2) planks stove in. All Equipment lost, three (3) ton coal lost, twenty-five (25) gallons gasoline lost; landing ladder and deck damaged.

STATEN ISLAND LIGHT — Current failure; stand-by lamp used; current restored 20 September, 1944.

STRATFORD SHOAL LIGHT — Rip rap displaced; catwalk to winch, outside stairway and outside toilet washed away, also ten (10) tons of coal, four (4) gasoline drums, seventy-five (75) gallons gasoline, waste pipe and miscellaneous articles washed away.

GREAT CAPTAINS ISLAND LIGHT — Eight (8) square feet of shingles blown off dwelling, one screen door smashed; one (1) window was broken; dory 15154 badly damaged.

PLUM ISLAND LIGHT — Door in lookout tower torn off; one (1) window broken; current failure. 4th order standby lamp installed in main light from fourteen (14) to seventeen (17) September.

CORNFIELD LIGHTSHIP NUMBER 118 — Dragged off station; replaced. No damage.

MONTAUK POINT LIGHT — Thirty-three (33) windows broken or cracked in dwelling and engine house; shingles blown from roof of dwelling and engine house; chimney top on dwelling blown off; chimney on engine house bent; ceiling and floor wet; twelve (12) feet of bank washed away.

BERGEN POINT LIGHT — Portion of cement platform washed away.

SEA GIRT LIGHT — Thirty (30) feet of gutter blown down; sand and driftwood on lawn; current and telephone failure.

STONY POINT LIGHT STATION — Current failure; three (3) large trees bown down; water seeped through north side of dwelling.

LITTLE GULL ISLAND LIGHT STATION — Boat 14104 and cradle washed away; 120 ft. of Marine Railway and car lost; foundation of engine room undermined; radio beacon tower foundation cracked; 2 storage shacks with contents lost (paints, rope, supplies); one lantern glass broken; electric washing machine and gas stove; 7 tons coal lost; barracks off foundation and out of shape; walks lost, $84.00 lantern glass lost from dock at Fort Michie; cistern salted; $150.00 lost food; concrete torn from top of landing dock; rip rap in slip shifted. Several windows broken; part of barracks ceiling down.

ROMER SHOAL LIGHT — Lost two and one half ton of coal, ladders, cars, etc. No damage to station, except rip rap shifted.

LLOYD HARBOR LIGHT — Contractors working gear for renewal of boat landing washed away. No damage to station.

OLD ORCHARD SHOAL LIGHT — Boat 11029 lost, also equipment; winch handle, boat bridle, decking, boat cradle, lost. Boat 14212 engine flooded; hole in power boat; eight (8) inches of water in engine room.

EATONS NECK LIGHT — Several panes glass broken. Landslide.

NORTH DUMPLING LIGHT STATION — Three strips of siding on east side of boat house torn away; steps at boat house to platform washed away; steps and walk from boat house to dwelling washed away; twenty-five (25) gallon gasoline drum, half full, washed away; salt water pump out of commission.

FALKNER ISLAND LIGHT — Boat house damaged; lower section of large door smached; door town off; five feet of capboard torn off; one window broken; bozt runway undermined; basin filled in; each end of island washed back about 10 feet; sides of bank washed back 15 to 20 feet; 20 tons of coal, 3 gasoline drums and sixty (60) gallons gasoline washed away.

STAMFORD HARBOR LIGHT STATION — Radio antenna slightly damaged.

GREENS LEDGE LIGHT — Boat basin filled in.

CONOVER BEACON LIGHT — Shore protection damaged. Tower undermined; ladders, planks, etc, carried away.

SHARK RIVER LIGHTS — Breakwater damaged. Light structures, however, were intact.

NORTH HOOK FOG SIGNAL — Concrete house on which fog horns are placed damaged in storm. Sand washed up to door of engine house; this should be protected by about three-hundred (300) lineal feet of rip rap.

STRATFORD POINT LIGHT STATION — Some shingles blown off roof; lightning arrester blown down; electric current failure; 10V lamp used; current restored 15 September, 1944.

STEPPING STONES LIGHT STATION — Antenna broken ond one door broken.

ROBBINS REEF LIGHT STATION — Flag staff, plank walk on breakwater, box of articles for survey, fifty (50) gallon drum with twenty-five (25) gallons gasoline, washed overboard.

NEW HAVEN LONG WHARF LIGHT — Coal box bad, stone repairs necessary; concrete open 2".

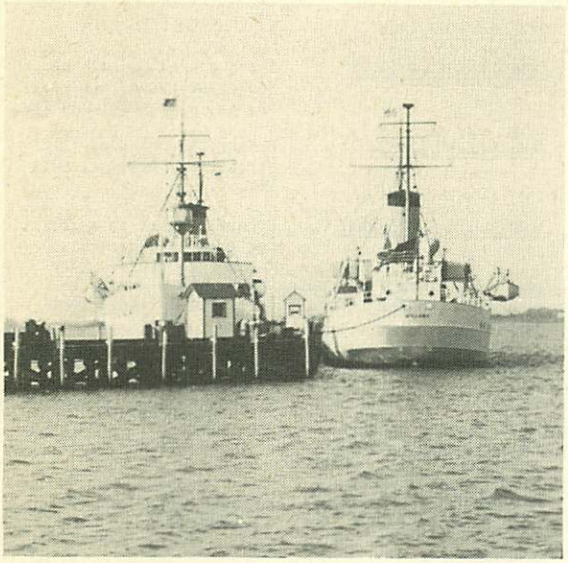
WEST BANK LIGHT STATION — Stone on north side washed over to south side and some overboard leaving gaps in breakwater. Kitchen floor warped due to water washing in through windows; exhaust pipe from one engine torn loose; siding on lookout watch room torn loose; boat 12071, gunwale on both sides split, planking on one side torn loose, power boat engine wet and magneto damaged, miscellaneous materials washed overboard.

CHAPEL HILL LIGHT STATION — One tree blown down carrying away electric and telephone wires; five (5) trees down and across road between station and entrance.

PROBLEMS — The problem as to cutters, tender class, involves both officers and crews. Since there are very limited number of officers who are experienced in aids to navigation work, upon their leaving the cutters, their replacement by inexperienced men materially impairs the accomplishment of work required. Some arrangement should be made whereby at least a nucleus of experienced men should be on cutters of this class at all times.

There have been no serious material problems. The principal problem of this nature is the accomplishment of repair work at lights which is understood to be due to some extent to the lack of funds.

There have been no serious logistical difficulties, except for a shortage of services of cutters, tender class, for extended periods due to cutters being assigned to work for the Navy which impaired or prevented the accomplishment of necessary aids to navigation work. No facilities of the Navy were used but the Navy made considerable use of Coast Guard facilities.



STERN VIEW OF MOHAWK TIED UP AT CAPE MAY HARBOR

BARNEGAT LIGHTSHIP

BARNEGAT LIGHTHOUSE

primary coastal lights were extinguished, and as soon as mine fields were laid, buoys were established to mark the channel leading through the fields. Buoys were also set out to mark the MACRI route, the inshore coastwise steamer lane. A plan for immediate blackout of all secondary aids was formulated and several test blackouts were conducted to determine the efficiency of the system.

DISTRICT DIVIDED INTO SECTIONS

At the outset of the war, the District was divided into sections, and certain tender class cutters were assigned the responsibility of maintaining aids to navigation in each of these sections. The CGC ELM, based at Atlantic City Lifeboat Station, was assigned the section which included the inlets and inland waters of New Jersey from Manasquan Inlet to Cape May. The CGC GENTIAN was assigned the area further off shore from Manasquan to Fenwick Island. The CGC LILAC maintained the aids between Edgemoor and Overfalls Lightship, and the CGC ZINNIA maintained those from Edgemoor to Trenton, including those in the Schuylkill River. Logistical records of the aids were kept by the Aids to Navigation Officer, but those of the cutters were kept by the Operations Officer.

REASSIGNMENT OF LIGHTSHIPS

On 13 January, 1942, BARNEGAT Lightship #79 and FIVE FATHOM BANK Lightship #108 were transferred to the Navy jurisdiction and Coast Guard personnel was removed. The vessels were used as LOWER and UPPER STATION SHIPS, respectively, in Delaware Bay. The LOWER STATION SHIP's position was 2000 yds, 022° true from Harbor of Refuge Light, and the UPPER STATION position was 3000 yds, 270° true from Brandywine Shoal Light. When the Lightship Stations were abandoned by the lightships, their stations were marked by large, deep-sea, buoys. On Barnegat Station a 9 x 38 whistle buoy was placed, and on Five Fathom Bank Lightship Station a 9 x 32 bell buoy was placed. The Radiobeacon duties of both Lightship Stations were discontinued. In the Barnegat Area a new Class A (200 mile) Radiobeacon was established at Sea Girt, New Jersey. Overfalls Lightship, normally located at the mouth of Delaware Bay, was moved on 21 March, 1942, about a mile southeast of its regular position to mark the intersection of the North and South Mine Swept Channels approaching Delaware Bay. The war-time position was in latitude 38° 47.1'N., Longitude 75° 00.7'N. With the cessation of hostilities, the two Lightships were returned by the Navy and Overfalls Lightship was relocated. BARNEGAT LIGHTSHIP #79 was returned to the Coast Guard by the Navy on 24 May, 1945, and FIVE FATHOM BANK LIGHTSHIP #108 was returned to the Coast Guard on 4 January, 1945. FIVE FATHOM BANK LIGHTSHIP resumed station duties on 16 July, 1945. BARNEGAT LIGHTSHIP was returned to station off Barnegat Inlet on 15 October, 1945, relieving RELIEF LIGHTSHIP which had been on Barnegat Lightship Station since 1 August, 1945. Upon the resumption of Barnegat Lightship station duties by RELIEF Lightship on 1 August, 1945, Sea Girt Radiobeacon were discontinued. Overfalls Lightship returned to her present position on 20 September, 1945, in latitude 38° 48' N., longitude 75° 01.4' W., at the cessation of the use of the entrance swept channels and adjacent minefields. RELIEF LIGHTSHIP #95 was used on all stations for relief purposes throughout the war.

SPECIAL CHANNELS MARKED

For the U. S. Navy, several projects were undertaken to provide channels for both off-shore and in-shore ship routing. The main off-shore ship routing was along specially designated routes called MACRI routes. These were marked by major floating aids, early in 1942, of the larger lighted buoy types. The MACRI routes were marked into two separate lanes, one for northbound traffic and the other for southbound traffic, and these were designated with letters "A" and "B". The MACRI "A" routing was a route which, being off-shore of the "B" route, by-passed the entrance mine-fields to the major ports along the coasts. MACRI "B" routing was more inshore and passed a ship to and through the mine-fields protecting the entrances to bays and rivers leading to major ports and anchorages. Entrance channels through mine fields planted across the entrance to Delaware Bay extended from the off-shore MACRI routes, through the fields, and into the Delaware Bay Channel. These channels were called the North and South Swept Channels, and were so called because they were patrolled and kept clear of drifting or enemy-planted mines by U. S. Navy Minesweepers. The North Swept Channel off the New Jersey - Delaware Capes, was marked with seven lighted buoys, and the South Swept Channel, with eight lighted buoys. In addition to the MACRI ROUTES and the NORTH and SOUTH SWEPT CHANNELS, the U. S. Navy required buoyage marking the deepwater and shallow water degaussing ranges at Brandywine Shoal Degaussing Station. One Lighted buoy and a white nun buoy was established. There were no submarine nets marked by any Coast Guard aids to navigation, nor were there any special channels marked by aids to navigation on specific request by the U. S. Army. The dredging buoys were kept lighted during all but actual enemy action blackouts. There was no discontinuances, or decrease in number of lights and buoys used to mark such activities.

CHANGES IN LIGHT INTENSITIES

Changes in light intensities for war needs came about as the result of the Blackout Plan of the Fourth Naval District, promulgated 9 July, 1941, by the Commander of the Philadelphia District in an order of that date to All Units of the District.[1] The blackout plan assigned aids to navigation to various activities within the District for control purposes. Several meetings were held during the latter part of 1941 with Captain E. A. Coffin, USCG, District Coast Guard Officer, Philadelphia, Commander R. P. Guiller, USN, Port Director, Philadelphia, Lieutenant D. J. Lucinski, Engineering Officer, District Coast Guard Office, Philadelphia, and Captain C. T. Coulter, President, Delaware Bay and River Pilots Association attending. At these meetings, the main discussion was concerning the discontinuance of aids to navigation in the Delaware Bay and River areas for blackout purposes. The conference resulted in the following plan:

(a) Remove approximately 40 ltd. buoys, replacing them with cans or nuns.

(b) Fit the remaining ltd. buoys, as designated by Captain Coulter, with smaller burners, reducing their candlepower.

(c) Extinguish a number of unimportant shore lights.

(d) All range lights and shore lights to be left at full candlepower.

At the date of the proposal of this plan to the Commandant[2] it was recommended that this plan be

1. Ref: (a) H/L 26 October, 1940 (OP-626-631)
(b) H/L 23 June, 1941 (OP-626-631)
(c) ComPhil Dist ltr 9 July, 1941 (626-631) Confidential

2. Commander, Philadelphia District letter 15 Oct. 1941 (626-621) Confidential

immediately instituted in order that the task of putting into effect a complete blackout of the Delaware River on short notice could be vastly simplified. This proposal was disapporved by the Commandant, Coast Guard, because the United States was not then in a state of war, however, it was later adopted in 1942 when the war became an actuality.

SPECIAL ANCHORAGES MARKED

The Captains of the Port established early in 1942 an Explosive Anchorage off Reedy Island in the Delaware River to provide restricted anchorage and loading areas for explosive laden vessels. Three unlighted, third class tall can buoys, painted white, numbered RX1, RX3, and RX5, were established 8 April, 1942, by the tender ZINNIA to mark this anchorage. It extended from the channel's western edge on the upper end of Reedy Island range to the eastern edge of Reedy Island Bar marked by the three unlighted can buoys. The northern edge of the anchorage extended to a line parallel to and 700 yds. SE of the centerline of the C & D Canal extended. The southern edge of the anchorage was approximately 1500 yds. NNE of the upper end of Reedy Island. The Reedy Island Explosive Anchorage was discontinued on 25 September, 1945, as a result of numerous requests from the Pilot's Association and other shipping interests. The buoys were discontinued on that date. Two adjacent anchorage areas in the lower Delaware Bay opposite Brandywine Light Station and in the vicinity of Old Bare Shoal were established by the District Coast Guard Officer, Fourth Naval District, at the request of the Commandant, Fourth Naval District. They were established for the purpose of controlling inbound and outbound ship movements. The Aids to Navigation section marked those areas with one lighted buoy and three unlighted buoys each. These buoys were established during July, 1942. The buoys were lettered AB, AE, AF, AD, BA, BB, BC, and BE, and the first letter of each pair indicated the anchorage area marked by the buoy. Because they were no longer necessary, these anchorage areas were discontinued by authority of Com4 and the buoys discontinued on 6 September, 1945.

WAR INCURRED WRECKS MARKED

The effect of enemy submarine activity along the Atlantic seaboard considerably increased the duties of the Department by the addition of extra patrol duties for the buoy tenders and the establishment of additional aids for specific military purposes. The location and marking of new wrecks resulting from the submarine warfare was one of the largest problems developed as a result of the war. These increased duties taxed the capacity of all cutters of the tender class in the District during the Spring of 1942. The following wrecks were marked by buoys during the war, for the protection and guidance of the mariner in the waters of the Fourth Naval District:

NAME OF WRECK	NAME OF BUOY	ESTABLISHED
SS Tolten	Seaside Wreck Lighted Buoy	25 March, 1942
YP 387	Wreck Lighted Buoy	26 May, 1942
Steel Dredge	Hereford Inlet Lighted Wreck Buoy	
SS R. J. Williams	R. J. Williams Lighted Bell Wreck Buoy "W"	27 June, 1942
SS Gulf Trade Sunk 11/19/44	Southerly Wreck Lighted Buoy (HB)	3 Nov. 1942
SS Morris Tracey	Maurice Tracy Wreck Lighted Buoy MT Renamed "Island Beach Wreck Ltd. Bell Buoy" July 1944	18 June, 1944

All these wreck buoys are still in existence, with the exception of the R. J. Williams Lighted Bell which was discontinued in November, 1943.

ADDITIONAL WARTIME ACTIVITIES AND RESPONSIBILITIES

The war naturally brought about additional duties for which the facilities under the direction of the Aids to Navigation Office had to be utilized because of their special qualifications. Buoy tenders, from time to time, were assigned some special specific duty and certain other war created responsibilities were assigned to the Aids to Navigation Office.

ASSISTANCE RENDERED BY CGC ELM

Although no regular anti-submarine warfare duties were assigned to the tenders, assistance, nevertheless, was rendered whenever possible. For instance, on 29 January, 1944, the CGC ELM proceeded to the assistance of the LCI-540 in a position sixteen miles east of Absecon Inlet, New Jersey. The stricken craft was reported in a sinking condition and was taken under tow at about 1845 and brought into a safe anchorage at 2145. The salvage of this vessel was completed under adverse conditions of strong wind and heavy sea.

CGC GENTIAN USED ON SURVEY OF WRECKS

In May 1944, the CGC GENTIAN was loaned to the Navy for the purpose of making an underwater survey of wrecks in the Fourth and Fifth Naval Districts. The GENTIAN was especially equipped with underwater sound gear for the expedition. One officer from the U. S. Coast and Geodetic Survey and one officer attached to the Operation Intelligence Branch of the Navy, Fourth Naval District, were assigned. The GENTIAN attempted to survey the underwater wrecks within the 100 fathom curve in both Districts, to determine the exact location of each wreck and the depth of water over it, and to decide whether or not the wreck was a menace to navigation. Also, every effort was made to determine the identity of the sunken vessel. Approximately one hundred sixty-seven wrecks were surveyed in the Fourth Naval District, a few of which could not be completely searched because of lack of time. While engaged in this work from 4 June to 16 September, 1944, the GENTIAN cruised 12,581.5 miles in the Fifth Naval District and from 17 September to 29 November of the same year covered 6,416.8 miles in the Fourth Naval District.

TENDERS UTILIZED AS ICE BREAKERS

During the winter months several cutters usually employed in Aids to Navigation duties were always busy with ice-breaking activities in the Delaware River and its tributaries. Very little ice was experienced during the war years until the winter of 1944-45, when extremely heavy ice made it necessary to pick up many lighted buoys in the Delaware from Elbow of Cross Ledge Lighthouse to Philadelphia. The Channel from Philadelphia to Trenton was broken up twice by the CGC GENTIAN. As

much as sixteen inches of ice was broken in the vicinity of Trenton. A number of vessels were freed from the ice in the Chesapeake and Delaware Canal.

RADAR BEACONS ESTABLISHED

On 1 May, 1945, three Radar Beacon (RACON) stations, located at Lakehurst Naval Station, Willow Grove, Pennsylvania and Cape May, New Jersey, were taken over from the Navy to be operated by Coast Guard personnel. This was in accordance with a letter[1] wherein the Coast Guard was directed to assume responsibility for establishing and operating certain aeronautical and marine communication and navigation aids. The first two mentioned are located at Naval Air Stations, and the Cape May radar beacon station is located in the lighthouse on Coast Guard property at the Cape May Point Lifeboat Station. Each station's normal complement consisted of two radio technicians and two seaman operators. The technicians, prior to assignment, completed a twelve weeks course on racon equipment at the Air Navigational Radio Aids School at the Navtrasch, Gainesville, Georgia.

Radar beacon station, NAS Lakehurst, N. J.
(LTA) CG Unit #421

Radar beacon station, NAS Willow Grove, Pa.
CG Unit #428

Radar beacon station, Cape May, N. J.
CG Unit #439

At Unit #30, Fenwick Island, one radar beacon station was for test purposes only, commissioned 26 December 1945. The following racon program was approved by CNO for peacetime operational purposes:[2]

Lakehurst - full operation by Coast Guard

Cape May - to be decommissioned by Coast Guard 1 May, 1946

Willow Grove - to be transferred to Navy for operation when Coast Guard reverts to Treasury Department, which was done 11 February, 1946

ROUTINE ACTIVITIES OF AIDS TO NAVIGATION OFFICE

In addition to the wartime responsibilities, the Aids to Navigation Office continued its regular peacetime duties of publishing the local Notice to Mariners and tabulating and reporting the damages to Aids to Navigation.

REDUCTION OF MAILING LIST

The Aids to Navigation section is an agency for distribution of Light Lists but because it handles no other navigational publications for public sale, it furnished the names and addresses of agents situated locally. The Aids to Navigation Section publishes Nocal Notices to Mariners covering all changes in the system of interest to mariners who travel in the waters of the District. In 1940 the District Coast Guard Office, Third Naval District, turned over to the newly established District Coast Guard Office, Fourth Naval District, a mailing list requiring the publishing of eight hundred seventy-five Local Notices to Mariners. As of January, 1946, interested parties received six hundred nineteen copies of the Local Notice to Mariners published. Local Notices to Mariners are not published at regular intervals but as the aids system warrants the need for dissemination of marine navigational information. Private owners of boats had decreased in number since 1940, but it was expected that this class of owner would increase in the future and result in an increase in the number of Local Notices to Mariners list.

REPORTS ON DAMAGE TO AIDS TO NAVIGATION

Files in the Aids to Navigation Section indicate that the only class of aid which sustained damage since the early part of 1943 was the buoy class. There are no records indicating any damages sustained by lightships, fixed aids, or their appurtenances; and no files prior to 1943 concerning damage sustained by aids to navigation. In 1943 a total of thirty-nine aids to navigation were reported damaged, destroyed, or missing, representing a value of $35,575. In seven cases the responsible party was determined, and damages from $1813 to several hundred dollars were collected. One obstruction buoy was hit, dragged off position, or lost, seven distinct times. In the calendar year 1944 twenty-one buoys were reported damaged, the responsible party being determined in three cases, and the amount of damage varied from $20.98 to over eight hundred dollars. In the same year twenty-two buoys were reported lost, nine of which were surveyed on 11 May, 1945, with the recommendation that they be stricken from the record. It was during this year that a major catastrophe, in the form of a hurricane, passed through the District on 14-15 September, extinguishing and moving off station many aids to navigation, and this story is more completely covered in the last section dealing the the "Hurricane." During 1945 twenty buoys were reported damaged with the responwible party being determined in the case of six. Fifty additional aids were reported missing or lost, twenty-four of which were subsequently recovered.

AIDS TO NAVIGATION OFFICE ASSISTS THE STATE OF NEW JERSEY ON CONVERSION OF NEW JERSEY INLAND WATERWAYS TO STANDARD MARKINGS

On 13 August, 1945, the District formally opened discussion with the New Jersey State Department of Conservation, Aids to Navigation Section, to suggest changes of marking the New Jersey Inland Waterway from the present markings to the types used in the Intracoastal Waterway controlled by the Coast Guard. In October, 1945, an inspection trip was made by representatives of the State and Coast Guard through the Inland Waterway to check on the feasibility of changing the markings. It was determined at this time that several changes in the marking could be made without too much cost or trouble for the betterment and standardization of the waterway. To date, the Coast Guard has cooperated fully and the following has been accomplished by the State of New Jersey:

All spar buoys have been painted with a yellow band, characteristic of the intracoastal waterway markings.

By the Spring of 1946 all post lights had been numbered in accordance with intracoastal standards.

Sixty third class special nuns and sixty third class special cans had been ordered by the State to start the program of replacing the gasoline drum type of buoy, used to mark the Inland Waterway Channel controlled by the State.

To replace the triangular and crossed stake markers which do not conform with the Intracoastal

1. CNO letter 8 June, 1944, OP-20-Z-mel, Serial 0569420 (SC) A6-2(5) to Comdt CG
2. H/L 14 November, 1945 (AAN) file CG-626

markings, the State proceeded to install on the stakes marking the channels rectangular and triangular markers. This last mentioned marking has no counterpart in the Intracoastal System, but is well set and accepted by local New Jersey boat operators. This change was effected by the boating season, beginning in the Spring of 1946.

CHANGES AND CONVERSION CONSIDERED

Consistent with the forward looking policy of the Service to utilize any improvement that will be of greater assistance to the Mariner, the Aids to Navigation Office found opportunity to consider a number of recommendations.

ELECTRONIC AIDS

Radio equipment for controlling lighted buoys was ordered for the buoys within and especially those adjacent to the Navy Yard area during December of 1942. Radio equipment was required for one hundred five lighted aids, for tenders, and for bases adjacent to those buoys to be controlled. This equipment was to supplement, and in some cases, was to replace manual blacking out of lighted aids. One hundred five buoys were made ready for the equipment and a meager amount of equipment was furnished by Coast Guard Headquarters. This equipment was later shipped to forward areas and the program dropped in this District. Further use of ANRAC (Aids to Navigation Radio Controlled) was contemplated for two projects of recent origin. DCGO, 4ND, ltr. 7 Dec. 1945, referred to H/L 4 Dec. 1945, lists the Fort Delaware Fog Signal, remotely controlled from New Castle Range Front Light Station, and the Christina River (Del.) South Jetty Fog Signal, remotely controlled from Edgemoor Coast Guard Repair Base, Delaware, as the two contemplated projects at that particular time. There are no Loran (Long Range Navigation) stations operating on a fixed rate in this District. There was, however, an independent Coast Guard Unit, #30, operating electronic equipment of Loran, Racon, and radiobeacon classes for test purposes. Coast Guard Unit #30, a loran station, located near Selbyville, Delaware, was one of the first stations of its kind and during the war years served as a slave station to the master station at Nantucket. After the end of the war, this unit became largely an experimental project. The unit has always operated under Headquarters and has been served by the District only insofar as certain logistical activities were concerned. The RACON (RAdar BeaCON) equipment is of the AN/MPN-2 mobile type and consists of one AN/CPN-8 (YJ) and one AN/CPN-6 (YG) sets. Their coding characteristic is 1-3-2 (dots). The mobile unit was commissioned 26 December, 1945 at 38°28.5' N., 75° 03.1' W., and operates for testing purposes only at unscheduled times. The experimental radiobeacon buoy, located 1000 yards. 193° true from Fenwick Island Shoal Lighted Whistle Buoy 1FIS (LL 1786 - 1944), is controlled and tested from Unit #30. It was established 28 June, 1945.

STEEL SUBSTITUTES AND FOULING OF BUOYS

Plywood can buoys and plastic nuns were received in this District for testing purposes during September - October, 1943. They were tested on orders from CG HQ ltr. September 11, 1943. Both types of buoys were placed in the water on the New Jersey Waterway during December, 1943, and lifeboat stations along the beach made monthly reports on their condition. The plywood can buoys were found to be easily damaged by ice and collision while the plastic nun buoys were very strong, and sustained little or no damage due to ice and/or collision. After twelve months of testing, the plywood buoys were relieved and discontinued, while it was believed that the plastic buoys were able to stand usage for another two or three seasons. The buoys were relieved in November, 1944. On 13 May, 1944, Woods Hole Oceanographic Institution submitted to the Commandant of the Coast Guard their plan for investigation of buoy fouling. Their primary purpose for investigation of buoy fouling was to determine as fully as possible the type and amount of fouling growths on buoys and ground tackle. This investigation was made to provide information of immediate concern to the mine warfare service and other interested parties. Delaware Bay North and South Swept Channel Buoys, fifteen in all, were among those selected by the Institution for observation. Observations were made on these and other off-shore buoys during July, 1944 and March, 1945. The tender class CGC GENTIAN was assigned to the duty of transporting the representative of the Institution and his observation equipment when the tender was assigned buoy relief duties of the buoys in question.

FLOURESCENT AIDS FOR UNLIGHTED MARKERS

Scotchlite, a paper reflecting tape used to bring out the presence of an unlighted buoy under the glow of a searchlight's rays, was applied to four buoys in the Delaware River in January, 1944. Smaller craft, from the tender class size down, found the reflecting tape satisfactory, but the Pilots Association, commenting on their experiences on larger vessels, found that they had no chance to use a searchlight to pick up the unlighted buoys equipped with Scotchlite tape. Oil and dirt were found to be detrimental to the reflecting qualities of the tape, and it was also determined that ice and collision removed portions of the tape from the buoys. This tape is still used on some buoys in this District because of its benefits to the smaller craft in running both unlighted and lighted channels. Plastic bands containing flourescent paints have been submitted to the Aids to Navigation Section of this District for test purposes during 1945. On May 24, 1945, H/L (ENE-24) authorized the District Coast Guard Officer, Fourth Naval District, to continue tests on phosphorescent pigments and plastics as may be applied to buoys or structures. The plastics were furnished by the Rohm and Haas Company of Philadelphia and the flourescent pigments were supplied the Rohm and Haas Company by the New Jersey Zinc Company of Pennsylvania. In June, 1945, the E. I. DuPont de Nemours Company of Arlington, New Jersey, expressed a desire to submit for test purposes, a plastic flourescent band for marking unlighted buoys. Buoys equipped with the plastic material have been on station since August, 1945, and have been observed twice during hours of darkness by representatives of the District Coast Guard Office and the companies interested. The results of these observations have been fairly satisfactory as far as the visibility aspects of the test are concerned. Reports of the tests have been forwarded to the Commandant (OAN) and (EN) for their knowledge and files.

COOPERATIVE RELATIONSHIPS IN THE DISTRICT

The Aids to Navigation Office worked directly under the direction of the Assistant District Coast Guard Officer who was also the Operations Officer. While the office was under the same head as the Engineering Department, there was naturally a close connection between these two activities; and this relationship was continued even after the separation because of the need for determining funds required for repair and maintenance of aids. Close cooperation was also maintained with the Assistant Operations Officer, and all orders for tenders to repair buoys and engage in other work on aids which originated with the Aids to Navigation

THE LIGHTSHIP DIAMOND SHOALS

BIG FREEZE ON THE POTOMAC - JANUARY 1948
THE COAST GUARD CUTTER MADRONA NOSES CLOSE TO MATHIAS POINT
LIGHTHOUSE IN THE POTOMAC AS A MEMBER OF THE STATION CREW LOWERS HIMSELF
INTO A SMALL BOAT TO COME ABOARD

Officer, and are passed on to the tenders by the Operations Officer. This arrangement has eliminated the possibility of conflicting orders to the Commanding Officers of the vessels. With regard to relationships between the department and various other District activities, there was no particular connection with Coastal Pickets, the Port Secruity, Beach Patrol, or Air Sea Rescue, and little with Convoy Escort and the Transportation Service except in the establishment of the MACRI route buoys and the dissemination of hydrographic material. Liaison is maintained with the Merchant Marine Inspection Service in the determination of responsibility for damages to aids caused by the collision of vessels with floating aids.

COOPERATION WITH THE ARMY AND NAVY

The Aids to Navigation Department has also maintained close relationships with the Army, Navy, and other governmental agencies. Requests received from both Army and Naval authorities for the establishment of specific aids were acted upon as swiftly as possible. Cooperation with the Army has consisted mainly of establishing and maintaining dredged channel buoys and buoys marking restricted areas used for firing at floating targets. Cooperation with the Navy has consisted principally of marking restricted anchorage areas, degaussing ranges and swept channels entering Delaware Bay. Close contact has been maintained with the Delaware River Pilots Association, and the members of this Association are frequently consulted with regard to the necessity for aids to facilitate and expedite movements of ships.

COOPERATION WITH THE PILOTS ASSOCIATION AND OTHERS

Merchant vessels, the Pilots Association, and other interested parties, are morally obligated to notify the Coast Guard of any discrepancies in the aids system. The merchantmen are reminded of this by instructions and explanations in the Light List. The Pilots Association, having a vital service to sell to merchant vessels which is dependent on the aids, are prompt in notifying the Coast Guard of any discrepancies and come forward from time to time with suggestions which improve the system. Other interested parties, such as small boat owners, fishermen, and shell fisheries operators are all quite prompt in asking for new establishments, primarily, and are prompt in reporting outages when they concern the smaller aids. On these reports is based a good deal of the work assigned the tenders. Each tender is bound by Coast Guard regulations to check the position and operation of all aids they pass each time they pass. In that manner a close check is kept by Coast Guard craft who handle the aids, etc.

IN CONCLUSION

The outstanding failure in the operation of the Department, was the fact that proper records for individual aids were not kept during the time the Department was supervised by the District Engineer. This lack of records resulted from incomplete historical records on the aids and no close system of checking on the reports from buoy tenders. This may have been due to inexperienced personnel and lack of time on the part of the District Engineer to instruct personnel assigned to the work. However, considerable difficulty was experienced in procuring records of the prewar activities of this department, and much material which might be of interest in showing organizational and operational developments was apparently unobtainable. The creation of a separate and well staffed Aids to Navigation Department overcame this difficulty. The trouble which can be causedby incomplete records on aids was illustrated when the SS CAROLINIAN grounded on a rock ledge at the lower end of Chester Range on 30 June, 1943. The Master charged that a buoy was out of position and no notice had been given to shipping interests. The records of the buoy were found to be in error because of the lack of close checking, and the Government was faced with a suit for considerable damages. Future developments expected in the Aids to Navigation Department are the discontinuance of the Racon Station at Cape May, the return of the Willow Grove Racon Station to the Navy, and the continued operation of the Coast Guard manned Racon Station at Lakehurst; gradual increases in aids to navigation in accordance with the demands of maritime interests throughout the District; a gradual change of light characteristics to conform with Headquarters' standards; continued experiments with new products to determine their adaptability to aids to navigation. Observations will be continued on an experimental radiobeacon buoy to determine its usefulness as an unattended aid.

FIFTH NAVAL DISTRICT
(NORFOLK)

In addition to its routine duties of maintaining all marine aids to navigation of the district and performing icebreaking duties in the upper Chesapeake Bay area during winter months, the Aids to Navigation section had many other duties to perform incident to World War II. In general these duties embraced establishment, maintenance, and discontinuance of special aids to navigation requested by the Navy Department and made necessary by the war.

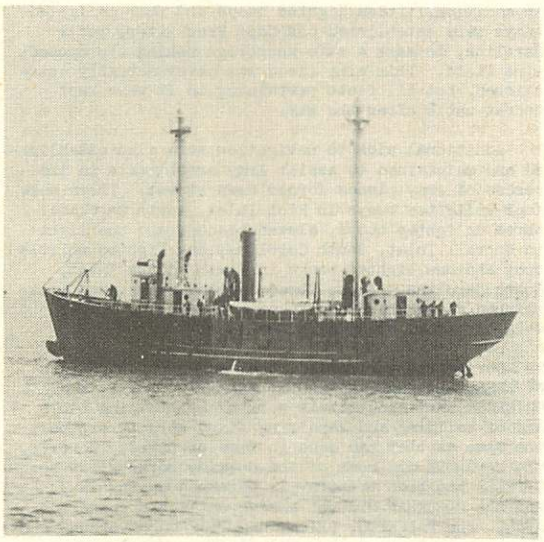
Under this heading came the establishment of buoys which marked the two sets of MACRI routes used for the purpose of guiding fast and slow types of shipping along the coast during and after the period of submarine menace. Likewise, the Aids to Navigation section had the responsibility for the establishment of Chesapeake mine-swept channel buoyage and many special Army and Navy target buoys and lights. Also, it was necessary to mark the wrecks of many ships which were sunk by enemy submarine activity off the coast. Many of these wrecks were located by Coast Guard tenders themselves and then buoyed appropriately to warn shipping away from these sunken hazards to navigation. In this connection, too, might be mentioned the buoyage established by the CGC ORCHID, by reference to which the mine field between Cape Hatteras and Ocracoke Inlet was laid.

When enemy sinkings of tankers became excessive, it was necessary for vessels carrying petroleum and its derivatives to be routed through the Intercoastal Waterway for safety. Many additional aids to navigation were established in that waterway to assist the navigation of those vessels.

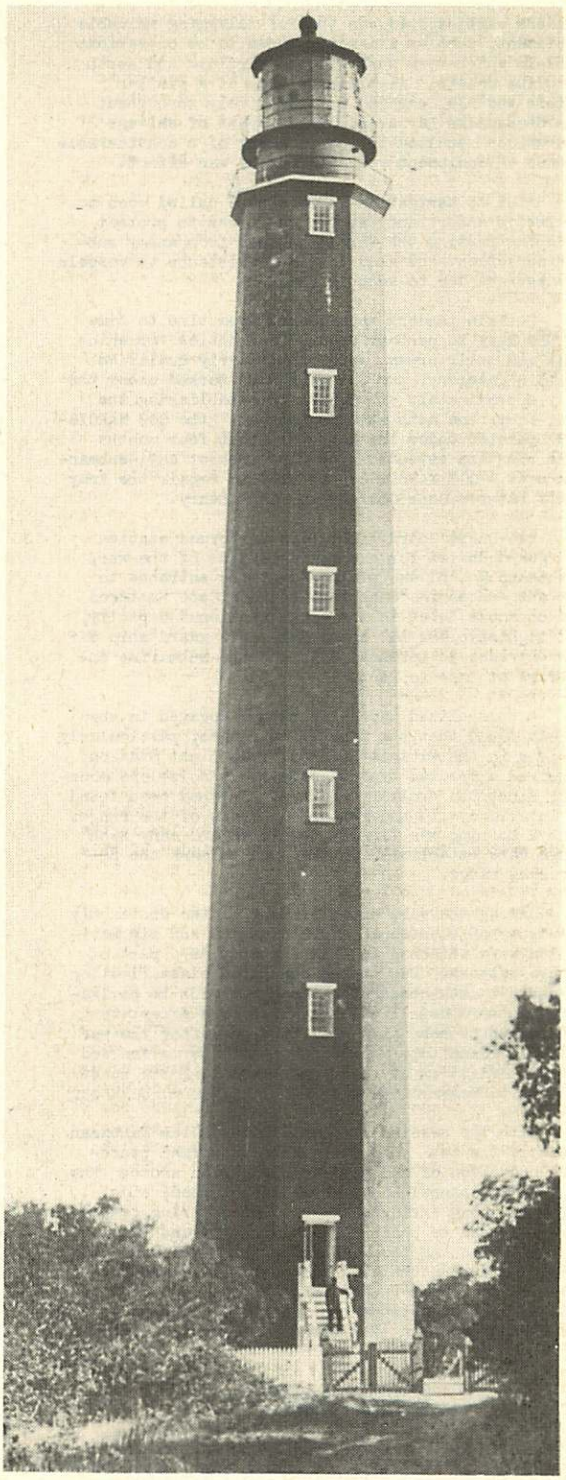
It was necessary to rearrange buoyage of the main channel of upper Chesapeake Bay so that transit shipping between Baltimore and the sea would pass safely outside of the amphibious training areas, particularly in the vicinity of the Cove Point-Patuxent River sector.

Due to the establishment of a firing range in Chesapeake Bay area, where Navy vessels of all classifications held firing exercises and were calibrated, it became necessary for tenders from the Aids to Navigation section to establish six additional lighted buoys in the area. Also, to facilitate the operation of large naval aircraft in the Patuxent River adjacent to the Patuxent Naval Air Station, five buoys were changed from unlighted to lighted types.

Another type of work in which Aids to Navigation



FRYING PAN SHOALS LIGHTSHIP



CAPE ROMAIN LIGHTHOUSE, SOUTH CAROLINA
CAPE ROMAIN LIGHTHOUSE, ON THE SOUTH CAROLINA COAST, JUST NORTH OF CHARLESTON

tenders participated was that of salvaging valuable equipment, such as armament, known to be on various vessels which were sunk off the Virginia and North Carolina coasts. Airplane salvage of a similar nature was also engaged in extensively throughout the Chesapeake Bay area. These types of salvage operations resulted in the recovery of a considerable amount of equipment valuable to the war effort.

Aids to Navigation tenders were called upon to assist in escort duty at various times to protect shipping passing the Virginia Capes from enemy submarine action, and also to give assistance to vessels in distress due to such action.

Certain tenders were loaned from time to time to the Navy to perform specialized duties for which they and their crews were particularly qualified. In this category, the CGC HYDRANGEA worked under the Navy approximately six months in establishing the anti-submarine nets at Cape Lookout. the CGC NARCISSUS operated under the Navy for about four months repairing and extending the Cape Lookout anti-submarine nets. CGC NARCISSUS was used to repair the Army cable between Cape Charles and Cape Henry.

Two Coast Guard lightships performed station and guard duties for extensive periods of the war. Lightship No. 81 was stationed at the entrance to the anti-submarine anchorage between Cape Hatteras and Ocracoke Inlet in the above mentioned capacity, and Lightship No. 107 stood duty as a guard ship off the entrance to Morehead City and the submarine anchorage at Cape Lookout.

A specialized type of work was engaged in when it was found that the degaussing ranges, particularly the one in the vicinity of Wolf Trap Light Station, required a special type of relatively noiseless mooring, since the ordinary chain mooring had been found to interfere with underwater apparatus of the range. Such a mooring was finally developed and many such buoys were established in the area to mark the degaussing range.

During the war, establishment of two distinctly new types of electronic aids to marine and air navigation were effected in this district as a part of a huge network. Due to the continued classification of certain data concerning these new aids to navigation, no more detail will be given here except to mention that these aids will continue after the war and will constitute a great boon both to marine and to air navigation over large areas along the coast and far to seaward. (THIS REFERS TO LORAN & RACON-ED.)

With the ceasing of hostilities in the European theater, the task of reconversion to normal peacetime operation of all aids to navigation arose. The mine-swept channel buoys were discontinued; aids which had been extinguished or dimmed during the war were restored to their normal intensity and the work of reestablishing the lightships which had been discontimued during the Atlantic hostilities was put under way. This work has largely been completed and with certain exceptions the Aids to Navigation section was rapidly assuming its standard peacetime schedule.

SIXTH NAVAL DISTRICT
(CHARLESTON)

During the war years 1939-1945, all regular peacetime Aids to Navigation in the Sixth Naval District were operated and maintained except for the removal of FRYING PAN SHOALS LIGHTSHIP off the coast of North Carolina, which was replaced by a 9-38-W lighted whistle buoy. SAVANNAH LIGHTSHIP and ST. JOHNS LIGHTSHIP off Savannah and St. Johns River remained on station throughout the war without interference by the enemy. Some curtailment in aids to navigation, however, was made by reducing the candlepower of lights on seventeen lighted buoys and thirty-six fixed lights, extinguishing the lights on forty fixed structures and replacing six lighted buoys with unlighted buoys.

In addition to the maintenance of the regular aids, there were established in 1942 at the request of the Navy six lighted buoys and two unlighted buoys to mark the MACRI routes for the safer passage of naval and merchant shipping through coastal waters open to attack by enemy submarines.

Also, in 1942 and in 1943 the District established seven special lighted buoys to mark swept channels off Cape Fear River, North Carolina, Charleston Harbor, South Carolina, Savennah Harbor, Georgia, and off St. Johns River, Florida; and four unlighted buoys were established off St. Johns River, Florida, to mark a restricted practice bombing area. In 1942, in addition, fifteen lighted buoys and four unlighted buoys were established off Cape Fear River, North Carolina, to mark a safe anchorage behind a proposed mine field. This mine field was never actually established, but all facts pertaining to it were kept secret until after the war.

Additional aids to navigation were also established and maintained to assist Army crash boats in the rescue of Army planes forced down at sea. There were four unlighted buoys in Rich Inlet, North Carolina; three unlighted buoys, eleven beacons and one light in Norrall Inlet, South Carolina; one lighted whistle buoy and one lighted range in North Edisto Inlet, South Carolina. Also, three lighted buoys were established along the coast to mark the wrecks of vessels torpedoed by enemy submarines.

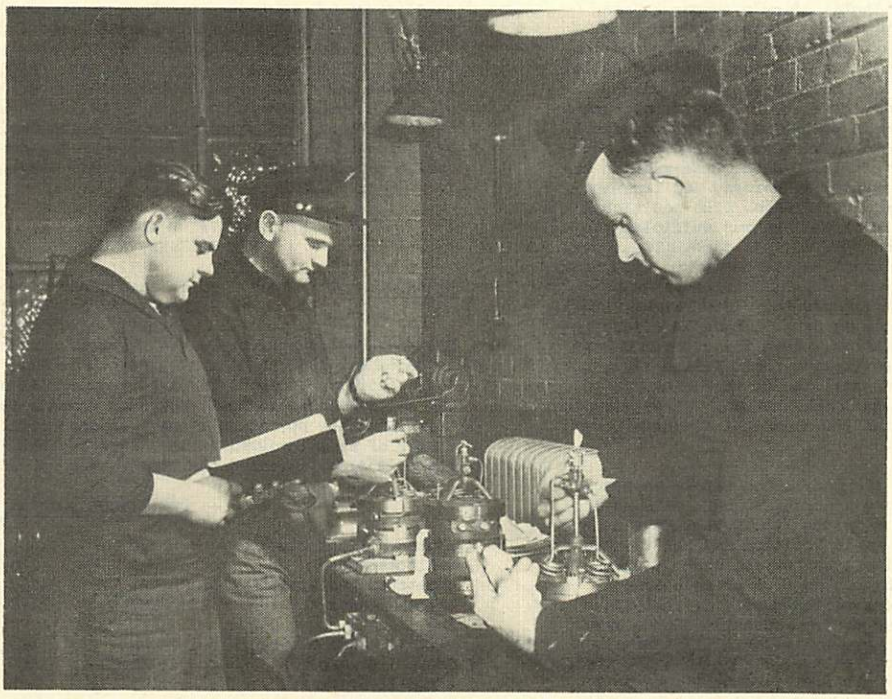
During the war period, the tender class cutters CYPRESS, BLACKHAW, MANGROVE, PALMETTO, BRIER, and PRIMROSE went about their work of maintaining buoys and of building and repairing fixed structures about the same as they had done in time of peace. However, the MANGROVE did most of the outside work, since the CYPRESS had been temporarily detached during 1942, and the BLACKHAW did not arrive until the summer of 1944. The PALMETTO, BRIER, and PRIMROSE confined themselves almost exclusively to inland waterways. The seagoing tenders CYPRESS, BLACKHAW, and MANGROVE were armed after a time with three inch fifty caliber general purpose guns and twenty millimeter and fifty caliber machine guns as well as depth charges for combating submarines. The small tenders, PALMETTO, BRIER, and PRIMROSE were armed with rifles and pistols only.

In 1944 five lighted buoys and four lights were ANRAC controlled for blackout purposes, and in 1944 the first Loran and Racon Stations were established in the Sixth Naval District. A "Double Master" Loran station with a Loran training unit was set up at Folly Beach, South Carolina; Racon stations were constructed at Folly Beach, South Carolina; Glynco, Georgia; and Jacksonville Naval Air Station at Jacksonville, Florida. ANRAC was discontinued in December 1944; Loran and Racon are to continue indefinitely.

Few personnel for operating aids to navigation were acquired during the war. A few additional men were assigned to tenders to man and to maintain the guns and those specially trained men to man the Loran and Racon stations.

Generally speaking, no difficulties directly due to war were encountered in maintaining aids to

AMERICAN SHOAL LIGHTHOUSE
ONE OF THE OFFSHORE LIGHTHOUSES MARKING THE PASSAGE
THROUGH THE STRAITS OF FLORIDA, AMERICAN SHOAL LIGHTHOUSE
STANDS ON A REEF ABOUT FIVE MILES FROM SHORE BUT CLOSE TO THE TRACK OF VESSELS



THE STUDENTS IN THIS CLASS AT THE COAST GUARD'S AIDS TO NAVIGATION SCHOOL,
DETROIT, MICHIGAN, WHO HAVE LEARNED THAT SAFETY IS THE FIRST RULE OF THE SEA
ARE NOW STUDYING, BY ACTUAL TEST, THE SECRETS OF THE ACETYLENE-FED BUOYS

navigation in the Sixth Naval District. Some inconvenience, however, was caused by the sinking of nine lighted buoys and the damaging of several others by gunfire. Sufficient evidence to convict was never obtained in these cases, but it is the general opinion that most of this damage was caused by American Army and Navy student aviators using the buoys for targets of machine gunfire.

SEVENTH NAVAL DISTRICT
(MIAMI)

The Jacksonville District at the beginning of 1939 had the longest coastline of any in the United States. The Aids to Navigation Officer, attached to the staff of the District Commander was charged with the installation and maintenance of Aids to Navigation as directed by the policies and orders of the District Commander and the Commandant, Coast Guard. As is always the case in peacetime, funds were never plentiful and material had to be conserved. In 1939 the principal Aids to Navigation duties were the maintenance of existing aids and there was only very modest expansion in 1940. With the greater emphasis on National Defense in 1941, increases in personnel and material for this duty became available. During this period the facilities available for Aids to Navigation work were the seagoing tender JUNIPER; three 80-foot class tenders, POINCIANA, ALTHEA and BIRCH; and the Buoy Depots at Key West and Charleston. Total personnel in these activities numbered about 125 officers and men.

When the Coast Guard was transferred to the Navy and war was declared, the tasks of the Aids to Navigation units increased tremendously. There was not only the maintenance of existing aids, but the task of planning and the installation of numerous new aids in the vicinity of Naval Bases, around mine fields, along convoy routes, in new mooring and convoy formation areas. As a sideline, the Navy called on the tenders to plant mooring buoys for planes, small vessels and destroyer anchorages, as well as for examination vessels at the major ports of Tampa, Key West, Miami and Port Everglades. Key West, during 1942, expanded to a large Naval Base with an extensive mine field, convoy anchorage, and training center for anti-submarine warfare. The additional aids required in this area alone was sufficient to keep several tenders employed full time. The convoy routes close to the coast had to be marked with heavy sea buoys. The Navy was establishing advance bases at Walker Cay in the Bahamas and Grand Cayman, B.W.I., Le Fe and Cayo Francis in Cuba. These locations required Aids to Navigation. When the submarine warfare descended on the Florida coast during 1942, the wrecks of torpedoed vessels which were a menace to navigation had to be suitably marked. These were the tasks which confronted the all-too-inadequate Coast Guard facilities.

In April 1942, the Charleston Depot was placed under the jurisdiction of the DCGO 6ND. The need for additional Depots in the 7th ND was apparent and plans were made for their location and construction. The Depot at Fort Pierce was established in July 1942, on a small dock rented from private owners. Later plans for a more suitable site at that place had to be changed due to the expansion of the Naval Amphibious Training Base so the original site was maintained throughout the war. In April 1943, the St. Petersburg Depot was finally established as a separate unit at the former Naval Section Base leaving the temporary facilities near the Air Stations. A small Depot was established at Carrabelle on the northwest coast of Florida. The Miami Depot, construction of which was interrupted by the war, was finally in such shape by March 1943, as to be usable for buoy storage.

It was not until September 1942, that additional tenders became available for duty in the District. The MISTLETOE reported for duty followed later by the REDBUD and MADRONA (new 180 foot class), and three of smaller classes, the COSMOS, FORWARD and MICAWBER. These brought the total number of tenders up to nine.

Throughout the war, Aids to Navigation activities remained, within the District, under the direct control of the DCGO. The Naval District Commander then presented all plans and requests for the aids to the DCGO for accomplishment. In September 1943, when the Section Organization was placed in effect, the Section Commanders were made responsible for minor maintenance within their Sections, but the control of the tenders and the Depots, planning buoyage and lights, and final action on requests for changes remained with the DCGO.

A new system of Aids to Navigation was developed early in the war, Loran and Racon, and the Navy Department assigned to the Coast Guard the task of installing, maintenance and operation of the stations. The Navy installed some of the first stations in the Seventh District but the Coast Guard constructed the latter stations. Quite properly this new system, being an Aid to Navigation, came under the cognizance of the Aids to Navigation officer. The Navy Department assigned this new responsibility to the Coast Guard in October, 1944. At that time the Navy operated Racon Stations at the following locations; Grand Cayman, B.W.I, San Julain, Cuba and Richmond Naval Air Station, Banana River Naval Air Station, Key West Naval Air Station and Boca Chica in Florida. Between January and June, 1945, Coast Guard relieved the Nab Naval personnel at these stations. An installation was placed in operation at the Coast Guard Air Station, St. Petersburg in January 1945. Later, in August 1945, this Racon installation was relocated at Egmont Key. The Loran Station at Hobe Sound was placed in operation in June 1945. All of these stations operated continuously for the remainder of the war, until the end of hostilities when the demobilization necessitated a reduction in this program.

EIGHTH NAVAL DISTRICT
(NEW ORLEANS)

BLACKOUTS — In accordance with Headquarters' letter of 26 October, 1940, to all District Commanders, there was prepared and submitted in December, 1940, a plan of blackout details classified according to areas involved and degrees of blackout for readiness to meet emergency demands for interrupting the operation of navigational aids. The number of aids involved at that time is shown below. There is also indicated the number as of 30 June, 1945.

	Dec. 1940	30 June, 1945
Attended Light Stations	30	23
Radiobeacons	9	10
Unwatched and Minor Lights	827	1137
Lighted Buoys	107	158
Fog Signals (incl. sound buoys)	64	76
Group I Bridges	124	145
Broup II Bridges	103	67
Reflectors (on daybeacons and buoys)	188	518
Totals	1452	2134

ARANSAS PASS LIGHT STATION, PORT ARANSAS, TEXAS

SABINE PASS LIGHT, TEXAS

The system of blackouts as first adopted was never used, being found impractical because of the length of time required to carry it out, and was superseded by a new one shortly after the attack on Pearl Harbor. The time and effort spent in drafting the original system was not considered as lost, and it is believed that the work put into the original system was of value in that it facilitated the working out in many respects of the system as finally adopted.

On 13 December, 1941, after an extended conference with staff representatives of the Commandant, Eighth Naval District, it was found necessary to revise the District's blackout plan of December, 1940, and the following general policy was recommended and approved:

(a) Following aids to be extinguished for the duration: All off-shore unwatched lighted aids to navigation which it would be impossible to blackout in time of rough seas; all aids the blacking out of which could not be accomplished within one hour's notice; minor lights and lighted buoys marking channels or waterways used exclusively for recreational navigation of pleasure craft and minor channels or waterways of small commercial importance not connected directly with the National Defense program. These last, in general, included channels under 20-foot depth.

(b) Certain lighted aids to be dimmed for the duration by raising the source of light above the focal plane of the lens, by decreasing the size of the burner or lamp, and, if necessary, in the case of white lights, by changing the color of the light. These aids included those marking the Intracoastal Waterway and such entrances and channels through which it was considered that night navigation was essential to National Defense.

(c) All watched aids, the blacking out of which could not be accomplished within one hour's notice, to be extinguished for the duration of the war or until otherwise directed.

(d) The operation of sound signals on buoys will not be interrupted at any time, nor will reflectors on buoys and daybeacons be shielded or removed, as they are not considered an aid to enemy aircraft.

(e) Lights on bridges crossing the more important waterways will be blacked out by Army personnel, Civilian Defense personnel and Coast Guard or by owner upon notification by such personnel. Lights on bridges crossing less important waterways, and on bridges far inland, the blacking out of which could not be effected upon short notice, will be extinguished for the duration.

(f) This plan is being worked out with other Government departments, pilots, etc.

In its simplified form, the plan comprised (1) a list of aids to be blacked out on notice, (2) a list of aids extinguished for the duration, and (3) a list of aids dimmed for the duration. The execution of (1) was delegated by areas to the various Captains of the Port. No further execution of (2) and (3) was necessary once they had been extinguished and dimmed, respectively.

Participation was had in various practice blackouts along the coast. The radiobeacons at South Pass and Southwest Pass were temporarily silenced at various times upon instructions of the Navy.

The plan was modified from time to time. Numerous aids which had been dimmed or extinguished were restored to operation at full intensity but shielded to lessen visibility aloft. The system was gradually relaxed until all aids were restored to normal operation shortly after the termination of the war in Europe.

The blackout system was perhaps a little drastic, but it must be remembered that each step in its execution was based on factors which influenced the decisions of those responsible at the time each step was taken and in the light of experience gained as the war progressed. Let us assume that the system had been made less drastic at the outset and that, for example, aids in the vicinity of Ship Shoal had been left in operation. If such had been the case, it would not have been surprising for some persons to have attributed the numerous sinkings in the Gulf by enemy torpedoes to the aids in that they offered the enemy submarines certain advantages, which would have created serious criticism of the Coast Guard. As a matter of fact, there were no aids in operation to offer such advantages in the areas in which most of the sinkings took place. On the other hand, there were Masters who expressed the opinion that the blackout of certain coastal aids made navigation very difficult. In the light of what actually took place in the 8th District, it is believed that the blackout system entailed a large amount of work on the part of office and field personnel which could have been used to better advantage. This work was occasioned by the fact that the same detailed attention was given to numerous minor aids as was given to major light stations. Practically all minor aids and buoys could have been left operating and the system confined only to the major light stations.

ESTABLISHMENT OF AIDS FOR THE ARMY AND NAVY

(a) Although no Coast Guard aids were established to mark swept channels in this district, 80 buoys of different types including moorings and appendages were procured at the request of the Navy and earmarked for possible use in this connection. Some of this buoyage was released in 1944 for more urgent Navy use elsewhere.

(b) 118 aids were established to mark channels leading to military installations, as follows:

Shoal Bayou Channel Light 1 and Daybeacons (4)- Tyndall Field, Fla.

Grand Lagoon Light 1, Fla. - Harbor Defenses of Panama City, U. S. Army.

Pearl Bayou Lights 2 and 3, Fla. - Crash boat anchorage, U. S. Army.

Section Base Channel Lights 1 and 5, Fla. - Navy Section Base, Panama City.

Section Base Channel Daybeacons (6), Fla. - Navy Section Base, Panama City.

Hollingers Island Channel Lights (11), Ala.- Ammunition Depot, U. S. Army.

Hollingers Island Channel Daybeacons (9), Ala. - Ammunition Depot, U. S. Army.

Ocean Springs Boat Harbor Channel Daybeacon 2 and Light 4, Miss. - Gulfport Army Air Field

Cat Island Light 1 and Range Lights, Miss. - Cat Island War Dog Reception and Training Center, Gulfport.

Cat Island Buoys (5), Miss. Cat Island War Dog Reception and Training Center, Gulfport.

Ferry Channel Jetty Light 1, Tex. - Foster Field, U. S. Army, Victoria, Tex.

Ferry Channel Lights (8) and Daybeacons (22), Espiritu Santo Bay, Tex. - Foster Field, U. S. Army, Victoria, Tex.

Encinal Channel Lights (13), Tex. - Naval Air Station, Corpus Christi, Tex.

Encinal Channel Daybeacons (28) - Naval Air Station, Corpus Christi, Tex.

(c) The following 24 aids were established throughout the district to mark degaussing ranges:

Mobile Bay Entrance, Ala.

Cable Area Lighted Buoys 15 and 16A (2)
Cable Area Buoys A and B (2).

Mississippi River below New Orleans, La.

Cable Area South Range Front and Rear Lights (2).
Cable Area North Range Front and Rear Lights (2).
Cable Area West Light (1).

Sabine Pass, Tex.

Sabine Cable Area North Range Front and Rear Daybeacons (2).
Sabine Cable Area South Range Front and Rear Daybeacons (2).
Sabine Cable Area East Beacon (1).

Galveston Entrance and Bay, Tex:

Galveston Cable Area West Range Front and Rear Lights (2).
Galveston Cable Area East Range Front and Rear Lights (2).
Galveston Cable Area South Light (1).
Cable Area Buoys A and B (2).
Cable Area Lighted Buoy 6A (1).
Cable Area Range Front and Rear Lights (2).

(d) The following 37 aids were established to mark restricted areas for military purposes:

Restricted Area Whistle Buoys I and V; Restricted Area Bell Buoys B and Z; Restricted Area Buoys G, K, N, O, R, X, AA and BB, Texas coast (12).

Restricted Area Buoys 1, 2, 3, and 4, northwesterly of Southwest Pass, Louisiana coast (4).

Restricted Area Lighted Buoys 17, 21 and 23, Pensacola Bay, Fla. (3).

Cat Island North Lighted Buoy 1, Cat Island East Buoys 1, 3 and 5, Mississippi Sound, Miss. (4).

Lake Borgne Danger Area Buoys 1, 2, 3, 5, 7 and 9, La. (6).

Restricted Area Buoys 1, 2, 3, and 4, off Horn Island, Mississippi coast. (4).

Restricted Area Buoys 6 and 8, Mississippi Sound, Miss. (2).

Restricted Area Daybeacons 5 and 7, Mississippi Sound, Miss. (2)

(e) The following 20 aids were established in connection with Army and Navy operations as indicated:

One-Hundred Fathom Lighted Whistle Buoy 2 - Eglin Field, Fla. (proving range)

Target Lighted Whistle Buoys 2, 2A and 4 - Eglin Field, Fla. (proving range)

Mooring Buoys A and B - Eglin Field, Fla. (proving range)

Mooring Buoy, St. Andrew Bay, Fla. - Navy Amphibious Training Command, Panama City, Fla.

Galveston Jetty Radio Calibrating Station, Tex. - Navy, Industrial Manager, 8th ND, Galveston

Reciprocal Bearing Station, Sand Island Light Station, Ala. - Navy, Industrial Manager, 8th ND.

Reciprocal Bearing Station, Galveston Jetty Light Station, Tex. - Navy, Industrial Manager, 8th ND.

Explosive Anchorage One Light, Mississippi River, La. - DCGO 8th ND.

Explosive Anchorage Two Light, Mississippi River, La. - DCGO 8th ND.

Explosive Anchorage Three Light, Mississippi River, La. - DCGO 8th ND.

Lighted Mooring Buoy, Mississippi River, La. - Navy, RMO 8th ND, for BuSHIPS.

Old Harbor Island Mooring Buoy A, Chandeleur Sound, La. - Gulfport Army Air Field, Miss.

Bolivar Peninsula Obstruction Buoys 2 and 4, Tex.- Navy Amphibious Training Base, Galveston.

Trial Course Buoys (3), Lake Pontchartrain, La. - Navy, BuSHIPS.

The establishment of One-Hundred Fathom Lighted Whistle Buoy 2 in 100 fathoms of water was accomplished using a 9x38-W buoy. A first class nun buoy was used for a suspension buoy to support the mooring chain. Two of this type were lost during storms, presumably sunk. It is believed that for depths of this kind a buoy of greater diameter designed to support its own weight and appendages without resorting to suspension buoys and kept within tenders' capacity to handle, would have proven better and would not have been lost.

MARKING OF ENLARGED INTRACOASTAL WATERWAY

The tremendous movement of oil along the Gulf Intracoastal Waterway, which developed during the war, necessitated the deepening and widening of the waterway from 10 feet by 100 feet to 12 feet by 125 feet, including realignment of certain sections. This brought about the need for additional aids to mark stretches dredged through bays and other open waters which previously had no need for marking because the natural depths were sufficient. Certain other sections were realigned which also required new aids. The various projects covering the establishment of new aids totaled about $358,000 and comprised the following:

146	Minor lights
9	Lighted buoys
1068	Unlighted buoys
23	Daybeacons
1246	Total

CAPE SAN JUAN LIGHT HOUSE, PUERTO RICO

PUERTO RICO LIGHT

The work of dredging was speeded up by the U.S. Engineers, which, in turn, necessitated a speed-up in the work of construction of aids to mark the various sections of the waterway as the work of dredging was accomplished. Work was done both by contract and by district tenders. There was set up at the Mobile Depot an efficient organization which went into quantity production of spar buoys, irons, shackles and concrete sinkers therefor, also prefabrication of various parts for fixed light structures which were standardized as much as possible, making the work of the tenders and contractors fairly simple and assuring the completion of all such work without any inconveniences to shipping.

COASTAL LOOKOUT AND MINE-FINDING STATIONS

As lighthouse towers lent themselves readily for use as coastal lookout and mine-finding stations, most of the light stations were used for the establishment of these additional facilities shortly after the outbreak of war in December, 1941. The need for housing facilities to accomodate the additional personnel assigned for these purposes was met by either altering or enlarging the then existing dwellings or by the erection of additional dwellings. Peloruses were installed on lantern galleries of various lighthouse towers to assist in locating objects in connection with the mine-finding phase of the work.

HYDROGRAPHIC INFORMATION

During February, 1942, it became necessary to arrive at a definite decision as to publication of the local Notice to Mariners and a policy for the issuance of same. The District Coast Guard Intelligence Office was furnished with a list showing all addressees on the district's mailing list for local Notice to Mariners, which were investigated with a view to eliminating such names as were found advisable in the interest of national security. The following policy was adopted with the approval of the Commandant. 8th ND, for the issuance of local Notice to Mariners and data prepared on form 2543 for weekly Notice to Mariners:

(a) Information concerning coastal aids, radiobeacons, major fog signals, off-shore buoys and sea buoys marking important entrances to be submitted to the Commandant, 8th Naval District, for approval before release. When practicable and in order to avoid delay, the approval is to be secured by telephone. In this connection, the Commandant, 8th Naval District, designated the Port Director as the officer authorized to give such approval. Frequent contact was had with the Port Director by telephone and no delays were experienced.

(b) Information concerning aids marking channels and inland waters to be released by the Senior Coast Guard Officer without reference to the Commandant, 8th Naval District, unless in the opinion of the SCGO the information is such as should be submitted for release by COMEIGHT.

(c) Copies of all local Notice to Mariners to be furnished to the Commandant, 8th Naval District, Port Directors, Naval Section Bases and Harbor Entrance Control Posts.

MARKING OF WRECKS

Numerous sinkings in the Gulf of Mexico by enemy torpedoes created menaces to shipping, and it became necessary to mark the wrecks in most cases with lighted buoys. Most locations were approximate, which necessitated search by the tenders assigned and determination of positions. Locations, soundings and other pertinent information obtained by the tenders were furnished to the Navy, which information later assisted in the disposal of the wrecks, which was accomplished by removal or blasting down to depths no longer considered dangerous to shipping.

AIDS TO NAVIGATION, GENERAL

A considerable increase in the number of aids to navigation took place in the 8th District during the war. There were about 2,500 aids in December, 1941, whereas on 30 June, 1945, there were about 4,000, or an increase of about 60%. It is desired to point out that the increase in the number of aids throughout the Service as a whole from 1941 to 1945 was only 13%. The aids to navigation section was charged with the inception or initiation as well as the preparation of numerous projects.

TENTH NAVAL DISTRICT (SAN JUAN)

GEOGRAPHICAL FEATURES AND SIZE OF THE TENTH COAST GUARD DISTRICT

The Tenth Coast Guard District, extending over an extremely wide area, the perimeter of which exceeds 4000 nautical miles, gives claim to being the largest in size, of the entire United States Coast Guard. It's operating areas include the waters of the Atlantic Ocean and Caribbean Sea, South of a line beginning at latitude 18 degrees-05' N, longitude 87 degrees-45' W, and running to a point in latitude 18 degrees-05' N, longitude 80 degrees-27'W, thence to a point where longitude 77 degrees-05' W, intersects the North coast of Cuba, thence to a point where latitude is 23 degrees-35' N, longitude 77 degrees-00' W, thence to a point in latitude 25 degrees-00' W, and thence to 90' T. Within it's bounds, amidst tropical beauty, snow capped peaks, jungles, wealth, filth, and extreme poverty, the languages and dialects of many nationalties are spoken. The native French tongue of Haiti, Martinique and French Guiana, the Spanish of Puerto Rico, Dominican republic, Cuba and Panama, the Dutch of Curacao and Saba Island, the Danish and English of old St. Thomas, along with the British accents of St. Lucia, Trinidad, Antigua, and British Guiana, all lend an interesting and varied aspect to the lingual atmosphere of the district.

COAST LINE AND OTHER FEATURES

A coastline, as generally defined, does not exist in the 10th Coast Guard District. In reality the coastline consists of the boundaries of the many islands and with the portions of Panama and South America that constitute the Southern and South Western extremities of the District. The numerous islands throughout the area present within themselves problems completely foreign to many other districts of the service. The great distances of outlying units from District Headquarters in San Juan, Puerto Rico, coupled with a critical transportation situation at times has been the source of many major problems in logistics and supply. The district includes, among others, the entire Island of Puerto Rico with its outlying Islands of Vieques and Culebra. Eighty miles to the east of San Juan is St. Thomas, Virgin Islands. It was here at Charlotte Amalie, the only city of the Island and seat of the government, with it's white beaches, towering mountains and healthful climate, that the Coast Guard situated its Captain of the Port Office for the Virgin Islands, and later, the Coast Guard mooring base, which will be dealt with later in this history. Extending 200 miles on, East-South-East of St. Thomas, past the strikingly green mountainous Islands of Saba, St. Eustacia, St.

Kitts and Nevis, which dot the horizon in their protrusion from the sea, lies the British Colonial Island of Antigua, acquired as a military base by the United States through the 99 year lease negotiations with England. Antigua became the site for the establishment of a Radiobeacon Station by the Coast Guard in 1943. The location of the beacon within the limits of the Naval Air Station, Antigua, facilitated Naval Aid in problems which otherwise at times might have proven critical due to its isolation and great distance from San Juan.

Antigua, rich in its background of legend and historical lore of the old British Battle Fleet during the days of the sailing vessels, is an Island of immense interest to historians. It was there that the forts and docks of the famous British Admiral Nelson were constructed. Still standing today, only a few miles distance from the Coast Guard Radio Beacon, are Nelson's Dock Yards, his old barracks and quarters, with baking ovens and time worn equipment still intact. The old guns, that rest in their rusty ancient mounts atop the crumbling Forts, still point menacingly toward the sea. The hidden tunnels, designed to permit hasty passage of troops from the upper levels of the mountain top fortresses down into the earth through subterranean channels to the beaches where Nelson's men met the enemy attest to the brilliancy of his planning and strategy.

Extending one hundred and ninety nautical miles almost directly south of Antigua, with its jagged mountain peaks, the old British Crown Colony of St. Lucia became the site for another Coast Guard Radio Beacon Station in 1943. In this instance, the Beacon, located on Pidgeon Island near the Naval Seaplane Base at Gros Islet, 7 miles north of Port Castries, has provided navigational aid to surface vessels plying the international trade routes to and from St. Lucia, B.W.I. With the cessation of hostilities and the reversion of the Gros Islet Naval Air Base to a caretaker status, the duties of upkeep and maintenance with regard to personnel were undertaken by Coast Guard officers and men. St. Lucia, not unlike Antigua also shares the many legends and historical stories of the now ancient wars. Along the western coast line of the island, approximately midway from either end, a small lagoon which extends inland with a very narrow opening to the sea is a source of one famous historical story. With England at war with France in the early part of the eighteenth century, the English fleet, under Nelson's command, anchored at Port Castries, St. Lucia and awaiting battle with the French Fleet which had taken refuge in near by Martinique, was destroyed completely by a hurricane with the exception of Nelson's flag ship. Upon learning of the English catastrophe the French immediately sailed to destroy the remainder of Nelson's fleet, but Nelson, not to be outdone, sailed the remaining flag ship through the small opening up into the lagoon and after placing a screen of palm trees across the narrow gap concealing himself from the French, watched the pride of France sail up and down the Island for days vainly seeking to destroy him. Later British reinforcements arrived from Jamaica and the French were defeated.

The location of the St. Lucia Radio Beacon, with regard to the steep incline of the terrain offshore position of Pidgeon Island, has, during the past, incurred difficulties in supply and transportation. The transfer of fuel oil up to the extremely steep summit from the mainland has constituted a constant hardship in efficient operation of the beacon. The construction of a narrow ramp extending from the beach upward with the use of a winch for hoisting was made in 1943. However, during the past years weather and jungle insects have been instrumental in its rapid deterioration to such an extent, that, at present, it is completely useless. Plans for the transfer of St. Lucia Radio Beacon from Pidgeon Island to the mainland have been promulgated and the change is expected to be carried out in the immediate future.

The leasing of sites for an American Base on the British Island of Trinidad in 1940 made possible the construction of the Coast Guard Radio Beacon Station at Chacachacare Island in 1943. The acceptance of the HF/DF Station from the Navy at Carlson Field, Trinidad, along with more explicit data in regard to the construction of the Radio Beacon will be dealt with later in this history. Trinidad, the most southerly Island of the West Indies situated off the Coast of Venezuela and 218 miles Southwest of St. Lucia, B.W.I., was destined to become one of the most important war time Naval and Army bases in the Caribbean Sea. In January 1944 Coast Guard personnel assigned to Trinidad activities consisted of 4 officers and 39 enlisted men. The personnel were used in part for manning two Coast Guard fireboats. Port of Spain, Trinidad, located to the extreme Northwest of the Island, along with Guantanamo Bay, Cuba, and San Juan, Puerto Rico, are the three major harbors of the Caribbean area. It is from these three focal points of shipping that ports and harbors of lesser importance extended during the years of World War II to form a ring of protection about the approaches to the Panama Canal.

AIDS TO NAVIGATION AND SHORE ESTABLISHMENTS EARLY HISTORY

The important functions of the maintenance of the Aids to Navigation in the West Indies waters of the United States including Puerto Rico Virgin Islands, Guantanamo Bay, Navassa Island, Caribbean Sea Islands, approaches to Panama Canal and Army-Navy Bases in the Caribbean Area, which were included in the 99 year lease with Great Britain, were first assumed by the 10th Coast Guard District on 1 July, 1939.

After termination of the war between the United States and Spain in 1898, the transfer of the Puerto Rican Lighthouse service to American jurisdiction was promulgated. By congressional action of April 12, 1900 (31, Statute 80) and Presidential Executive Order dated May 1, 1900, further jurisdiction of these same lights was given to the Lighthouse Board. The Board at that time, being appointed by the President, was attached to the Treasury Department. The Lighthouse Board thereupon temporarily attached the Puerto Rican Lighthouse Service to the Third District of United States Lighthouse Service with Headquarters offices in New York City. Immediately, thereafter a suboffice was established in San Juan, Puerto Rico. This arrangement was cumbersome and inconvenient due to the delay in transmission of correspondence and in the handling of Lighthouse affairs which required prompt action. The Secretary of the Treasury by letter to the Speaker of the House of Representatives dated March 4, 1902, proposed that the Treasury Department be authorized to create another Lighthouse District to embrace the Puerto Rico Lighthouse Service. In December, 1902, the suboffice was transferred from the U. S. Naval Station, San Juan, to the Custom House, and San Justo Bastion, or the Marina, at San Juan, was transferred from the War Department to the Treasury Department as a site for office space and quarters of the Lighthouse inspector.[1]

1. Due to the fact that the History of the 10th CGDD from the Coast Guard standpoint actually began in 1939, a background of the activities and functions is set forth in the first narrative for purpose of clarification.

A Congressional appropriation of $200,000 was made on March 4, 1907, for the construction of a tender, later named the "ORCHID", for use in the Puerto Rican Area. The appropriation being approved, the contract for construction was signed and the date for completion was to be in the early part of 1908. The "ORCHID" was a steel, schooner rigged, steamer of 900 tons displacement, 190 feet overall, 30 foot beam, 12 foot draft and a speed of 12½ knots, with two triple expansion engines giving a total of 1000 horsepower.

AIDS TO NAVIGATION EARLY CONSTRUCTION

The completion of Mona Island light house beacon was the first construction project undertaken with the change of governmental administration in the Puerto Rican area. Completed in 1900, the material for its erection had been assembled by the Spaniards prior to the war in 1898. In July, 1906, a temporary buoy shed had been completed in the San Juan Depot Grounds. By April 1907 the laying of waterpipe, construction of watchmen's quarters and all repairs had been completed. Also in 1906, plans and specifications for the construction of Cabras Island Lighthouse were preapred and proposals submitted to private contractors. Meanwhile, the 7th Lighthouse District, in 1906 and 1907, finished the erection of Fisherman Point Range Lights, Guantanamo, and repairs to Windward Point Light House. The materials for Windward Point Light had been delivered in 1906 to Guantanamo by the Tender "IVY" which, at the same time of delivery, had located the sites for the lights.

REORGANIZATION OF THE LIGHTHOUSE SERVICE

The Act of Congress, June 17, 1910, provided for a Lighthouse Bureau to be under the jurisdiction and control of the Department of Commerce and the Department of Labor. By Presidential Proclamation of January 26, 1912, (Page 6, Volume I) by section 4 of the Act to establish the Department of Commerce and Labor approved February 14, 1903, the Lighthouse Board, which had been previously attached to the Treasury Department had been transferred to the Department of Commerce and Labor, and by section 10 of the same act, all such powers relating to the Lighthouse Service were transferred from the Secretary of the Treasury to the Secretary of Commerce and Labor. In 1912, on July 27, the President approved the Act of Congress authorizing appropriate funds for expenditure to be incurred under the change.

SAN JUAN HARBOR LIGHTS 1912 - REARRANGEMENT OF

With the dreding of a 35 foot channel in the Harbor of San Juan the necessity of rearranging the system of buoys became eminent. In March 1912 steps were taken for this rearrangement throughout the entire harbor and channel entrance defining the limits of the newly dredged project. By November, 1913, Port San Juan Light had been converted from oil wick to I.O.V. The following conversions were made as listed below:

Point Jiguiro - Oil Wick to I.O.V. - August, 1913

Point Borinquen - Oil Wick to I.O.V. - July, 1913

Cape San Juan - Cape Rojo - Oil Wick to I.O.V. January, 1914

Muertos Island Light - Oil Wick to I.O.V. - March, 1916

Point Tuna - Oil Wick to I.O.V. April, 1914

NAVASSA ISLAND LIGHT APPROPRIATION MARCH 4, 1913

By an Act of Congress approved on March 4, 1913, an authorization of $125,000 was made for the construction of a light station in Navassa Island, West Indies. In September, 1914, preliminary plans for Navassa Island Light Station were finished and a concrete tower had been erected. In December, 1915, construction of the light had been commenced by contractors. July 9, 1916, Radio Apparatus on Navassa had been installed and found satisfactory in communications with Guantanama Bay, Cuba, and Jamaica. In 1917 Presidential Proclamation reserved Navassa Island for Lighthouse purposes. On October 21, 1917, Navassa Island Light Station was officially placed in commission. The light was 395 feet above sea level and its reported visibility was 26 miles in distance.

SPANISH LIGHTHOUSE PERSONNEL

Personnel of the former Spanish Lighthouse Service, who had served under the former regime as lighthouse keepers and in certain other minor capacities, were continued in the service as citizens of Puerto Rico. The principal aids to navigation which had been constructed by the Spaniards consisted of some 12 Lighthouses in the major promontories on the Island of Puerto Rico and adjacent smaller islands, which at the time were deemed adequate by that government for the volume and type of shipping that existed. The Aids to Navigation in Guantanamo Bay, Cuba, also were placed under the control of the Lighthouse Board by Presidential Executive Order 24 December, 1903, and were administered by the Third Lighthouse District until May 1, 1905, when they were then transferred to the 7th Lighthouse District with Headquarters in Florida.

AIDS TO NAVIGATION - EARLY VESSELS

During the first few years of operation of Aids to Navigation in Puerto Rico servicing was carried out by local sailing vessels, these being augmented afterwards by a lighthouse tender which was secured on a loan basis from the Continental United States for a few months each year. The first tender on record was the "PANSY", a steel screw steamer of 348 gross tons loaned by the Seventh Lighthouse District. The tender was thus employed until April 1907 in delivering supplies and oil, transferring keepers, caring for buoys and other cargo, demanded by the service. In April 1907, the vessel being no longer in operating condition, was towed to Portsmouth, Va., for repairs, arriving there in July, 1907. The vessel "PEORIA" was made available by the Navy Department as a replacement in the absence of the "PANSY", this was also a steel vessel of 487 tons displacement and she served efficiently in Puerto Rico waters during the disability of the latter named vessel.

During April, 1914, the tender "MYRTLE" was ordered from New York to Puerto Rico, while in May of the same year the Lighthouse Inspectors dwelling along with quarters for the assistant superintendent and Chief Clerk were completed at San Juan Lighthouse Depot. In July, 1914, the survey of Navassa Light had been completed. In May, 1914, the tender "IVY" left Puerto Rico for a new permanent station in the 5th Lighthouse District at Baltimore, Maryland. The tender "MYRTLE" was transferred from the Third Lighthouse District to San Juan, which had become the 9th Lighthouse District .

PROBLEMS OF LOGISTICS AND SUPPLY WITH RESPECT TO DISTANCE

Problems of supply and logistics, always affected to a great extent by distance and methods of transportation, have constituted,

at times, a handicap in the efficient operations of Radio Beacons, Light Stations, and other Units of the District. Prior to the assignment of Coast Guard aircraft to the 10th Coast Guard District during World War II, and the inauguration of a Naval Air Transport route throughout the Caribbean Area, the dependency placed upon travel by surface vessel over hundreds of miles of water, hampered greatly, adequate and prompt service to outlying activities. The assignment of a JRF type aircraft to the District with pilots and crew aided greatly in the alleviation of the transportation situation. However, at times, in the absence of the Coast Guard aircraft, radio electricians and electronics experts were forced to depend largely upon Naval Air Transport and Army Air Transport in arriving at various units for repair and maintenance.

Prior to the termination of hostilities and in the pre-war years before the expansion of commercial aviation within the bounds of the District, many Coast Guard units were practically inaccessible with regard to flight. This naturally incurred the loss of days in the use of slow surface vessels in reaching an objective. Though aviation has, to a great extent, remedied these problems, numerous Coast Guard activities located in positions unadapted to the use of aircraft, still must depend solely upon other means for transport of supply and repair.

The following distances of outlying units of the 10th Coast Guard District, as they are situated from the District Headquarters, San Juan, Puerto Rico, are listed in nautical miles:

Cape Mala Radio Beacon Station
San Juan District Headquarters - 1040 miles

Cristobal Mole Radio Beacon Station
San Juan District Headquarters - 970 miles

Quito Sueno Bank Light
San Juan District Headquarters - 890 miles

Portland Bight (Jamaica)
San Juan District Headquarters - 620 miles

Manzanillo Aids
San Juan District Headquarters - 670 miles

Nuevitas Aids
San Juan District Headquarters - 650 miles

Great Exuma Aids
San Juan District Headquarters - 620 miles

San Salvador Island Light
San Juan District Headquarters - 580 miles

St. Thomas
San Juan District Headquarters - 70 miles

Antigua Radio Beacon Station
San Juan District Headquarters - 200 miles

Trinidad Aids
San Juan District Headquarters - 540 miles

Essequibo River Aids
San Juan District Headquarters - 830 miles

Bahia H/F - D/F
San Juan District Headquarters - 2765 miles

Belem H/F - D/F
San Juan District Headquarters - 1605 miles

The discontinuance of Coast Guard responsibility with respect to Essequibo River Aids, Belem and Bahia Brazil Aids, Jamaica Aids, Manzanillo Aids, Nuevitas Aids and San Salvador Aids has not precluded their being listed here, inasmuch as it is desired that an over all picture be given of activities as they existed during the war years. The discontinuance of Goat Island, Jamaica, was in process of being carried out at the date of this writing. (October 10, 1946)

The responsibilities incurred by the acceptance of the H/F - D/F Stations in Bahia and Belem, Brazil from Naval custody in October 1945, created critical problems in communications and administration. The absence of other Coast Guard activities in that area and a lack of an efficient communication system of other government agencies and branches of the service proved to be a great handicap in solving overall problems. Belem lying 1605 nautical miles from District Headquarters at San Juan, and Bahia which lies 1160 nautical miles further south were a constant problem not only to District Communication but to finance and supply as well. Irregular mail delivery often prevented prompt payment of men and civilian employees and at times the situation became so critical, administrative activities were routed by necessity through the American Consuls office in that area. The deactivation and release of the two stations to the Brazilian Navy in May 1946, relieved the District of these added exigencies.

CARIBBEAN AND ATLANTIC VESSELS AND AIRCRAFT

The location of the Coast Guard District with respect to the distance from the Continental limits of the United States; its proximity, with regard to 10th Naval District, and the extensive operation of naval vessels and aircraft within the area, both hindered and aided in the solution of problems of logistics and facilities within its extremities. With operational control during World War II under the control of the Commander 10th Naval District, logistical problems of supply were of a minor nature inasmuch as naval supply, as a rule, was sufficiently available. The extensive use of naval air transport contributed greatly to the solution of problems of transportation of supply and personnel from the Continental Limits of the United States.

Operational use of Coast Guard aircraft and surface vessels were made not only in conjunction with the Navy during wartime operations, but they also worked with the naval forces in fleet maneuvers and bombardment exercises in the Cublebra training area for security purposes and observation. The expansion of Air Sea Rescue activities augmented the number of surface vessels and aircraft assigned to the 10th Coast Guard District with the end of hostilities in Europe. Added aircraft, consisting of 1 PBY 5-A with three aviators and crew, assumed duty with the air detachment at Naval Air Station, San Juan, Puerto Rico, in early January 1946. The critical personnel shortage, that became prominent during the later period of demobilization, proved a severe handicap in the operational activities of the district as well as administrative functions.

The geographical location of the Tenth Coast Guard District with respect to climatic conditions relieves the Operations Division of many responsibilities that ordinarily would be found in a colder climate. Although the problems of ice and fog with regard to the operation of surface vessels are not prevalent, their counterpart in the forms of violent hurricanes and earthquakes have at times left paths of death and destruction. Moreover the presence of tropical disease and contaminated water have constituted serious problems to health of personnel assigned

BUOY REPAIR
TRAINING YOUNG COAST GUARDSMEN FOR THE EXACTING DUTY OF KEEPING AIDS TO NAVIGATION GEAR AND EQUIPMENT IN PERFECT WORKING ORDER

POINT LOMA LIGHTHOUSE, CALIFORNIA
POINT LOMA LIGHTHOUSE MARKS THE ENTRANCE TO SAN DIEGO BAY

to the District. The temperatures within the extremities of the area vary in intensity, with Puerto Rico's average temperature being 76 degrees; ranging from 50 degrees to 90 degrees in the Southern extremities, such as Panama and Trinidad, where the temperatures are much higher.

ELEVENTH NAVAL DISTRICT
(LONG BEACH)

The Eleventh District Aids to Navigation Section has shown a steady increase in services rendered and equipment handled during the war years, but it was well on the way in its expansion by the time the Lighthouse Service was incorporated in the Coast Guard in 1939. An examination of printed data furnished to mariners in the early part of the 20th Century (1900-1910) shows that the Lighthouse Board had listed some 45 aids on the seacoast which is now included in the limits of this district. A period of approximately 30 years, between 1910 and the time the Lighthouse Service was incorporated in the Coast Guard, showed a marked increase in the number of aids, and by 1940 there were approximately 188 aids on the same stretch of coast where there were formerly 45. Six years of wartime necessity and technical progress, with a concomitant increase in the use of these aids, has raised the total to a present number of 271.

While this district was still a section of the San Francisco district, all aids to navigation and administrative matters were handled from the San Francisco office. The Coast Guard maintained a buoy depot in this area, but it was used only for storage of buoys and very minor repairs which could not be accomplished afloat by a tender. The facilities at that time consisted only of a small blacksmith ship and some other minor outbuildings used for storage of equipment.

Late in 1940, when changeover was being made to set up the Los Angeles Section as an independent district, the Buoy Depot was reorganized as a Coast Guard Depot and provisions were made to install machine and electrical shops, battery shops, and an administrative office. These new installations, together with the blacksmith shop, constitute a major depot for the repair and upkeep of aids to navigation, with a staff of civilian mechanics augmented by enlisted personnel. Buoys and spare parts for this area were transferred from the San Francisco District to the new Depot to set up a working stock and this was further augmented by new construction buoys received from Headquarters. At this Depot all floating aids, fog signal apparatus and other equipment used in the district for aids to navigation purposes were cleaned, repaired and tested.

During the war, this district was called upon to prepare for shipment and forward for overseas use, a large supply of floating navigational aids. The Depot coordinated work of overseas shipment with Naval Advance Base Depot, Port Hueneme, and maintained close liaison with that activity in order to furnish material that was immediately needed as soon as our naval forces had taken over bays, inlets and other navigable bodies of water from the enemy in their push toward Tokyo.

During this wartime period the personnel complement of the Depot exceeded 50 enlisted men plus civilian personnel, all of whom were actively engaged in aids to navigation duties. Since the termination of hostilities, the need for new aids in forward areas has dropped to a negligible quantity, and the stocks of buoys on hand at Naval Advance Base Depot, Port Hueneme, and at the Depot have been turned over to the Coast Guard for peacetime utilization.

For the safety of incoming convoys and returning men-of-war, it was necessary during World War II to have special mine-free channels to the major ports of the area. The Navy Department chose to have swept channel entrances to the ports of Los Angeles and San Diego, and made the necessary arrangements for sweeping the areas at regular intervals. It devolved upon the Coast Guard to furnish the necessary buoys to mark these safe channels, and in some instances, special practices had to be evolved for planting buoys in extreme depths of water. In the San Diego Area, buoys were planted with wirec cable, as the correct length of chain would have been heavy enough to sink the buoy. Constant upkeep was required on swept channel buoys moored with wire cable, since the wire would frequently be picked up in the mine sweeping gear and be cut, leaving a buoy adrift. The large increase in the number of ships and aircraft holding target practice in this area also caused problems in trying to keep buoys lit and afloat since stray bullets would often be found in buoy bodies and lamps.

Dredging and improvement of harbors since 1939 has materially increased the necessity for new aids. Such locations as the Navy Net Depot, Anaheim Bay, Camp Pendleton, Oceanside, Calif., Roosevelt Base, Terminal Island, and Long Beach Outer Harbor have all required new installations of aids, and with the proposed Master Beach Plan for Los Angeles, which will establish new yacht harbors, a further increase of fixed and floating aids was anticipated. At one time time the Navy proposed to use the imundated Salton Sink, later renamed Salton Sea, for a seadrome, and the Coast Guard procured and planted a complete outfit of navigational aids for that body of water. The plan was dropped, however, and the Salton Seadrome was never put in an operational status.

ANRAC

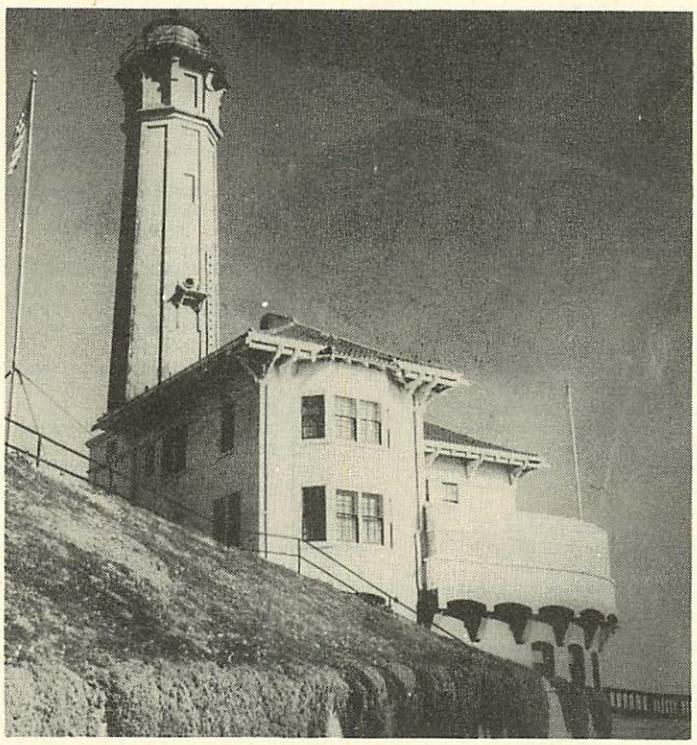
During 1942 a radio system for blackout control of acetylene and electric lights on buoys or fixed structures was developed and reliable control of these lights could be obtained within a radius of seven nautical miles of the control station. The radio equipment for attachment to a buoy minimum size, 7 ft. diameter) consisted of a special radio receiver and relay (gas valve for acetylene buoy). The control station consisted of a low power transmitter with antenna and control unit. The system was called ANRAC.

After a thorough study of the district buoyage system, it was recommended that eighteen navigational aids in the Long Beach-San Pedro area and twelve aids in the San Deigo area be equipped with Anrac. The buoys and fixed aids to be so equipped were selected according to their strategic importance.

These radio controls were installed and operated efficiently until August, 1945, during which month all blackout activities on the West Coast were cancelled and aids to navigation resumed to peacetime operation. All ANRAC installations in the Eleventh Coast Guard District were permanently discontinued and dismantled in September, 1945.

LORAN

Loran is an electronic method of navigation by means of which navigators can accurately and quickly determine their position through the medium of radio signals transmitted from stations of known position. After extensive site surveys in this district it was decided that the most suitable locations for Loran Transmitting Stations would be Gaudalupe Island, Mexico, and Point Arguello. California. Failure to come to an agreement with the



THE ALCATRAZ LIGHTHOUSE IN THE 12th COAST GUARD DISTRICT (CALIFORNIA)

CHOW DOWN!
THE CREW OF THE BLUNTS REEF LIGHTSHIP GET THEIR KNEES
UNDER THE BOARD AT THE CRUCIAL MOMENT KNOWN AS "CHOW DOWN"

Mexican authorities has, however, precluded the possibility of establishing a Loran activity on Guadalupe Island. A Loran unit has been established at Point Arguello and was expected to be placed in operation during the latter part of June, 1946.

RADAR BEACONS (RACON) — A Radar Beacon is an electronic aid to navigation which, when interrogated by appropriate radar pulses, identifies itself by transmitting a coded signal. This coded signal is received by radar equipment and appears on an indicator in such a manner as to provide the navigator with a range and bearing of the radar beacon which instantaneously establishes a "fix."

The Coast Guard, in mid-1944, was directed to assume responsibility for the operation and maintenance of all navigational pulse equipment then under Navy cognizance. In accordance with the above directive the DCGO 11ND assumed responsibility for operation and maintenance of five racon stations; namely, Santa Ana, Santa Rosa, San Clemente, Point Loma and Point Fermin.

During the early part of the postwar period it was necessary to temporarily discontinue all of these Racon stations and place them in caretaker status. This was due to a critical shortage of qualified operating personnel.

RADIO BEACONS — Four radio beacon stations, Point Arguello, Anacapa Island, Los Angeles Harbor, and Point Loma were being maintained by the Coast Guard. Of these, the Los Angeles Harbor beacon was an experimental beacon transmitting a continuous carrier wave being modulated for the purpose of transmitting an identifying characteristic.

TWELFTH NAVAL DISTRICT
(SAN FRANCISCO)

The San Francisco District, Coast Guard, on 1 July, 1939, by authority of the President's Reorganization Plan No. 2, dated 9 May, 1939, consolidated with the Department of Commerce Eighteenth Lighthouse District, and thereby assumed responsibility for the operation and maintenance of the Aids to Navigation serving the navigable waters within the boundaries of the District which comprised the states of Arizona, New Mexico, Nevada, Utah, Colorado, California, and a part of Texas, and the coastal waters adjacent thereto.

The boundaries and extent of the District were changed 1 December, 1940, by creation of the Los Angeles Coast Guard District, thus making the Los Angeles and San Francisco Coast Guard District boundaries coincide with the boundaries of the 11th and 12th Naval District boundaries respectively. Since 1 December, 1940, the San Francisco Coast Guard District has operated and maintained all marine aids to navigation on Coastal waters from the Santa Maria River to the California-Oregon Line; all tributary bays, sounds, and rivers thereto; and Lake Tahoe. These aids during the period 1 July, 1939 to 7 December, 1941, included:

Primary Seacoast Lights (attended)
Fog Signals (attended)
Marine Radio beacons and Distance Finding Stations (attended)
Secondary Lights (attended and unattended)
Lightships (attended)
Minor Lights
Automatic Fog Signals
Lighted Sound Buoys
Lighted Buoys
Daybeacons
Unlighted buoys

District facilities for operation and maintenance of aids to navigation consisted of:

(a) Coast Guard Yerba Buena Depot
(b) Tenders SEQUOIA, LUPINE and COLUMBINE
(c) 72' Work Boat LOCUST
(d) 3 Lightships:
SAN FRANCISCO LIGHTSHIP (LV #83)
BLUNTS REEF LIGHTSHIP (LV #100)
RELIEF LIGHTSHIP (LV #76)
(e) The aids themselves.

Aids were repaired, installed and maintained by:

(a) Station Personnel
(b) Coast Guard Yerba Buena Depot
(c) Tender
(d) By contract with private firms
(e) By USED on a reimbursement basis

During 1941 the District placed numerous buoys to mark military installations and restricted areas within San Francisco Bay, as well as to mark the first anti-submarine net gates.

In November, 1941, the Coast Guard was transferred to the Navy by Presidential Order. The principal immediate effect of this transfer, with regard to Aids to Navigation in the District, was the preparation of a blackout plan and the continued marking of restricted areas, net entrances, and other military obstructions within San Francisco Bay.

On 8 December, 1941, the Blackout Plan was executed and all lighted aids to navigation were extinguished and radio beacons and fog signals were placed out of operation. The execution of the complete blackout plan worked an extreme hardship on mariners and the following steps were taken to restore essential service:

(a) Essential lighted aids were restored at reduced intensity and/or screened so that they were not visible from planes.

(b) Fog Signals were restored to operation.

(c) Lightships were removed from station and were replaced with lighted sound buoys. LV #83 and LV #100 were transferred to the Navy, converted to Examination Vessels and were so used for the duration of the war.

(d) A swept approach channel from Farallon Islands to San Francisco Bar Channel was marked by lighted sound mid-channel buoys.

(e) Unlighted buoys were substituted for some lighted buoys.

As soon as immiment danger of air or fleet attack on the Pacific Coast was considered past, marine radio beacon stations resumed normal operations.

Additional security was provided by an improved Blackout Plan; improved communication to stations, and the installation of ANRAC controls on lighted buoys marking important approaches and channels to and within harbors. Approximately 125 lighted buoys were so equipped. ANRAC control made it possible to extinguish and/or light a single buoy or group of buoys instantaneously from a single control station.

District Tenders were augmented by the temporary addition of the two 180' Class Tenders MALLOW and SWEETBRIER which were assigned to this District pending further assignment to duty in the Southwest Pacific. The services of these additional tenders were especially valuable during 1944 and 1945 because of the tremendous additional load placed on the District tender facilities. In addition to being required to service the additional buoys required to mark the swept channels, restricted areas, net entrances, special anchorages, and other military installations, the services of these vessels were constantly being solicited by the Army and Navy to lay cables, establish mooring buoys and do other miscellaneous work for which these services had no suitable vessels available.

During the year 1944 CNO directed the Commandant, Coast Guard, to establish, operate and maintain a chain of radar beacon (Racon) stations providing complete coverage for aircraft along the entire coastline of the United States. Radar beacon stations were established in the Twelfth Coast Guard District as follows:

Radar Beacon Station	Date Commissioned	How Established
San Luis Obispo	June, 1945	New station on Light Station Reservation
Point Sur	November, 1945	New Station on Light Station Reservation
Moffett Field	September, 1945	On Naval Air Station Reservation obtained by transfer from the Navy
Farallon	November, 1944	New Station on Light Station Reservation
Point Cabrillo	February, 1946	New Station on Light Station Reservation. Replaces former Army Station near Fort Bragg.
Humboldt Bay	July, 1945	New station on Lifeboat Station Reservation. Replaced former Navy Station at Arcata.
Point St. George	May, 1945	New Station on D/F Station Reservation.

The reduction of Coast Guard personnel following the end of hostilities necessitated the temporary closing and placing in caretaker status of all radar beacon stations in the District except those two at Farallon Island and Moffett Field. It was anticipated that these stations would be reactivated at such time as adequate personnel were made available.

As of 1 June, 1945, the Coast Guard, at the direction of CNO assumed responsibility for the operation, maintenance and monitoring of the Farallon Island Type H Homing Beacon Station for aircraft. This station was operated by CAA prior to the time the Coast Guard took over. Its purpose was to provide radiobeacon coverage for planes flying between the United States and Hawaii and transoceanic airmen considered it an extremely important aid to air navigation.

Between 10 April, 1945, and 3 May, 1945, Commandant, Coast Guard established and operated a mobile Loran chain on the West Coast with stations at Point Arguello, California; Point Arena, California; Cape Mendocino, California; Cape Blanco, Oregon; and Cape Grenville, Washington. The purpose of this chain was to provide Loran Service to facilitate training of military personnel in the use of Loran and to determine the best sites for the establishment of a permanent Loran chain on the Pacific Coast of the United States. The Point Arguello, Point Arena, and Cape Mendocino stations were discontinued about 3 May, 1945, and responsibility for providing training Loran Service was assumed by an Army Portable Loran Chain. Point Arguello, 11th Coast Guard District, and Point Arena, 12th Coast Guard District, were selected as permanent sites for stations of the Pacific Coast chain. A permanent station had been constructed and commissioned at Point Argeullo. A permanent station at Point Arena was under construction. Pending completion of the permanent Loran station at Point Arena, a mobile unit had been placed in operation at that site and reliable and continuous Loran service to mariners on the Point Arguello - Point Arean rate, 2H2, had been provided since 11 July, 1946.

As soon as possible after the end of hostilities the District Aids to Navigation were returned to their normal prewar status by:

(a) Removing swept channel buoys.
(b) Placing Lightships back on Station.
(c) Replacing lighted buoys on stations in place of temporary unlighted buoys.
(d) Discontinuance of ANRAC controls.
(e) Restoration of normal light intensities and discontinuance of screens.
(f) Discontinuance of aids used to mark net gates, restricted areas and special anchorages which were no longer required.

Numerous special buoys have been established to mark anchorages for surplus shipping. Some of these no longer required have been removed. As of 1 September, 1946, the District Aids to Navigationwere considered to have been stabilized and to have assumed their permanent postwar status. The principal changes from the prewar aids to navigation system in this District were represented by the addition of the West Coast Loran chain, Radar beacon system, and the Farallon Island Type H Homing Beacon. It was noted, too, that many of the buoys, minor lights and small fog signals, established during the war years to serve military requirements, were being retained in the postwar system of aids to navigation due to the permanent nature of many of the military establishments.

THIRTEENTH NAVAL DISTRICT
(SEATTLE)

A history of Aids to Navigation is, prior to 1939, a history of the Lighthouse Service. Since

1789, the Lighthouse Service had established and maintained navigational aids along all coasts of the United States and all its inland waters. In 1939, the Reorganization Plan II provided for the consolidation of the Bureau of Lighthouses with the Coast Guard. The transfer of the duties from the Bureau to the Coast Guard were made mainly to reduce expenditures to the fullest extent for the efficient operation of the Government.

347 Lighthouse Service personnel were employed in the Seattle District at the time of the consolidation. This was a far cry from the handful of men who beat their way through the wilderness in 1849 to find a site for a lighthouse on the desolate shores of the Northwest Pacific. At that time, Congress had allotted $15,000 for the establishment of two lighthouses and 12 can buoys at the entrance to the Columbia River. This began the activities of the Lighthouse Service in the 13th Lighthouse District which included Oregon and Washington and later Alaska. The boundaries of the Lighthouse Districts followed closely those of the Coast Guard Districts.

LIGHT STATIONS

The "romance" of the old Lighthouse has been lost, for the most part, by the mechanization of the lights and the modernization of related equipment. Isolated lighthouse sites have radio or telephone communication, motor launches, and electrically operated lights or signals. The oil lantern has been superseded and supplemented by radio aids - radiobeacons, RADAR beacons and LORAN. In addition to the lights' rays, there are "pips" and"blips" and "pulses" to guide the mariner to safety. However, though these electronic aids be far more reaching and provide greater accuracy than the light, they can never instill the same warm rush of relief and thanksgiving that fills the sailor's heart when the first pale rays of a familiar light beacon breaks through the fog and rain after anxious hours on a stormy sea.

When the Lighthouse Service consolidated with the Coast Guard, 31 major light stations were among the facilities transferred to the Seattle District.[1] Many of these Light Stations had tales of heroism, danger and tragedy woven into their histories. The oldest of these stations were on the lights at Cape Disappointment and New Dungeness, completed in 1856 as the first activity of the Lighthouse Service in the new frontier - the Pacific Northwest.

The New Dungeness Lighthouse was built in 1857 on a spit off the south shore of the Strait of Juan de Fuca near the entrance to Puget Sound. Cape Disappointment Beacon was constructed on the only headland of the low beach between Tillamook Head and Point Grenville (80 miles), on the north point of the entrance to the Columbia River. The following year, another lighthouse was erected on Tatoosh Island just off the tip of Cape Flattery. The Island had previously been used as a whaling station and fishing headquarters by the Indians who had been, until then, the sole inhabitants. Before the Lighthouse was built, a blockade was established and muskets furnished to the workmen as a protection against the marauding Indians. The first Keeper of the station resigned because of the "annoyances" he and the other 3 white men suffered at the hands of the 250 Indians living there. Because of the treacherous waters and shoals, the easiest access to the Island was by a huge basket. In calm weather boats could land on the beach but the basket method was the more dependable. This was by no means a "primitive" device, for the basket and its hoist are still the best means to effect a landing.

In quite rapid succession, Umpqua River, Willapa Bay, Smith Island, Ediz Hook, Cape Arago, Cape Blanco, Point No Point, Point Wilson, and Yaquine Bay Lighthouses were built. In 1879, construction began on the Tillamook Rock beacon.

Tillamook Rock Lighthouse was one of the most famous as well as one of the most exposed stations in the Lighthouse Service, set on a great precipitous rock lying a mile offshore from Tillamook Head on the Oregon Coast. A dark cloud of ill omen shadowed the station as, in the landing of the construction party, the superintendent was swept by a great wave into the sea and drowned. Almost insurmountable obstacles faced the engineers, for the entire top of the rock mass had to be blasted level to provide space for the lighthouse and its accompanying structures. Heavy seas continually washed over the Rock carrying away half finished foundations, equipment and endangering the lives of the entire work party. Although the light stood 133 feet above the water, on many occasions tremendous waves swept completely over the station carrying large fragments of rock which caused considerable damage to the station. On one such occasion, a rock weighing 135 pounds was hurled through the roof of the building and into the quarters below, causing extensive damage. Another time, the sea tossed a boulder through the lantern, extinguished the light and flooded the dwelling below.

West Point, built in 1881, Alki Point and Browns Point, built in 1887 and Destruction Island, built in 1891, were the next light stations to be erected. Here again, at Destruction Island, treacherous seas made landing difficult except in calm weather, so the "basket" and boom were again called upon for safe landings on the station. 14 other lighthouse were established in the Seattle District, the last being the Lime Kiln structure in 1914. Strangely enough, the Lime Kiln Lighthouse was the last light station in the District operating an oil lantern. An attempt was made to electrify the light by extending commercial power to the Station but the Power Company was unable to furnish sufficient current; in the same regard, poles had to be set in solid rock and the cost and labor for this were almost prohibitive. A request was made for Headquarters' approval to install a power plant at the unit but this was not commensurate with Headquarters' policy, so the light remained an incandescent oil vapor type. This type, familiarly known as i.o.v., gave good service although its range could not match that of the newer electric light. The old i.o.v. light came in two sizes and was approximately equivalent to the 350 watt and 750 watt electrict lamps of today; this limitation permitted slight variation in the range of the lighted beacons. The lenses increased and magnified the light as they revolved to produce a flashing effect.

Reminiscenses of the Lighthouse men who tended these lights during the years when the Northwest was, for the most part, a mountainous wilderness, make interesting listening. Even after the invention of railroads, telephones and the automobile, trips to coastal Light Stations involved travel by boat, stage and horseback. Stage drivers informed passengers before the journey began, that there was no guarantee that the stage could complete the trip, in which event, the traveller made the remainder of his journey on foot. Seasonal rains, washouts, and the miserable conditions of the "roads" (deer trails, or Indian paths) made such stipulations a necessity. Today's

1. Coquille River and Warrior Rock Lighthouses were originally "keeper stations" but were changed to unwatched lights in 1940.

TILLAMOOK ROCK LIGHTHOUSE
TILLAMOOK ROCK LIGHTHOUSE IS BUILT ON A WAVE-SWEPT ROCK ONE MILE OFF THE COAST OF OREGON. THIS IS ONE OF THE MOST PERILOUS ASSIGNMENTS AMONG THE LIGHTHOUSES, KEEPERS FREQUENTLY BEING MAROONED UPON THE ROCK FOR WEEKS AT A TIME

UMATILLA LIGHT SHIP
OFF THE SEA COAST OF WASHINGTON STATE THE PACIFIC IS NOT ALWAYS PACIFIC

brief trip from Bandon to Cape Blanco, Oregon, can be made either way in a fraction of an hour; earlier travellers spent three days! The uncertainty of transportation was illustrated in the following anecdote: An engineer of the Lighthouse Service was called to Destruction Island to repair the boilers. A buoy tender took the engineer to the Island and he requested that the tender return on Friday to pick him up. Friday came - and went; another Friday - no tender; a third Friday - and in the distance the curl of a tender's smoke was seen on the horizon (in those days the smoke trails of the various type ships identified them to the men whose idle hours were spent watching the horizon for the vessels that occasionally appeared there.) When the Master of the tender was admonished for his tardiness, he replied, "You said to come on Friday; isn't this Friday?" Time was of little import.

Life on the Light Stations until the middle thirties was a world of its own. Because of their locations there were no telephone facilities, and commercial electric power did not reach to the outposts. There were generally two keepers and their families assigned to each station and the competition for the most tidy and efficient station among the keepers was keen. A few of the isolated stations at Tillamook Rock, Destruction Island, Cape Flattery, etc. had four or five keepers, one on continuous liberty rotation. With the installation of radiobeacons at many of the stations, it became necessary to bring in commercial electric power or generate power at the station. With electricity available, the i.o.v. light was superseded, the fog signals mechanized, and the comforts of the keeper's dwellings increased. Telephone service or radio-telephone service soon followed as the construction of roads by the State Highway Departments made the outlying stations more readily accessible.

Seventy keepers were in residence on the Stations when the Lighthouse Service was consolidated with the Coast Guard in 1939. During the war, this number had increased to 176 on these stations. The increase was due, primarily, to the fact that unskilled men inducted into the Service had not the training, background, nor interest in the Station which was common to the men earlier assigned there. Furthermore, the work at the station increased during the war years; Coastal Lookout units with their dogs and horses were generally located on Station grounds. This necessitated turning the dwellings of the Keepers into barracks to quarter the increased personnel and building kennels, stables and shelters for equipment. The end of the war began the gradual reduction of the Stations to their normal peacetime complements.

Early in the war, the Commandant, 13th Naval District, ordered the concealment painting of ten of the Light Stations that were near military areas or war industries. The walls were "toned down" with gray and the space under the eaves painted black to accentuate the silhouette of the Station as it appeared from the water. (Tongue Point Repair Base was provided with a camouflage net to cover the wharves where vari-colored buoys and markers were stored. This Base was in the vicinity of the Naval Air Station, Astoria, and the work was done in conjunction with assistance from that activity.) Army activities near Coast Guard units furnished the paint for camouflaging the structures. The last of the stations was returned to its normal peace time color by the end of the summer, 1945.

A continuous lookout watch was maintained by the Keepers of New Dungeness, Ediz Hook, Slip Point and Cape Flattery Lighthouses beginning, strangely enough, 6 December, 1941. All vessels, aircraft, or any suspicious activity (such as attempts at communications between persons on shore and unidentified vessels) were reported to Naval Section Base at Port Angeles and the Harbor Defense, Fort Worden. This order directed that persons engaged in suspicious activity should be apprehended and taken into custody. However, this directive was rescinded and, rather than take such individuals into custody, observers notified the nearest Army or Navy intelligence who took the necessary action.

Drills in the use of the gas mask were held at all Light Stations and a course in Chemical Warfare was compulsory for All Hands. A mobile Chemical Warfare unit was sent out from the District Coast Guard Office to all Coast Guard Stations and actual gas tests were made during the instruction. The District Training program included rifle practice for all personnel assigned to light stations; this was in addition to training received at "boot" camp or specialized schools.

The Light Stations did not all return to their former peacetime status. Many of the innovations of war were retained at the stations. RADAR beacons had been established at 4 stations; additional Kohler units had been installed; commercial power had been run into many stations. The war had left its mark - to most of the Light Stations' advantage.

LIGHTSHIPS

Lightships are actually floating lighthouses placed on station in locations along the coast where it would be impracticable or needlessly expensive to build a lighthouse. Quite frequently, they mark the approach to a port or the outer limits of outlying dangers. Occasionally, they are used in inside waters. The forerunner of the modern lightship was the beacon boat which was originated in 1789. It was a small boat with colored daymarks on the mast and was used for about 31 years. There was no sound or light equipment on the beacon boat and consequently, it was superseded by the light and bell boats in the early part of the 19th Century. These light and bell boats were queer structures made of iron, flush-decked, turtlebacked and with a light or bell clappers fastened to the mast. Later daymarks were added. Light boats, or floating lights, as they were then called, were mostly anchored in inside waters and it was not until the development of the sturdier lightship that hazardous locations along the open coast were able to be marked.

The first light vessel (the No. 50) to be placed on the Pacific Coast was stationed at the entrance of the Columbia River in 1892 and was propelled by sails. At one time during her history, she parted her moorings in a tremendous sea and heavy gale and was stranded on the shore near the mouth of the Columbia River. She lay there for 16 months before it was decided that the only possible means of returning her to her station was by hauling her overland through the woods and launching her in the Columbia River. The No. 50 was constructed of wood and remained in service only until 1909 when she was replaced by the steelhulled lightship.

During the amalgamation of the Lighthouse Service and the Coast Guard in 1939, four lightships, the COLUMBIA RIVER LIGHTSHIP #93, the UMATILLA REEF LIGHTSHIP #88, the RELIEF LIGHTSHIP #92 and the SWIFTSURE LIGHTSHIP #113, were transferred to the Coast Guard. These four lightships maintained only three stations as the RELIEF LIGHTSHIP #92 was used on all stations as relief. They were steel-hulled vessels with a displacement of approximately 685 tons and a complement of 3 to 6 officers and 5 to 11 crew. All but one was built around 1908; the

SWIFTSURE LIGHTSHIP #113 was the newest and it was completed in 1929. In addition to exhibiting a bright beacon light, the lightships were also equipped with sound signals, radio, radio-telephone, and radio-beacons. In addition to their regular duties as lightships, they were also instructed during the early days of the war, to notify the Commandant, 13th Naval District of all vessels passing the Columbia River northbound.[1]

At the outbreak of the war, LIGHTSHIPS NO. 88 and 113, were removed from their stations by the Navy and replaced by lighted whistle buoys. The ships were reconverted by removing the radiobeacon and antenna mast, by installing armament, by realtering radio facilities and by increasing the complement to 30 Coast Guardsmen and 5 Coast Guard Officers. The No. 88 was then placed in the Strait of Juan de Fuca as a Recognition Ship and the No. 113 was sent into Alaskan waters. The removal of these two ships left only the COLUMBIA RIVER LIGHTSHIP #93 on station at the entrance to the Columbia River with the No. 92 to be used as its relief.

The use of one lightship as standby only, seemed most uneconomical of ships and men at a time when they were at a premium. The District Coast Guard Officer, with the approval of the Commander, Northwest Sea Frontier, proposed to Headquarters that the COLUMBIA RIVER LIGHTSHIP #93 should remain on station for a month and then, on a clear day with good weather, the ship would leave her station, go to Astoria for fuel and supplies and return before dark. A station buoy would be placed close to the Lightship's position at all times and mark the station when the Lightship itself was absent. Such an arrangement would permit the RELIEF LIGHTSHIP to be used as part of the Off-shore Observation Force.

This plan met Headquarters' approval but was put into operation for only a brief time. Too many difficulties resulted to warrant the discontinuance of the relief. Water, sufficient only for 25 days, could be carried and this supply was greatly diminished when the fog signal was in operation. Special trips to replenish the water were made by the tenders, requiring a full day from their regular duties in the servicing of aids. The motor lifeboats were also required to deliver fresh food and vegetables and medical supplies. In addition to these difficulties, the proper operation of the radiobeacon was affected; batteries only charged full when the ship was off station because when charged over 1190 specific gravity while on station, the timer on the radiobeacon was thrown off. The 24-hour continuous beacon operation was a tremendous strain on the storage battery and generating equipment. The two-week schedule was not interrupted again until the RELIEF LIGHTSHIP #92 was placed on the Recognition Station, Strait of Juan de Fuca, when the No. 88 needed relief for repairs. During one such relief, the Commanding Officer of the No. 92, a Chief Boatswain, performed the duties which were ordinarily handled by the seven officers aboard the Recognition Ship. Because of the efficient manner in which he handled this station, the Chief Boatswain was highly commended by the Navy.

Although the Light List indicated that radio messages of importance in the maintenance of aids to navigation, or on other urgent matters, could be received during the first fifteen minutes of each hour from 0800 to 2015, this service was not used for many years and, consequently, was discontinued in 1944 in order to replace the radioman who serviced the equipment by a radio technician to handle the radiobeacon equipment. The necessity of a technician became evident when a failure of the radiobeacon could not be remedied due to the lack of spare tubes aboard. A survey of the stock proved an adequate supply of tubes on hand, but the radioman was unfamiliar with the beacon equipment.

The war altered but slightly the routine of the LIGHTSHIP #92 and #93. Other than the issuance of small arms and a lookout for northbound vessels, the lightships maintained and performed their peacetime duties. The regular radiobeacon equipment was operated alternately with the standby equipment to insure proper operation and repair of both units. It was discovered that the antenna on the main equipment was more efficient than that on the standby equipment so an antenna transfer switch was installed to permit operation of both transmitters on the main antenna. To preclude any failure of the telephone transmitter, communication with shore was made possible by the use of the regular communication antenna. As a result of the installation of the antenna transfer switches, the radiobeacon transmitters were alternated each week.

RADIOBEACONS

The early conception of the mariners, that all aids to navigation must be received by the normal senses of sight and sound, was radically changed by the development of the radiobeacon system which has, since its inception in 1921, become recognized as a most important innovation for for increased safety for mariners. As radio signals are not obscured by fog, wind, rain, snow or temperature changes, and bearings may be taken at great distances far beyond the horizon, the radiobeacon had great advantages over previous types of navigational aids. Proof of its efficiency lay in the fact that since its inception approximately a quarter of a century ago, the radiobeacon system was adopted by all maritime nations and direction finders were developed to fit not only the requirements of large ocean liners but small pleasure craft and fishermen's vessels as well.

At the time of the consolidation of the Lighthouse Service and the Coast Guard, the Seattle District operated nine land-based radiobeacons and four radiobeacons on the lightships at Swiftsure Bank, Umatilla Reef and the entrance to the Columbia River. Two beacons were under construction at Destruction Island (completed in 1943) and at Willapa Bay (completed in 1941). Two more radiobeacons were authorized in 1942, one at Cape Flattery (Tatoosh Island) and one at West Point. In the middle of 1945, the radiobeacon at Ediz Hook was established, bringing the total number of District radiobeacons to 18. However, at the onset of the war, the Navy removed the light-

1. Because of the confined conditions aboard Lightships, men were granted 180 days personnel liberties per annum. It was found that the men became weary after spending some time aboard Lightships on exposed stations, and it was necessary to bring them ashore at frequent periods. It was the practice of the Lighthouse service to make a trip to the Lightship every four weeks, using one of the buoy tenders for this purpose and, at the same time, delivering provisions and water. After spending 8 weeks aboard, the members of the crew and officers were given four weeks liberty ashore. This arrangement proved very satisfactory for a period of years. Under the Coast Guard, however, it was felt that the 8 week period of duty was too long. The 4-week period was not provided for under Coast Guard Regulations, It was only aboard that enlisted men were entitled to quarters and rations. The question was raised as to whether the enlisted men in the lower grades would have sufficient funds to finance themselves on these long periods of liberty. It was standard Coast Guard practice to provide 10 days shore duty to keep the crews contented.

ships from Umatilla Reef and Swiftsure Bank thus leaving only 16 beacons in operation. Of these 16, one was maintained by the RELIEF LIGHTSHIP and used alternately on the Columbia River station.

In an effort to increase, to even a greater degree, the efficiency of the radiobeacon system throughout the United States, Headquarters urged that a monitor system be developed and put into operation in each District. Subsequently, a monitor station was established at North Head Radio Station which checked the performance of all District radiobeacons. Between 0800 to 1100 and 1500 to 1900 daily, each radiobeacon was monitored, the time for the check being staggered to insure a truer picture of the various beacons' performance. Outlying stations were notified daily of all failures or defects in the radiobeacons' operation. These reports were a District innovation and were not required by Headquarters but were merely another measure adopted by the District Coast Guard Office for increased efficiency in the District system.

An arrangement was made for rating the radiobeacons on a percentage basis for efficiency of operation. For each various type of failure, an established number of points were deducted from a perfect score. These scores were then arranged in chronological order and published each month. However, a discrepancy was evident in that one station operating on the wrong minute for 35 minutes received the same percentage rating as a station being off sequence for only 10 minutes. A new plan for such rating was established and put into operation in the early part of 1945. This new system was so arranged that an offending radiobeacon station was marked down for not only the type of failure, but for the number of minutes of faulty operation. This accounted for the low percentage rating for 1945 of 94% as compared with the percentage rating of 96% for 1943 and 98% for 1944. Actually, the number of failures occurring after the February survey in 1945 became less than those in the months prior to that date.

The Radiobeacon Station guilty of the most failures was on the Columbia River Station. The high percentage of failures in this case was due to a combination of old equipment, fluctuating voltage, disinterested personnel, too small a complement and the motion of the ship, which tended to dislodge the sensitive parts, especially during heavy seas. Little or no interference was found in any of the radiobeacons. One instance of expeditious conduct occurred at Yaquina Head Radiobeacon Station when lightning struck the building in which the beacon was housed and destroyed the equipment and severely injured the operator on watch. Only twelve minutes elapsed between the time the radiobeacon was struck and put out of commission before the standby unit was operating normally.

Peacetime operation of the radiobeacon consisted of the distance finding dash being sounded when fog was actually in the area of the radiobeacon and the fog signal was in operation. During the war, the distance finding dash was used continuously, as for fog, for the purpose of not allowing the enemy to know whether it was foggy or clear weather. Two days after the declaration of war, on 9 December, 1941, the radiobeacon stations were instructed that no radiobeacon signals and no test transmissions in the radiobeacon band were to be permitted during the emergency without specific authorization from the District Coast Guard Officer. This order permitted no variation and forbade all radio frequencies radiation within the band from 285 to 315 kcs. from any radiobeacon stations. Radiobeacon transmitters on any frequency on land stations were not permitted to be used. During the period of radiobeacon silence, radiobeacon clocks were maintained in normal condition but no other equipment was operated although it was kept in full repair in the event it should become necessary to go into operation. Rooms were kept heated so that equipment would not be damaged and a continuous watch was maintained in anticipation of the time the radiobeacon was ordered into operation. Six months later, the radiobeacons were restored to operation on low power and maintained a schedule as for fog. In October, 1942, the Commander, Northwest Sea Frontier ordered the resumption of all radiobeacons in the coastal waters of Oregon and Washington. (Some radiobeacons were authorized on specific dates to be silent for the purpose of cleaning insulators, only after the District Coast Guard Officer had approved the period.)

In March, 1944, Radio Station Meadowdale was selected as a Monitoring Station for radiobeacons, as the activities at that station had been considerably reduced. The North Head Monitor Station's use had been increased extensively as radiobeacons had not been returned to peace time schedule (operating three minutes out of the usual two ten minute periods each hour) but were operating on a continuous program of one minute out of every three. Although Headquarters' instructions ordered that each radiobeacon in the United States be monitored at least once every four hours, it became possible, in the 13th Naval District, to monitor each radiobeacon every hour after the new monitor station had been added. Monitoring receivers were calibrated with a frequency meter and were checked periodically to insure accurate observation. Each monitoring station kept a record of its observations on a Headquarters' form which was submitted to the District Office and reviewed by the Aids to Navigation Officer who summarized the data before submitting it to Headquarters. Any unusual situations were reported with detailed information to Headquarters at once.

Although three Canadian radiobeacons were operating on a continuous schedule as for fog, which conformed with the United States program, three other Canadian radiobeacons were still operating on a peace time basis. Headquarters suggested to the Controller of Radio in Ottawa that the radiobeacons at Quatsino, Race Rocks and Point Atkinson be placed on a twenty-four hour fog schedule. The purpose of this continuous operation was to prevent the possibility of the enemy receiving information as to visibility at radiobeacon stations, formerly disclosed by change of operation from normal operation to fog schedule. Continuous operation had an equally important factor in making beacons available to vessels which might be in an area of reduced visibility, yet, within reception range of a station enjoying clear weather. It further eliminated the personal equation in determining what might or might not be considered reduced visibility. The recommendation that the three Canadian aids maintain a continuous schedule was intended not only to fill a gap in Pacific Coast Radiobeacon System, in the interest of uniformity, but to provide better aids to navigation in a very dangerous area. Headquarters volunteered to lend the Canadian Government equipment for installation in this section. However, the Canadian aids were installed without Coast Guard assistance.

In order to determine whether or not radiobeacons should return to their prewar schedule, mariners and pilots were asked by Boarding Officers whether they found the peacetime operation of radiobeacons of greater value than the continuous fog schedule. Most mariners were of the opinion that better use could be made of them if they were transmitting each minute of the hour. In connection with the airways, Pan American Airways, the Air Transport Command and the Army Service Forces all indicated that marine radiobeacons

were used by the pilots and they, too, felt that even better use could be made of them if they were transmitting each minute of the hour. A flight check made at this time on radio marine beacons in Canada found that these aids assisted greatly in safe navigation of aircraft equipped with radio direction finders. Those radiobeacons were operated on a continuous schedule. As a result of these questions and flight tests, it was decided that war time operation of radiobeacon (continuous as for fog) would continue.[1]

Because of the mounting failures of radiobeacons in the District, a survey of radiobeacons and monitor stations was made in February, 1945. All radiobeacon stations were visited and Commanding Officers of each station presented the problems of his activity. As a result of this survey, the following recommendations were presented to the District Coast Guard Officer and later were accepted as District Policy:

(a) A twenty-four hour watch maintained at all radiobeacon and monitor stations.

(b) The standby unit switched on immediately in case of failure.

(c) The method of timing radiobeacons standardized.

(d) Personnel at all monitor stations thoroughly tested and instructed.

New radiobeacon monitoring instructions were prepared by the Communications Officer together with a communication chart for reporting radiobeacon failures, and showing all teletype, land line or radio connections in the District. A neon light bulb was installed in the pilot house of the COLUMBIA RIVER LIGHTSHIP as a visual check of the radiobeacon. The Quartermaster was instructed to check the timing every half hour.

The instructions for monitoring, as set up by the Communications Officer, were an improved revision over earlier procedure. Defective operation was determined to be:

(a) Incorrect timing in excess of five seconds.

(b) Improper frequency plus or minus .01% of the assigned frequency.

(c) Lack of tone modulation.

(d) Slurred or broken characteristics.

(e) Increased number of characteristics per minute.

(f) Sub-normal signal strength.

(g) Continuous operation for calibration purposes during the regular operating periods.

All previous instructions conflicting with the new regulations were cancelled. The District Coast Guard Officer further instructed that radio technicians be assigned only to such duty as that for which they had been trained and were not to be used in any other capacity. Commanding Officers were instructed to see that these assignments were carefully made.

1. Radiobeacon peacetime operation (continuous - clear weather) was resumed at the end of the war.

Although radiobeacon alarm units were issued by Headquarters for installation on District radiobeacons, they had not been found completely successful. A radiobeacon alarm unit was improved by Chief Radio Technician D. W. Reid and was installed at West Point for thirty days' trial under Headquarters' authority. During this trial, the radiobeacon alarm unit proved successful as no failures were reported. As a result, Headquarters requested that a similar unit be forwarded to Norfolk to be tried there. No results of the Norfolk trial were received from Headquarters but the unit at West Point was still working successfully.

Causes of radiobeacon failures were generally easily repaired but it was the duration of these failures which the District Coast Guard Office worked incessantly to overcome. Monitor stations experienced great difficulty, at times, in notifying an offending station of its inoperation due to the frequent inability to make radio contact with the radiobeacon station which necessitated routing the message through other stations or agencies. Heavy storms in the area destroyed telephone communication and on occasion, visual signals had to be relayed to certain stations. Alarm units, as noted above were not perfected, so frequently radiobeacon stations were unaware of their defective operation until notified by the Monitor Station. Had there been some means for notifying, under all conditions, the radiobeacon station of its faulty operation immediately after the failure was detected, the duration of faulty operation would have been greatly reduced.

Although the radiobeacons in this District were not operating at 100% efficiency, it was the opinion of the District Office that the beacons were operating on a par with beacons throughout the continental United States. This was determined by the reports from mariners and airmen who used beacons as navigational aids and was also due to the determination of the Aids to Navigation Officer to increase the efficiency of the beacons.

A radiobeacon buoy with a working range from 7 to 50 miles had been developed and was considered in the 13th Naval District the year before the war. Trials were made on batteries in some of the rough waters along the coast and on the Columbia River Bar. The batteries proved too fragile so dry packs were tested; these, too, developed defects. As the packs cost $30.00 apiece, much experimentation proved too costly. The District Coast Guard Officer saw the advantage of a perfected radiobeacon buoy in that a string of such buoys along the coast, 15 to 20 miles apart on the 30 fathom curve, would eliminate the necessity of the UMATILLA REEF LIGHTSHIP; the removal of the Lightship would counteract the use of tenders servicing the equipment (buoys had to be serviced every 4 months), as well as the cost of the tenders. The Aids to Navigation Officer and the District Coast Guard Officer were both in favor of the establishment of a radiobeacon buoy at Grays Harbor Entrance where there had been considereble agitation for a Lightship; this station was within easy run for the CGC MANZANITA. Had the buoy proved applicable to conditions at Grays Harbor, buoys could have easily been installed at Duntze Rock, Yaquina Bay, Tillamook Rock, Umpqua, Coos Bay and wherever tender equipment was available. Further consideration of the radiobeacon buoy was discontinued during the war, but the feasibility of replacing the lightship with a radiobeacon buoy rose again at the conclusion of hostilities.

UPPER COLUMBIA RIVER

One of the most remarkable advances in inland marine navigation was that which transferred the swirling waters of the Columbia River into 300 miles of

navigable waterway. In 1805, when Lewis and Clark concluded their amazing trek to the Northwest Coast, vast portions of the Columbia River defied the explorers' attempts to transport their party and supplies on its broad expanse. Almost 140 years later great ocean-going vessels were able to ply their way into Oregon and Washington river ports.

The wildness of the river lay in the swiftness of the water forming treacherous whirlpools and rapids over the shallow, jagged bottom. To eliminate this danger, two great projects were undertaken: The Bonneville Dam and the Celilo Canal. Although the canal was finished before World War I, river traffic to The Dalles, Oregon, and beyond, had ceased around 1916. In 1932, navigation in this section was revived for the transportation of wheat, but the service between Upper and Lower ports was intermittent. This renewal of navigation was more or less on a trail basis to determine if sufficient commerce could be developed to support water carrier operation.

Sufficient traffic was realized and, after the construction of the Bonneville Dam which was completed in 1938, river traffic expanded into the movement of great steel barges designed to carry liquid petroleum in the hull and package or bulk cargo on deck. With this increase of traffic from Astoria, Oregon, beyond The Dalles, Oregon, the necessity of navigational aids to insure the mariner's safety became most apparent. As a result, the Seattle District centered the majority of its activities in the promotion of safe navigation along the river. Here was the proving grounds for experimental light structures and buoys to determine those most suitable for the area. Due to the rapid current, ranges marking channels had to be so perfected as to enable the mariners to ascertain his course in split-second timing.

The sheer steep cliffs of this area presented problems in erecting shore structures and the swift waters made the mooring of buoys almost impossible. Even before the consolidation of the Lighthouse Service and the Coast Guard, the problems of marking the river had been of primary importance to the Lighthouse Service and basic markings had been established along the banks. The last allotment made to the Service in 1939 was for the establishment of additional lights in the Columbia, Umpqua and Yaquina Bay. River traffic at that time consisted mainly of the transportation of oil to inland ports and the movement of wheat downstream. Although the water was proven open to ocean-going vessels, the majority of the craft were tugboats and freight barges, especially the section above Celilo, Oregon. Several "oil tank farms" had been established along the shore to supply Army and Navy installations in that area and it was from these "farms" that the vast supply of oil and fuel came, so necessary in the DuPont project at Hanford, one of the plants that specialized in the manufacture of the Atomic Bomb. War gave emphasis to the river traffic and, subsequently, the Aids to Navigation Section of the Seattle District concentrated on lessening the danger and increasing the safety of those who plied the Columbia.

Early in 1940, Headquarters ordered a Board to study the Columbia and Snake Rivers to determine the aids to navigation to be established there. At the time of the survey, the Columbia River was marked by navigational aids for river traffic from Astoria, Oregon, to Umatilla, Oregon. At the mouth of the river, aids had been established in strategic locations by the Lighthouse Service, and, during the years before the war, the main duties of the Aids to Navigation Section in that area had been to relocate the aids from year to year as the channel shifted due to the water's own course or by dredging operations carried on by the Army Engineers. An interesting observation of the shifting channel in this vicinity is the disappearance of Sand Island in the entrance of the river. The island, several square miles in area, was "eaten away" in its entirely by the new course the river followed. Other than the installation of special buoys for mooring or the marking of mine fields, no new projects were inaugurated in the vicinity of Astoria during the war years.

In addition to establishing the new depot for the maintenance of aids and tenders at Vancouver, Washington, the Aids to Navigation Section was also engaged in this area in the relocation and rebuilding of damaged structures. It was beyond Vancouver that the most improvement in navigational aids were to be found.

Bonneville Dam had encouraged and promoted waterborne transportation into the upper region of the river. Between Bonneville, Oregon, and Vancouver, Washington, aids suitable for the traffic found there in the past, had existed for some time, but with the improvement of the channel, the Board recommended additional lights and markings. Theoretically, navigation by ocean vessels was possible; it did not become an actuality except for the initial voyage of such a vessel to The Dalles, Oregon, in 1939, to prove the channel was large enough for traffic of this type. A conference with marine interests was held in 1943 and a program for proposed aids between Vancouver, Washington and Bonneville was drawn up. The necessity for additional aids was intensified by the continual requests from Government agencies to increase the total tonnage on the Columbia River because, due to the manpower shortage, inexperienced men were operating vessels over these treacherous waters and also because almost all railroad tank cars had been taken out of the area due to the war emergency. This placed an exceedingly large burden on the water carriers to transport the required petroleum products for the Army and Navy Air Forces on the Columbia River. The area was marked, at that time, by 6 ranges, 26 lights and 2 beacons.

The new program presented to Headquarters in 1945 requested that 51 structures be electrified and that duplex lanterns be replaced by single General Railway signal, Type "SA" lanterns in order to simplify and standardize equipment. This proposed project was approved by Headquarters and work began instantly. The contour of the shore in this area, near Multnomah Falls, created precipitous cliffs rising almost from the water's edge which prevented the use of the customary range, and, consequently, it was proposed to install experimental channel limiting group lights which had been temporarily established at Arlington beyond The Dalles, Oregon. Headquarters disapproved the use of the new ranges and as a result, the area was left inadequately marked as the conventional two board ranges could not be established on the sheer banks. (A great number of the rear lights of conventional ranges installed above Celilo were fixed instead of flashing. When the lights were first installed, both front and rear lights were flashing. As this section of the river was very dangerous due to the rocks and whirlpools and side currents, the operators of the boats had very little time for observation of ranges which were astern when going up the rapids as the current and the whirlpools were continually changing the boat's course. If the light was at an eclipsed state when the operator looked back at the range, he was unable to determine whether or not he was on the course as very little time could be spent looking for the range).

EXPERIMENTAL BUOYS

The area between Bonneville, Oregon, and The Dalles, Oregon, consisted of two

deep water pools which were formed by the construction of the Bonneville Dam and was well lighted with numerous river bank lights. A meeting with vessel operators a few months before the war resulted in the unanimous approval of the lights as they were at that time. Requests were constantly made for installation of buoys but none were developed which could ride the swift current during freshets. Oil drum buoys were set out in the vicinity of Celilo and, at the conclusion of the war, were still the most effective buoy markings. The buoys had been painted white, with red or black band markings as the navigators had found it difficult to pick out the solid red or black buoys at night. The mariners urged the development of a surface riding buoy equipped with reflectors as reflectors could not be installed on the oil drums. The dependency of tugboat operators on these markings was evidenced in the fact that if the tender assigned to that area was unable to replace an oil drum, the operator himself would pick up the drum and sinker and place it on station en route. Early in 1941, this was common practice as that section between The Dalles, Oregon and Umatilla, Oregon, was seriously handicapped by the lack of sufficient boat equipment. At the beginning of the war, an especially built 65' buoy boat was assigned to that area.

Experiments were made to determine the effectiveness of surface riding buoys, the first being with a Wallace and Tiernan and a 13th District boat type buoy, designed for the Columbia River. The buoys were placed on station in the Upper Columbia where the current was 8 miles per hour. The Wallace and Tiernan buoy was lost a month after its installation and a careful search of the river banks and dragging the river bottom failed to produce it or its mooring. Reports indicate that, until the time it disappeared, it had performed in an extremely satisfactory manner. The 13th District buoy was still in place at the conclusion of the war.

On the following page are photographs of the Headquarters pre-fabricated fast water buoy during assemblage and on station. The illustration of the boat type buoy is the District buoy which was placed on station and which at the conclusion was still in position. The Headquarters buoy did not prove equally successful.

SCOTCHLITE

At Vancouver, Washington, experiments were conducted in the use of Scotchlite, which is a plastic reflector material, on daymarks in the summer of 1943. Its success paved the way for similar installations on beacons in the Upper Columbia around The Dalles, Oregon. However, due to the heavy sands which stuck to the Scotchlite, it was abandoned in favor of the reflector buttons which protruded far enough from the daymark to prevent their whole surface from being filmed with sand and dust. The Scotchlite was installed in other District Areas, mainly Coos Bay, with hearty approval of the mariners in the Bay.

EXPERIMENTAL RANGE MARKINGS

A serious problem confronted the Aids to Navigation Section in the Upper Columbia where it was impracticable, due to the impossible terrain to establish the conventional range lights but where it was necessary to provide channel markings for safe navigation. After two years, consideration, C. E. Sherman, Nautical Scientist of the Aids to Navigation Section, devised a means to provide this marking and the initial experiment proved most successful. Sherman's "channel limiting group" lights provided positive protection for a width of 198 feet and were so arranged that the center light showed flashing red and the lights on either side showed fixed white until the navigator departed from his course and reached the edge of the safe channel, at which time the white marking the channel side became red. Should he continue into the red light, it appeared to be extinguished, which indicated a deep penetration into the outer side of the safe channel. The openings in the side lights, although but 1/8" wide, could be seen for a distance of 1.4 statute miles with a light of sufficient brilliance that it could be seen by a person having normal vision looking within 30° from the light. These openings were provided by the arrangementsof two opaque screens spaced 10 feet apart along the axis line of the light, one having its left edge and the other its right edge of this axis.

Tests of the channel limiting group equipment were observed by the District Engineering and Marine Inspection Officers and it was their recommendation that it was worthwhile to establish and to put into use such an experimental range on the Columbia River. This was done at Arlington, Oregon, with Headquarters' approval, in the Spring of 1945. An investigation of the success of this type of range indicated that the majority of the operators preferred the old type regular center line lighted range of two boards. This preference, in the opinion of the District Coast Guard Office, was made primarily because of the lack of understanding and the use of the limiting channel range and, consequently, detailed printed instructions were issued to all operators in the Celilo-Pasco District where the Arlington range was located. As a result, more favorable comments were received in regard to the use of the limiting channel lights, but, notwithstanding, Headquarters would not authorize their establishment on other ranges where the two-board range was impracticable because of the terrain. This policy, which Headquarters adopted, left areas in the Columbia River unsafe for navigation as the lights and markings which could be established there provided only inadequate coverage.

INCREASE OF AIDS AND CHANNEL IMPROVEMENTS

Recommendations for the increase of aids to insure safety of mariners in the Upper Columbia were presented to the District Coast Guard Officer and Headquarters by the Board of Survey. Headquarters felt that complete justification for the project as a whole, as being vital to the waterfront, had not been furnished, and requested that a complete list of all shipping interests concerned, the extent of their operations, and a list of all government agencies involved there in the war interest, be furnished. Letters from navigation companies indicating the large burdens placed on water carriers to transport the required petroleum products to Army and Navy installations on the Columbia were forwarded to Headquarters together with freight tonnages and traffic statistics. The proposed improvements were then approved and an appropriation of $50,000 was granted. (June, 1940). Additional appropriations were granted later.

The Snake River, which enters the Columbia just south of Pasco, Washington, was not navigable except during high water from the middle of March to the middle of July. At the time of the survey, the U. S. Army Engineers were contemplating the improvement of the Snake River by providing a channel five feet deep from the mouth of the Snake to Lewiston, Idaho, 139 miles upstream. However, this portion of the river presented additional problems in that the rise in elevation to Lewiston from the mouth was 400 feet and the waters swift and shallow. Army Engineers had surveyed this section in 1934 at a cost of $150,000.00 but by 1940 the survey marks were missing and existing

maps of the river were unreliable. Although railway lines paralleled the Snake River on either side to Lewiston, most of the shipping in the area was done by barge as the freight charges for rail transportation was excessive. In anticipation of the Army's proposed dredging, wheat elevators had been constructed along the banks of the Snake, in spite of the fact that river traffic had been discontinued for some time prior to the Army's proposed project. Improvement of the Snake River was calculated to reduce the price of waterborne gasoline about 1 cent at Lewiston and 3/4 cent at Spokane and to insure navigation at least nine months of the year. On the strength of the Army's proposal, Headquarters allotted $33,000.00 for the establishment of aids along the Snake to Lewiston but this was later diverted to other projects as so little progress was made by the Army in the dredging of the proposed channel by 1945.

Ranges were not established even though there was a minimum of river traffic near Lewiston as the Board felt that the establishment of any aids implied responsibility for the safety of the courses over which soundings and chart data were incompleted. By the end of World War II, river traffic on the Columbia had reached a peak. Day and night, winter and summer, through fog or clear weather, tugs and barges, fishing boats and other commercial marine craft plied the river from Astoria, Oregon to Pasco, Washington. The Upper Columbia had been thoroughly marked with additional aids to insure safe navigation; Army Engineers had dredged channels to promote commerce; and inland navigation companies had increased their tonnage so that by 1945 the Columbia River had taken its place amongst the top ranking commercial waterways of the world. But, at Pasco, extensive river traffic ceased, for beyond this point the conditions of the river made through traffic impossible. Although the Columbia reached for hundreds of miles beyond Pasco, Washington, all commerce was localized in small areas along its length.

AIDS IN ROOSEVELT LAKE

The building of the Grand Coulee Dam on the far reaches of the Columbia, to provide water for irrigation and water power for this great Northwest section, brought about additional activities for the Aids to Navigation Section. The building of the dam created a lake which extended almost 200 miles from Mason City to the Canadian border. A question arose as to whether or not Roosevelt Lake constituted part of "the navigable waters of the United States" as interpreted by the laws. In March, 1944, the Law Officer advised that Roosevelt Lake was navigable and, together with the Columbia River which flows into it and gives rise to it, furnished a water way for foreign commerce. With this fact established, it became necessary to establish aids to navigation along the lengths of this lake. At that time, there was very little traffic on Roosevelt Reservoir but it was the opinion of local marine interests that the traffic was bound to increase not only commercially but in pleasure craft following the war. Numerous hazards existed that made travel especially dangerous under the conditions as they then existed. In a meeting between the Superintendent of the Coulee Dam and representatives of the District Coast Guard Officer, locations were proposed for spar buoys to be anchored in the lake and provide the shortest run from Grand Coulee Dam to Kettle Falls, Washington. These locations were consistent with assumed limitations of 20 feet of water at buoy locations with a maximum reservoir drawdown at elevation 1208 and a minimum distance between the buoys of 1/2 mile; the normal elevation of the reservoir when full is 1290. An investigation made by the Aids to Navigation Officer determined that 27 lights and 10 reflectors would suffice to mark the lake. The Bureau of Reclamation was in favor of the establishment of 51 buoys but the District Coast Guard Officer felt that buoys would be impracticable for several reasons. Due to the lowering of the water to different levels which would cause different shoal areas to appear and changes would have to be made in the buoys to keep the channel safely and effectively marked. Furthermore, the mountainous land area which formed the bottom of the lake together with the deep water, rendered use of buoys inadvisable; for in many places the buoys would be moored in over 200 feet of water which would require large buoys and, consequently, the services of a buoy tender. Unlighted buoys were not considered, for, as such, they would be inadequate. For these reasons then the Aids to Navigation Officer determined that the 27 lights and 10 reflectors would be adequate. These lighted aids would consist of a battery box on a concrete foundation with a 200mm lantern with a focal plane of 12 feet. Aids were to display a white light of 90 candlepower, flashing either every 4 seconds, 6 seconds or 10 seconds, and were to be serviced by the Seattle Operating Base twice a year with half of the battery cells being relieved at a time. The Bureau of Reclamation extended the use of one of its boats to be used in establishing these aids and in the servicing of them.

Work in this area was not begun until the latter part of the Summer, but the operators, in the early Spring, began to urge that some assistance be given them as the waters were entirely without navigational aids and it was necessary to maintain a regular service including night travel in the transportation of lumber and direct war supplies. Due to the lack of lights, the operators were constantly damaging marine equipment and retarding the flow of this important traffic. Marine inspectors had established Coast Guard Operating Regulations in this area and operators were finding it almost impossible to comply with these regulations under the circumstances. They pointed out that the installations of equipment such as were direly needed in the Roosevelt Lake were being made in other inland waters where cargo, generally, did not have the high war rating as in their area. They understood that complete coverage of the area could be made. In spite of the urgency of this request, the District Coast Guard Officer did not feel that temporary measures could be taken and, consequently, Roosevelt Dam aids were not established until August, 1945. The War Department issued a permit for a boom to be established below Peach to catch any drift from the Upper Columbia River before it reached the Dam. Brush so caught by the boom was to be dragged ashore and disposed of by burning. The boom was to be installed in two sections, one slightly upstream from the other, but overlapping its length so as to permit boats to pass around the ends of the boom on their way either up or down the river. Headquarters, at the request of the War Department recommended that the District prescribe such lights or signals as were necessary. The District Coast Guard recommended the reflector type lens which required no electric or automatic power for operation.

In December, 1944, a representative of the Aids to Navigation Office surveyed the area of Coeur d' Alene, Idaho, for navigational lights on the lake. As a result, it was determined that lights and reflectors were necessary as there was considerable traffic in lumber and war supplies. Before approval was received from Headquarters for these installations, a second durvey was made, approximately six months later, to determine the exact locations. (It had been impossible and impracticable to spot exact locations in the December Survey). The results of the second investigation were that 9 lights were proposed, subject to Headquarters' approval. Headquarters, however, did not favor the proposed program for

aids to navigation in Coeur d' Alene as there did not seem to be sufficient traffic bearing on the war effort and also because the war was drawing to a close. (13 August, 1945). Headquarters indicated that if sufficient evidence was presented for the need for aids in that area at some future date, the program would be given consideration.

The cessation of hostilities did, by no means, indicate that river traffic on the Columbia would end. Indeed, it had only begun. The great reservoir of the Columbia River as a commercial waterway had only been tapped. The tremendous source of electrical water power provided by Roosevelt Dam together with the natural resources to be found in this area made the commercial development of the Northwest inevitable. Here great mills and factories and farms and commerce of every sort were to spring up and the products of the field and forest and industry would be carried by great barge trains down the Columbia to its mouth and on to foreign ports.

ABBREVIATED STATEMENT OF TONNAGES
THROUGH BONNEVILLE AND DALLES-CELILO CANAL

(1911-1939)

Through Bonneville Locks
(Cascade Locks Prior to 1938)

PERIOD	OIL PROD.	WHEAT	RAFT LOGS	TOTAL TONNAGE
1920	(Yearly Average)		*	33807
1924	*	*	157	835
1926	*	*	38615	39076
1928	*	*	20748	38413
1930	*	0	77928	79747
1932	*	5160	47456	59777
1934	*	33608	46172	87029
1936	*	10192	45012	59490
1938	51685	27642	69642	161920
1939	215809	49420	133785	416814

Through Dalles-Celilo Canal

PERIOD	OIL PROD.	WHEAT	TOTAL TONNAGE
1920	(Canal Comp. 1915)		4020
1924	0	0	7
1926	0	0	0
1928	0	0	0
1930	0	0	0
1932	0	293	408
1934	*	21017	23408
1936	*	6495	7295
1938	26254	12111	44349
1939	119350	18921	139535

* Indicates that the tonnage, if any, was small and unimportant.

Note: Total petroleum products shown above are about 90% gasoline and 10% fuel and diesel oil.

BLACKOUT

"Blackout" entered the universal vocabulary with the advent of World War II, although, it had, in some degree, been used in all previous wars. The blacking out of municipal lights became the activity of the Civilian Defense Organization, but the problem of extinguishing lights on river and railroad bridges and the blacking out and silencing of navigational aids fell to the Coast Guard. Accordingly, the Commandant advised all Districts in October, 1940, that plans for the extinguishment of lighted aids and the silencing of sound signals were to be prepared in the event of a serious national emergency. In the 13th Naval District, a Board was immediately organized for the purpose of making a study of meeting any emergency which called for the purpose of interruption of the operation of navigational aids in the Seattle District, including all Canadian aids in the Strait of Juan de Fuca. The District Coast Guard Officer ordered this Board to study the strategic areas of the Columbia River entrance, to study several bar harbor entrances, San Juan Islands and the Puget Sound Area, and to formulate a Blackout Plan. The Plan was submitted to the Commandant, 13th Naval District for approval, as the Coast Guard operated its blackout through the Senior Naval Officer of the District.

This Blackout Plan, as approved in September, 1941, divided the District into seven areas, designated as Blacks One to Seven, and each Black was further subdivided into seven sections indicated by letter so that any part of any area could be blacked out separately. The "S" Code, developed previously by Communications for exclusive use in this District, was enlarged to accommodate blackout activities in all communication between Coast Guard units. For example, if all aids in the District were to be blacked out, the "S" signal was "Signal 26"; if the lights were to be blacked out and the sound signals silenced, the "S" signal was "Signal 138". If a blackout was designated in Black One Area, the signal was "Signal 26-1". To blackout Section A of Black One Area, the signal was "Signal 26-1A", etc. An "S" Code Signal Book was published for issuance to all units, Appropriate "S" signals were also prepared for the relighting of all aids.

Radiobeacons were not silenced under the general blackout but were covered by individual instructions to the Commanding Officers as required. Although an effort was made to cover all aids, it was understood that aids omitted or aids established after the Plan was distributed were to be blacked out by the unit having charge of that area. Commanding Officers were instructed to exercise their best judgement in the assignment of trucks, tenders, or small boats and these assignments were determined in advance.

Commanding Officers were further directed to familiarize themselves with the aids in their area, securing keys necessary for entrance to equipment and to properly instruct personnel under their command, in order that the blackout could be carried out smoothly and expeditiously. Sound buoys were silenced by securely lashing bell clappers or air intakes and whistles were wrapped with canvas and securely lashed. The District Coast Guard Office was to be notified by dispatch when the blackout had been effected or aids had been relighted, in accordance with District orders.

In October, 1941, a conference was held at Tongue Point Depot, Astoria, Oregon, to instruct personnel from that area in the operations required of the various types of aids to navigation to effect the Blackout Plan. A blackout drill of all units under the command of the Astoria Base was held on October 22, 1941. Each aid was visited and examined by the

personnel assigned thereto to ascertain type of equipment, the correct way to make the aid inoperative and the tools and materials required. During the practice, only an examination was made and the operation of the aids was not stopped. This was the only test of its kind in the 13th Naval District prior to the outbreak of the war.

On 9 December, 1941, a blackout was effected in the entire District on instructions from the District Commandant. Three officers, together with a small staff of enlisted personnel, issued instructions to the various Commands from the Aids to Navigation Office. Orders for the blackouts were received at 1400 and, by 2200, the blackout was completely effected. Tremendous obstacles were encountered, there having been no previous test of the Plan as set by the Board in September. Bridges throughout the District were blacked out, although no plan had incorporated such procedure and railroad officials as well as highway superintendents offered little cooperation. No word was received from the blacked areas as to the time their aids were extinguished nor was word received that they had been relighted following the blackout. This was due to the inability of telephone and radio facilities to handle such heavy traffic. No report was required concerning the results of the operation and a general blackout, other than tests in various areas, was never made in the District again.

Because of the difficulties experienced by Lifeboat Station crews in extinguishing certain buoys in rough seas and strong tidal currents during this blackout, it was decided that if the buoys could be approached against the current at a distance of 10 or 12 feet, and a switch operated with a blow or push of a pole from a small boat, the buoy light could then be extinguished quickly under reasonable sea conditions. (Such a switch was later designed and installed on the lighted buoys on the approach to the Columbia River Bar). As a further result of this blackout operation, a revision was made of the Blackout Plan, especially in the system of notifying civilian keepers and attendants as difficulty had been encountered in reaching these persons by telephone in their homes.

On December 10, 1941, shortly after the lights in the Columbia River Entrance Area had been blacked out, a distress signal was received from the SS MAUNA ALA which had run aground near the Columbia River Entrance about four miles south of South Jetty on Clatsop Beach. The SS MAUNA ALA, bound for Honolulu, had been out six days, and, at the declaration of war, had started back for Seattle under orders. The Master of the MAUNA ALA was not aware that the blackout of navigational lights was in effect. The million dollar cargo of Christmas effects, as well as the vessel itself, was a total loss. Lifeboat crews from Point Adams Lifeboat Station and Cape Disappointment Lifeboat Station, as well as the CGC CHANDAGA, assisted in the removal of the crew and Master. No lives were lost and no injuries sustained. In the investigation which followed, it was determined that the Master was at fault.

The District Liaison Officer suggested a system for the control of coastal lighthouses as employed by the Canadian Navy to be initiated in a similar way for U. S. Lighthouses. The Canadian Plan consisted of a broadcast three times a day at regular hours to all lighthouse keepers along the Coast. The system was divided into lettered plans; i.e., Plan "A" meant to keep lights burning bright, "B", submarine scare and all lights must be extinguished, etc. The District Coast Guard Officer did not accept this recommendation as the District plan then in use provided for extinguishment or relighting of any or all lights on a few minutes advance notice. The District system had the following advantages:

(a) It provided more positive communication and means of checking receipt of instruction.

(b) It provided greater security and more flexibility of instruction.

(c) It did not depend on any outside agency.

Proposals for dimming coastal lights were disapproved because of the unlighted gaps between lights which would have existed when the lights were dimmed.

A test blackout was held in March, 1942, for all Lifeboat and Light Stations. As a result of this test, it was decided that Seattle Radio Station, Westport, would, in the future broadcast a whistle blast preceding the instructions for blackout. Upon hearing the whistle over the air, all personnel standing radio watches were instructed to copy the message which followed and notify their Commanding Officers. Because of the possibility that telephone communications between Lifeboat and Light Stations might not be available at the time a blackout was ordered, all Light Stations which were radio-equipped were ordered to maintain a radio watch during the entire time the light was burning.

Revisions of the Blackout Plan[1] were made periodically to keep each section of the District cognizant of any changes in that particular area. After each revision, holders of Blackout Plans were ordered to destroy copies of previous Plans by burning. In 1945, a complete coverage of state railroad bridges, covering the area as far east as the Cascades, was completed and included in the Plan. It was advised by the Aids to Navigation Officer that similar blackout regulations be continued during peace time so that any confusion, in the event of a similar emergency, might be eliminated. It was further recommended that tests of the Plan be made occasionally be effecting a total blackout as there was no assurance that the plan in use was, by actual test, perfected. This recommendation was made to the Navy by the Aids to Navigation Officer in the early period of the war; the recommendation suggested that such a trial be made during the summer and in daylight when weather conditions would not necessitate mariners' dependence on lights or sound aids. This proposal was not approved.

Although at the cessation of hostilities, the Blackout lost its purpose for existence, the Plan was kept current in the event there should again be use for it. A complete revision, however, was necessary as the "S" signal for blacking out and relighting aids was cancelled by the Communications Officer. Without the "S" signal, the Plan in effect at the end of the war was not feasible. The Commandant, 13th Naval District, ordered the Port Townsend and Oak Bay aids relighted, an act which virtually ended the Blackout as these were the last two extinguished aids to return to operation. The Blackout had served well.

ANRAC — The enforcement of blackout in the United States at the outbreak of the war necessitated that, in addition to the blackout of municipal lights, the navigational aids in continental waters had also to be extinguished or silenced. (See blackout). To perform this action by manual labor consumed far too much valuable time and so it became expedient that a more swift method be devised. By 1942, Headquarters developed a radio control system

1. Blackout Plan. File CG-626 (14220/X-12)

for aids to navigation intended primarily for blacking out unattended lighted aids by means of radio signal. This system consisted of a control station transmitting specially coded ultra high frequency signals with a special receiver mounted on the buoys or other aids which responded to code signals and operated relays of gas valves to extinguish or relight gas lights or to turn off or on other types of aids. The system was designated by the coined word "RACAN" which was later changed to ANRAC to avoid confusion with RADAR beacons or RACONS.

The receiving control, in combination with an electric relay, was used to operate an electric bell signal to notify light keepers at outlying stations, lamplighters or buoy patrols that aids were to be extinguished. Such installations at certain visual vantage points permitted the person notified to observe the extinguishment procedure and to take the necessary action in those cases where receiving equipment proved faulty. This system of notification was considered as a means of relieving commercial communications facilities and was carefully planned in order to avoid serious results in case of testing operations. Weekly operational tests were made and all failures were reported in detail to Headquarters.

A transmitter and a keying unit were required for each control station, together with an emergency standby. A single control transmitter operated all receiving controls within its working radius of approximately 7 miles even though it was not within visual range of the receiving station. (The working radius of the control transmitter beyond its visual range depended on the size and nature of the obstruction; ordinary obstacles did not materially affect the working radius of a control transmitter.)

After a thorough study of the use of ANRAC, the District Coast Guard Officer, 13th Naval District, requested Headquarters' authority to install the equipment with Cape Disappointment Light Station as the control unit and the following buoys to be equipped with receivers:

Columbia River Outside Bar Ltd. Bell Buoy
Main Channel Lighted Whistle Buoy 2
Clatsop Spit Lighted Whistle Buoy 6
Peacock Spit Lighted Bell Buoy 7
Clatsop Spit Lighted Whistle Buoy 10
Clatsop Spit Lighted Whistle Buoy 10A
Peacock Spit Lighted Bell Buoy 9
Clatsop Spit Lighted Whistle Buoy 12
Clatsop Spit Lighted Whistle Buoy 14
Desdemona Sands Lighted Bell Buoy 11

It took approximately eight months for the delivery of the major ANRAC items to the District and it was not until March, 1944, that the first two ANRAC equipped buoys were placed on station. All maintenance and repair work for this initial installation of special buoy equipment was handled at the Tongue Point Repair Base. Maintenance personnel from this yard kept a running record sheet of both buoys together with a battery record for which a new calendar marking system was adopted. The ANRAC equipped buoys were placed on station in accordance with the normal buoy replacement schedule and for this reason, although other buoys were equipped with the ANRAC receivers at that time, they were not set out.

In the meantime, the Commandant, 13th Naval District, had ordered the relighting of buoys in Grays Harbor and Willapa Bay Areas which had been blacked out for security. This action was necessary to facilitate the movement of marine traffic related to the war effort. On the other hand, experience had demonstrated that certain hazards to defense activities were created by the inability to black out lights promptly, since the lights in this area might have been of inestimable value to hostile craft, and, in order to circumvent any such use being made of the lights, it appeared necessary that arrangements be made for their blacking out expeditiously. Experience had further demonstrated the impracticability of getting the lights extinguished in any kind of reasonable time, except for shooting them out. In one test case, it was a matter of five days before some of the buoys could be approached without the possibility of seriously damaging a boat or buoy or injuring personnel. For these reasons, the District Coast Guard Officer requested Headquarters to install ANRAC on the following lights where other means could not be utilized to obtain reasonable prompt extinguishment:

Grays Harbor Lighted Bell Buoy 5
Grays Harbor Lighted Whistle Buoy 8
Grays Harbor Lighted Whistle Buoy 6
Grays Harbor Lighted Whistle Buoy 9
Grays Harbor Lighted Whistle Buoy 11
Grays Harbor Lighted Whistle Buoy 1
Grays Harbor North Bar Lighted Whistle Buoy NC
Grays Harbor Outside Bar Ltd. Whistle Buoy GH
Willapa Bay Lighted Whistle Buoy 1
Willapa Bay Lighted Whistle Buoy 12
Willapa Bay Lighted Bell Buoy 14
Willapa Bay Lighted Bell Buoy 18

Headquarters approved the Grays Harbor and Willapa Bay Project, but, the equipment was held up until the middle of 1944. (The buoys were meanwhile equipped with brackets so that installation could be completed shortly after receipt of the transmitters.) Headquarters also indicated at that time that ANRAC installations, other than Columbia Bar, had not been anticipated for the 13th Naval District and that since ANRAC had been developed principally because of the potential hostile air attacks, it was to be applied only to those unattended lights on floating and fixed aids which were grouped to form patterns giving lines of orientation. It was not to be applied to relight or control lights of comparatively low intensity which were not readily recognizable to locate strategic areas or indicate definite bearings. Headquarters advised that further requests for ANRAC installations would not be favorable received.

By early 1944, blackout requirements in certain areas were materially reduced but no indication existed that such restrictions might not again be imposed. It was, therefore, desirable to continue the ANRAC program. The Coast Guard investment in ANRAC represented a considerable amount and a fair test of ANRAC in localities adjacent to better service facilities was necessary, in any case, to accomplish the ANRAC program as planned and to prove the equipment for use in remote areas where need for same continued to exist. Headquarters realized the difficulties encountered in pursuing the program due to shortage of servicing facilities but it desired that the ANRAC program be brought to a logical conclusion. ANRAC installations were modified only to the extent that aids of lesser importance were ANRAC equipped and field tested before the program was extended to include all aids in the original plan. Sufficient aids of lesser importance were field tested to determine the effectiveness of ANRAC under varying conditions. Daily preliminary tests of ANRAC equipment on the Columbia River bar buoys indicated that their performance was entirely satisfactory. However, due to the fact that there was probably less than 5% of the time, in the fall of the year and continuing through the winter, that all of the controlled buoys could be seen from Cape Disappointment, it appeared that a questionable situation

would be created by extinguishing the lights on these buoys daily and then having no assurance that relighting was accomplished. In order to verify the conditions that existed in connection with this situation, visibility tests were made on all ten buoys twice each day without the use of control equipment. A tabulation sheet, showing all ten controlled buoys, the date and hour, and an indication of each buoy light that was visible before 0800 and after 1200 each day, was submitted to the District Coast Guard Office weekly. In 3920 observations, lights were visible by telescope from Cape Disappointment Lookout Station only 2900 times. This figure included all ten buoys listed on the previous page, during period from 17 July, 1944, to 12 February, 1945, at which time the visibility tests were discontinued.

By November, 1944, Headquarters became interested in the peace time value of ANRAC and requested that the District Coast Guard Officer prepare a list of such locations in the 13th Naval District where ANRAC could be used for peace time operation. The major complicated features (essential for security) were to be simplified to meet peace time application to unattended radiobeacons or fog signals where maintenance by an operating crew and expenses related thereto presented objectionable difficulties. In response, the District Coast Guard Office listed five fog signals near the mouth of the Columbia River within a three mile radius from Point Adams Lifeboat Station, Hammond, Oregon, and the fog signals at Tacoma Waterway, Milwaukie Shoal and Point Defiance all within a radius of 4½ miles of Browns Point Light near Tacoma, Washington. However, the District Coast Guard Officer did not feel that ANRAC control of shore lights during peace time would have any advantage over the sun relays currently installed due to the higher cost and a greater possibility for human error.

Headquarters was requested, since the war time ANRAC program had proved unsatisfactory, that authority to discontinue the radio control of the lights on the buoys at the entrance to the Columbia River be granted. Due to the fact that an outage on any one of these buoys created a difficult situation and also because the necessity for an emergency blackout seemed extremely doubtful, this action seemed practicable. At the same time, it was requested that Headquarters postpone indefinitely the installation of the ANRAC equipment on buoys at the entrance of Willapa Bay and Grays Harbor as the equipment had not yet been placed on the buoys due to delay in installing the related control equipment on shore. This action, to remove ANRAC from Columbia River, Grays Harbor and Willapa Bay, was approved but the request for the installation of ANRAC on the five fog signals was not. Authority was granted, however, to equip Browns Point Light Station, near Tacoma, Washington, as a control point for fog signals at Tacoma Waterway, Alki Point, near Seattle, Washington, as control station for Duwamish Head Fog Signal, Point No Point, Hansville, Washington, as control station for Double Bluff Lighted Trumpet Buoy and Point Adams, Hammond, Oregon, as control station for Desdemona Sands Fog Signal. A form No. 2609 for the installation at Duwamish Head was forwarded to Headquarters. No further action was taken by the District Coast Guard Officer on other points approved by Headquarters.

SPECIAL BUOYS

RACONS (see following chapter) were primarily navigation aids for aircraft during the war years. However, since RADAR equipment was installed aboard Navy vessels, merchant ships, Coast Guard cutters and numerous other surface craft, it became another function of the Coast Guard to establish and maintain some sort of system to enable these ships to calibrate their RADAR equipment. A system of buoys equipped with targets or reflectors was developed by the Navy to furnish these vessels a means of testing their RADAR range and the alignment of the optical system with their RADAR antennae.

The first such buoy in the District established for the specific purpose of RADAR range calibration was placed in the west end of Dalco Passage in September, 1943. This buoy was installed at the request of the Seattle-Tacoma Shipyard and the Navy and was used mainly in the calibration of Radar installations aboard newly constructed vessels. The buoy was an ordinary first class tall type can bearing no special equipment; it was in operation as long as the Seattle-Tacoma Shipyard was engaged in ship construction.

As the war progressed, the traffic of damaged vessels to the Puget Sound Navy Yard for repair, increased. The single buoy in Dalco Passage was found inadequate to meet calibration demands and its type was not entirely satisfactory. The need for additional RADAR calibration buoys was plainly evident due to the fact that RADAR installations aboard surface craft had also greatly increased. Using the regular first class can as a base, three more buoys, designed for RADAR calibration, were developed and located southeast of Blake Island. These buoys utilized the lighting equipment (Wallace and Tiernan) for use in can buoys and which had originally been purchased by the 13th Naval District for installation on Jefferson Point Degaussing Range. As buoys were stationed in waters through which towing vessels proceeding from the Tacoma-Olympia Area toward Seattle passed, small flags were installed to make the buoys more easily sighted by the towing boat operators. Although the buoys and lights were provided by the Coast Guard, the reflectors and additional floats were manufactured and installed by the Navy. The duty of maintaining the buoys and servicing the lights fell to the Coast Guard.

South of Willapa Bay, approximately 4 miles off the Washington Coast, a target buoy for aircraft RADAR calibration was placed on station in September, 1944. This target buoy was the only special buoy in the District not maintained for marine RADAR calibration alone. Installed temporarily at the request of the Naval Air Station, Astoria, the buoy remained in service for the duration of the war. The buoy was originally equipped with a flashing white light which was removed the following year, as the lantern was damaged in hoisting the buoy. Naval authorities recommended that the light be removed as it was not needed in the capacity in which the buoy was operating.

The Port Orchard Buoy No. 1, located in Sinclair Inlet in Washington, was converted for RADAR calibration by the installation of special RADAR reflectors manufactured and installed by the Navy. These reflectors were so designed as to give a flat surface no matter in what position the buoy or ship might be. In order to limit the drift of the buoy, it was moored by three sinkers, each sinker having a mooring chain attached to a swivel at the bottom of the buoy. This arrangement cut down the normal drift to not more than five yards. This particular type of mooring was developed in the District to increase the stability of buoys for special stations.

In addition to the floating calibration units, three minor light structures were equipped with RADAR reflectors at Point Herron, Washington, Duwamish Head, Washington and Desdemona Sands, Oregon. These metal reflectors were mounted in the piling of the structure and therefore, did not change in the general appearance nor lessen the structures' effectiveness as aids

to navigation. The installation at Desdemona Sands consisted of a metallic screen in two panels, each panel 8' by 8', forming an inverted "V". This screen was used for accurate orientation of the Army Service Craft Detector SCR-296 which was installed on Cape Disappointment. The reflector at Duwamish Head was requested by the Navy as necessary for fine control RADAR calibration of ships in that area. The reflector there consisted of two cross metallic planes mounted on the piling underneath the lights. The reflector at Duwamish Head, Washington, proved most successful where a shore type reflector had previously failed to meet desired requirements.

In April, 1945, two of the three calibration targets and lighting equipment on the Blake Island RADAR calibration buoys were lost. The buoys were replaced by Coast Guard first class regular cans, equipped with 150mm lanterns. Due to the great depth of the water in that area, it was impossible to use chain as a mooring and consequently steel wire ropes were furnished by the Navy Yard for mooring. Dragging operations were carried out by Coast Guard tenders in an effort to recover the lost equipment, but the attempt was unsuccessful.

The last special purpose buoy to be installed, was a boresighting buoy requested by the Anti-Aircraft Training Center at Pacific Beach, Washington, and located 4,000 yards off the coast from the Station. Prior to the establishment of this buoy, a Coast Guard patrol craft from Grays Harbor, Washington,had moored off the coast while the station's guns were being boresighted. The establishment of such a buoy not only facilitated the boresighting but also released the patrol boats for more appropriate duties. The buoy was a first class tall type nun, painted white and lettered "A".

The first four obstruction buoys to be established in the District were placed at the Entrance to Port Townsend, Washington, to mark the Navy Submarine net a year before the war. Shortly afterwards, the Navy also established a magnetic survey range at Port Townsend and requested the Coast Guard to provide and plant four ice spar buoys there; funds for the transaction were provided by the Navy. This particular type of buoy, the ice spar, was selected because of its availability in the District, its length and its ability to remain vertical during any stage of the tide. These buoys were authorized by Headquarters but were never installed here as the magnetic survey range was moved to Point Jefferson and they were placed on station in that area shortly after the outbreak of war. All these buoys had a buoyancy chamber at the low water floatation mark to keep them upright in deep water and they were moored with a chain pendant. This type also marked the range positions with the least swinging radius as the water was deep for a fixed structure. Additional floatation chambers were provided for the lighted buoys to keep the buoy floating perpendicularly. The fog signal, however, was necessarily installed on a fixed structure.

Two Port Townsend Obstruction Lights("A" and "D") were established in 1941, together with two unlighted Obstruction Buoys("B" and "C"). Headquarters, in August of that year, approved the installation of Marrowstone Obstruction Light 1 and Point Hudson Dolphin Obstruction Light 2 at the entrance of Port Townsend Bay in Washington. Two other lights were authorized by Headquarters but were not installed as the need for them had decreased. In addition to these special aids to navigation, the Port Townsend area provided an obstruction lighted bell buoy, obstruction light and a lighted bell buoy. The Point Hefferson Degaussing Range included lighted spar buoys (12 were originally established but 2 were discontinued) a mooring buoy, placed on station there for small guard vessels.

These special RADAR calibration buoys were war measures and, though activities in this field were continued after the war, they were gradually reduced. The Degaussing Range, however, continued in operation at full strength, the Navy having informed the District Coast Guard Officer that the range would be necessary for at least a year after cessation of hostilities. These special aids, then, remained to the Coast Guard to service and maintain; one more activity added to its peace time function.

RACON - LORAN

Of all the ingenious war developments which were diverted to peace time use, RACON and LORAN were the two which effected safer navigation for air and surface craft and were, therefore, the concern of the Aids to Navigation Section, both during and after the war.

RACONS (formed by the contraction of RAdar and BeaCON and not to be confused with RACAC, the initial terminology for ANRAC equipment)[1] had been established during the war years at Air Stations or Light Stations (or activities where the need for them was evident) along the coasts of North America, from Greenland to the West Indies, in the Hawaiian Islands and the Canal Zone. Military agencies were the sole users of RACONS until the conclusion of the war, at which time the use of RADAR was permitted to commercial concerns and, consequently, dictated the post war expansion of the RADAR beacon installations. Although many RACONS were discontinued at Air Stations which the Army or the Navy abandoned, more were eventually established along the routes of commercial aircraft.

Both the Army and Navy awaited eagerly the completion of RADAR and, when it was perfected, began installing it, ashore and afloat. It was not, however, until the early months of 1943, that the RACON program reached the Northwest Coast. Early in that year, the Navy had determined to establish RACONS on Coast Guard Light Stations at Cape Arago, Charleston, Oregon, Cape Blanco, Port Orford, Oregon, Heceta Head, Florence, Oregon, and Yaquina Head, Agate Beach, Oregon. As the aerial activity in the 13th Naval District had increased rapidly, the RACONS were located at highly important navigational points and were regarded as a responsibility comparable to that of a light or radiobeacon. No additional personnel were required for the RACONS as the equipment itself needed very little attention. Although a continuous watch was necessary, the radio-telephone watch was able to maintain and operate the RACONS without hindrance to their other assigned duties. Sixteen Coast Guardsmen from the above mentioned Light Stations were schooled in operation and maintenance of RACON equipment at the one week training course at the Naval Air Station, Seattle, a short time before the installations were completed.

The Installation of these early RACONS was supervised by the Air Officer, Northwest Sea Frontier. All Equipment, including the converted power supply and its installation, were supplied through the Radio Material Officer, 13th Naval District. The Coast Guard's responsibility was to assign space for and accept responsibility of the security, monitoring and maintenance of these installations. The local maintenance crew had no responsibility for repairing the equipment; this was the charge of the Radio Material Office.

1. Army and Navy correspondence regarding the initial installations referred to the RADAR Beacons as "Raydon" and "Radon" as well as RACON.

By the end of May, 1943, RACONS were in operation at the above Coast Guard Units as well as at the Port Angeles Air Station and Tatoosh Island, Washington.[1] The Army Signal Corps had installed a RACON at the Grays Harbor Fog Signal Station, Westport, Washington, which was operated and maintained entirely by Army personnel. The Coast Guard had no cognizance of this Army RACON other than its existence for the equipment and its operation was classified as "Secret" and carefully guarded. This RACON was discontinued and the maintenance crew was withdrawn about a year after its installation when a new RACON was established at Hoquiam, Washington, also under Army supervision.

The YH RACON installations were in operation only a few months when the Navy advised that all activities were to be equipped with the newer, improved model of RACON, the YJ.[2] Two YJ RACONS were installed in the former locations of the YH and the latter models, together with their antennae, spares and instruction books were placed in storage. The installation of the new equipment was again done under the superivsion of the Radio Material Officer, 13th Naval District. At the same time, the Chief of Naval Operations directed that a site be selected, plans drawn and estimates made for a complete RACON Lighthouse (YJ, AN/CPN-3, and AN/CPN-6, in duplicate). Surveys for this site were made by Radio Material Officer's representative and a representative of the District Coast Guard Officer.

RACONS had not proved themselves "aids" to navigation by the beginning of 1944. Improper performance was prevalent and was due, in the main, to inefficient maintenance and to lack of appreciation of the importance such equipment bore to the safe passage of aircraft. At this time, a Chief of Naval Operations directive[3] transferred all Navy pulse equipment to the Coast Guard for operation and maintenance; the equipment was turned over to the custody of the Coast Guard, thus eliminating any financial transaction. The first RACON Station to be transferred was the installation at Tillamook Naval Air Station which was assumed by the Coast Guard on 1 May, 1945. An inventory of all equipment (together with condition in which it was received) was signed by the Commanding Officer of the Group, Hammond. Inventories were kept on file at the RACOn Station, Group, District Coast Guard Office and Headquarters. Equipment was later signed for by the District Property Officer which left only the operational end of transfer to the Aids to Navigation Section.

The directive from the Chief of Naval Operations, in addition to authorizing the transfer of equipment, also urged the establishment of new RACONS wherever the need for them was apparent. Headquarters was also directed to transfer RACONS to Coast Guard property wherever feasible. At Tillamook, Oregon, Shelton, Washington, Quillayute, Washington and Whidbey Island, Washington, Coast Guard personnel were messed and quartered with the Navy as the RACON Stations were facilities of thoseeactivities. However, at Astoria Naval Air Station, the RACON Station was a facility of the Astoria Operating Base and the men were billeted there. Seattle RACON Station, although a facility of the Naval Air Station, could not provide accommodations for the Coast Guard personnel; the men were placed on subsistence and quarters and lived in the nearby town of Kirkland. All other RACON Stations were established near a Coast Guard unit where the men could be billeted. (Exception was RACON at Oceanside where personnel were quartered with Army. See paragraph concerning Army RACONS.)

Prior to the Navy's transfer of all pulse equipment to the Coast Guard, all metters dealing with electronic aids had been handled by the District Communications or Communications Engineer Officer. However, in compliance with Headquarters' new policy regarding the electronic aids, the operational activities of the RACONS became the responsibility of the Aids to Navigation Section (under Operations). The following specific duties of the Aids to Navigation Officer were listed as follows:

(a) Obtain from the Chief of Naval Operations pertinent information concerning the specific Navy RACONS to be transferred to the Coast Guard.

(b) Obtain approval from the Chief of Naval Operations for the establishment of new units and decommissioning of old ones.

(c) Conduct a study to determine the operational requirements for the RACON system.

(d) Determine the operational requirements for various areas and furnish this data to the Office of Engineering for procurement of the equipment and the preparation of budget estimates.

(e) Recommend operating and supporting (non-technical) personnel complements for RACON Stations and set up priorities for assignment of these personnel.

(f) Arrange for the establishment of an appropriate system whereby all users of RADAR beacons are promptly notified of outages or defects.

(g) Prepare and disseminate operating instructions for RADAR beacons.

(h) Obtain and analyze operational reports from users and from field activities in the interest of bettering the service rendered to navigators using RADAR beacons.

(i) Advise the Communications Officer as to communication facilities required.

An Assistant Aids to Navigation Officer, especially trained in electronic aids, was assigned to the District to work particularly in this field.

When the transfer of RACONS from Navy to Coast Guard was pending, the Commanding Officer of the Blimp Squadron 33 at Tillamook, Oregon, fearing the coastal RACONS might be discontinued, set forth the importance of the RACON to his command as follows: "The airship, a slow moving aircraft designed to operate in conditions of reduced visibility at a low altitude, has, when such weather conditions exist, become dependent upon the coastal RACON Stations located clear of all interference of land masses as a primary method of making a landfall..... It is often difficult to identify portions of the coast in the P. P. I. (position plot indicator) scope due to the similarity of the received images of the bays and capes of this coastline. The airships position is immediately and positively verified upon timing in the RACON signals." This gave evidence that the earlier stigma of "inefficient operation and improper maintenance" of the RACONS was being eliminated. In

1. Tatoosh Island RACON was established by the Navy on 1 February, 1943, and discontinued a year later.

2. BuShip's Confidential letter, Serial C-979-384, dated 22 November, 1943.

3. Directive from the Chief of Naval Operations (op-20-Z) to The Commandant, U. S. Coast Guard, serial 0569420, Confidential, dated 8 June, 1944.

five months of operation, under the Coast Guard supervision, nine failures occurred but only one RACON lost actual operating time (2 hours 15 minutes) as the standby units were switched on in all other instances. The following table shows the usage of the 13th Naval District existing RACONS during the June, July and August months of 1945:

	June	July	August
Arago	12 hrs.	7 hrs.	3 hrs.
Astoria	30 inter.	76 inter.	112 inter.
Blanco	50 inter.	20 inter.	16 inter.
Heceta Head	12 hrs. 22 min.	5 hrs. 43 min.	5 hrs. 48 min.
Port Angeles	91 hrs.	60 hrs.	65 hrs.
Quillayute	not estbd.	7 hrs.	15 hrs. 45 min.
Shelton	4 hrs.	284 inter.	112 inter.
Tillamook	26 hrs.	40 hrs.	25 hrs.
Yaquina Head	12 hrs.	8 hrs.	6 hrs.

*Decrease in usage is probably due to the gradual reduction in the training program following VE-Day. These figures were taken from Monthly Reports submitted to Headquarters.

Two Model PBY5A planes were specially equipped by Headquarters with appropriate RADAR equipment required for the purpose of flight calibration for the RACONS, and with LORAN receivers for use in LORAN system checking. These planes were assigned from Headquarters to check RACONS on the West Coast and Alaska; the first of these RADAR RACHEL, arrived in the District in May, 1945. Flight test procedure required that approximately 8 bearings be selected and runs, at various altitudes, be made on these bearings so that the area entirely surrounding the RACON was covered. Data of the test, together with a graphic plot were prepared for each calibration and forwarded via the Aids to Navigation Officer to Headquarters. Results of tests made in the 13th Naval District were as shown below. Three District LORAN Units were checked but date regarding these tests did not pass through the District Office as those units operated directly under Headquarters. (See LORAN).

RACON STATION	MODEL	"A" BAND COVERAGE	"B" BAND COVERAGE	ANTENNA ELEVATION	MAXIMUM RANGE
Astoria, Ore.	YJ	49 North 65 East 50 South 60 West	89 North 92 East 71 South 127 West	750	65 "A"
Port Angeles, Wash. (2nd check)	YJ	61 North 60 East 16 South 55 West	95 North 101 East 17 South 73 West	25	67 "A" 102 "B"
Seattle, Wash.		30 North 11 East 28 South 33 West	49 North 42 East 40 South 46 West	505	35 "A" 55 "B"
Tillamook, Oregon	AN/CPN-3	20 North to South-west 70 South to Southwest 60 Southwest to Northwest		25	

During the initial check of the Port Angeles RACON, the YG homing beacon interfered with the signal; the second test, after the equipment had been adjusted, proved quite satisfactory considering the surrounding terrain, and showed an increase over a previous check of 35 miles on a 90° bearing from the beacon. In the northern quadrants, good coverage was obtained but it decreased slightly over Vancouver Island, B. C. and became quite poor to the south where the mountains were approximately 7500 to 8500 feet high. The RACON antennae were located on Ediz Hook near Port Angeles, Washington, in the open with no restrictions other than the mountainous terrain.

The antennae at the Astoria RACON were elevated 750 feet above sea level but this elevation did not provide the coverage originally hoped for. High hills to the northeast across the Columbia River and mountains to the east reduced the ranges in those directions, while a grove of trees 150 feet from the station (about 50 feet in height) restricted the signals at lower altitudes to the north, northeast and east. It was determined by the pilot that the beacon afforded good coverage over water and fair coverage over land. The Tillamook RACON was checked while a forest fire was raging about 20 miles distant from the station which caused dense clouds of smoke to ascend about 8000 feet into the air. However, there was no indication that the smoke affected the beacon's signals in any way, as the mountains restricted the signals beyond a close range of 20 to 30 miles. Mountains again restricted the beacon range to the north and east but the valley toward the northwest and out to sea provided maximum coverage. Much interference was received from the Cape Meares signal blending with the Tillamook indication on the scope at ranges of 45 miles and greater. The results of this Tillamook check seemed to indicate that the RACON there had little navigational value, whereas the Cape Meares beacon was used almost exclusively for navigation by the Blimp Squadron at Tillamook, Oregon, although the Tillamook RACON was good for homing to the air station when a landfall had been made with the Cape Meares RACON. The pilot suggested that one RACON, situated on the peak of the hill above Oceanside, Oregon, would serve the purpose of the two beacons then operating.

At the Naval Air Base, Seattle, the RACON Station was located in a rectangular clearing surrounded by trees on a hill. The trees encircled the beacon in all directions except west, being about 350 feet from it to the north and 125 feet distant to the east. On the west southwest, they were approximately 50 feet from the beacon. Although the grove only averaged 30 to 50 feet in height, they reduced the line of sight coverage of the beacon, and subsequent results of the test showed the contour curves to be determined largely by these trees and not by the hilly and mountainous terrain. It was the opinion of the pilot that increased coverage of the beacon could be obtained by cutting down or topping the trees within 150 yards radius of the antennae and/or elevating the antennae.

An Army YH RACON was established at Point Chehalis, Washington, on Coast Guard property with the understanding that the installation was only temporary due to the fact that a completed RADAR beacon and Lighthouse with YJ, YK and YM equipment was under consideration by the Coast Guard for that vicinity. In September, 1944, the District Coast Guard Officer had requested the Chief of Naval Operation's approval to install this Point Chehalis RACON as the equipment and personnel for such a project were all available in the 13th Naval District. This approval was granted and the Bureau of Ships was directed to furnish

technical assistance in connection with the Point Chehalis site survey.

The first site ("A") considered consisted of a flat portion elevated about 15 or 20 feet backed on the south by a wooded area on high ground. A number of dwellings (the Coast Guard Lighthouse, Lookout Tower, Etc.) placed a limitation on beacon performance in this sector. A second site ("B") elevated 300 ft. was also considered for the RACON Station. The site was only a mile from Moon Island Airport, with a road for access and with a mast height of 50 ft. It afforded operation seaward for surface craft up to a distance of 24 miles (line of sight) which, although the site was 9 miles inshore of Point Chehalis, Washington, provided a better range extending to seaward 3 miles beyond that of "A".

A third site ("C") was considered where the temporary Army installation had been set up. However, this location had many disadvantages as the elevation was 40 ft. less than that of "B". A large elevated water tank presented a problem in the matter of radio shadow. The property at "C" was owned by the City of Hoquiam, Washington, and the owner of the adjacent land objected to the building of a tall structure. The only disadvantage that appeared at the "B" site was the fact that a Civil Aeronautics Administration Light Beacon Tower, which had been established there, had a tall structure which produced a shadow. However, the various structures could be located so that the shadow would occur to the east where it would not affect an overall performance. The Commander of the Northwestern Sector, Western Sea Frontier, was heartily in favor of the "B" site for, in addition to the reasons stated above, a considerable number of Navy flights used the route via Moon Island when en route between Astoria, Oregon, and such points as Shelton, Seattle, Whidbey Island and Arlington in the State of Washington. The Commander, Northwest Sector also urged that, should a place be made by the Coast Guard in this location, the Army be requested to remove their temporary installation to avoid unnecessary duplication, and probable confusion to pilots. In January, 1945, the Chief of Naval Operations directed the Coast Guard to take action to install a RADAR Beacon at Site "B". The Commander, Naval Air Bases, 13th Naval District was also of the opinion that the site should be at this particular location.

Before work had progressed to any extent, the Army announced that it proposed to decommission the RACON installation at Cape Meares (Oceanside), Oregon, Neah Bay, Washington, and Hoquiam, Washington. Immediately the District Coast Guard Officer requested Headquarters' approval for these stations to be taken over by the Coast Guard, 13th Naval District. Approval granted, a survey was made of the Cape Meares (Oceanside) RACON as well as the one at Neah Bay, Washington. The Cape Meares location consisted of one YJ and one YK equipment located in a rubberized Quonset type hut situated on a hill at an elevation of approximately 335 ft. The only access to the station was by a foot path up a steep hill through a wooden area. All supplies and equipment were packed up and down this path. There was no emergency power line and no sanitary facilities or drinking water at the hut. It was definitely determined that that location was unsatisfactory from the standpoint of adequacy of equipment, lack of space for additional equipment or spares, lack of space for enlarging the present building and lack of accessibility. With this in mind, a survey was made of the Cape Meares Light Station, Tillamook, Oregon, with the idea of relocating the RACON equipment on Coast Guard property where adequate space was available at an elevation at approximately 325 feet. However, coverage to the eastward was restricted to high altitudes by a ridge, 150 ft. higher than the station. The coverage was comparable with that obtained at the present location. The Army had located in this particular site for security reasons and, as the war ended the necessity for such security, the more accessible position gained favor. In addition to other difficulties, when the Army RACON personnel were withdrawn, there were no facilities for messing, other than in the town of Oceanside, Oregon, (one mile distant) which Army Medical authorities had condemned as unsatisfactory from the standpoint of cleanliness. All things indicated that Cape Meares Light Station was the ideal place to move the equipment.

A similar inspection was made at the Neah Bay Army RACON Station which consisted of two YJ units and two CPN-3 Units located on top of a 1430 foot hill in a square wooden building. The station was accessible by a road constructed by the Army. The grade was steep, the road rough, but it was normally open the year around except for occassional falling of trees across the road. An attempt had at one time been made to top the nearby trees, but the Indians in the area objected. It was thought that satisfactory coverage could be given aircraft and perhaps surface craft without topping the trees, but as a flight had never been made it was not possible to make an accurate deduction. At that time, Army personnel were subsisted and quartered at a camp near the village of Neah Bay, Washington. It was necessary for personnel to be housed in the Neah Bay Indian Village, 6 miles from the RACON Station.

For reasons of inaccessibility and because good coverage was not provided for surface craft, a survey was conducted to determine whether or not adequate coverage for both air and surface craft could be given from a location on Tatoosh Island, Washington, in the vicinity of the former Navy RACON which had earlier been discontinued there. On 1 September, however, the station at Neah Bay, Washington, and at Cape Meares (Oceanside, Oregon) were transferred from the Army to the Coast Guard. The RACON at Hoquiam, Washington, was not transferred. Army personnel had been retained there until the Point Chehalis RACON Station was completed.

The end of the war brought about the discontinuance of many Auxiliary Naval Air Stations. Those in the 13th Naval District with which the Aids to Navigation Section was particularly concerned were the Auxiliary Air Stations at Quillayute, Washington, Tillamook, Oregon and Shelton, Washington. Information received from the Commander, Naval Air Bases, indicated that these three stations would be placed on a caretaker's status, meaning that 15 or 20 men would be assigned to the Air Station to maintain buildings and to provide the necessary guards. The discontinuance of the Air Station at Quillayute, Washington, affected the RACON Station only in that the personnel assigned there were placed on subsistence and quarters and the RACON continued to give service to aircraft flying in that vicinity. However, as the beacon was located approximately three miles from the nearest water, it was doubtful that the station would be of any benefit to surface navigation. The Aids to Navigation Officer recommended that, in order to maintain the RACON for general air navigation, the beacon be moved to Destruction Island Light Station and there afford service for both air and sea navigation. Such a move would give added navigational RACON coverage and add to a chain of RACON Stations for electronic navigation along the Coast.

The Tillamook RACON, as was seen earlier, provided limited coverage and was of little value except to the aircraft at the Air Station. The Aids to Navigation Officer recommended that the Tillamook

RACON be decommissioned when the Air Station went into a caretaker's status. The Shelton RACON also provided limited service in much the same manner as the Quillayute beacon to cross-country flights. Whether or not it was to be continued, depended upon the investigation made by the Army and Navy suthorities to determine their needs. There was little doubt that the Air Stations at Tillamook, Oregon, Quillayute, Washington and Shelton, Washington, would be discontinued.

Headquarters conducted a survey to determine what applications could be made of shore based RADAR to the performance of Coast Guard peace time functions. All types of applications were investigated in order that the fullest advantage might be taken of the latest electronics developments. The part RADAR had played to win the war was common knowledge. The part it would play during the postwar period was somewhat problematical and the subject of much speculation.

It was the intention of the Coast Guard to make the most possible use of RADAR and other electronic devices in order to increase the efficiency of its public services. One shore base installation was established and two installations were tentatively scheduled to be used as an experimental setup to determine whether necessary coverage could be provided for air sea rescue operation. No program other than experimental had been devised for furnishing coverage for the protection of small craft along the coast and in the harbors.

The District Coast Guard Officer of each District was directed to investigate the possible applications of shore based RADAR to the particular problems of his District. Consideration was given to the need of air sea rescue to provide warning of potential or real distress, to determine the assistance to possible control of shipping in and around harbors and the use of RADAR as a supplementary aid for coastal lookout as well as in checking the positions of navigational or nay other applications which would increase the efficiency of Coast Guard functions. Results of these investigations by the District Coast Guard Officer were submitted to Headquarters in order that no phase of RADAR application was overlooked in the overall study.

The end of the war found the District not only operating 14 RACON Stations, but a new electronic aid, LORAN, with stations at Cape Blanco, Oregon, Point Grenville, Washington, and Spring Island in Vancouver, B. C. A Monitor Station for LORAN had been set up at Yaquina Head, Oregon. Installation and supervision of LORAN was controlled entirely by Headquarters. However, on survey trips to determine sites for the various stations, representative of the District Coast Guard Officer, 13th Naval District, had been present. The original installations at the aforementioned stations were temporary, in that they were mobile units, contracts having been let to private industry for the construction of permanent stations. The Aids to Navigation Office distributed 1500 temporary LORAN navigation charts covering the coast from Cape Blanco to Spring Island to Army, Navy and Canadian Air Stations, as well as innumerable warships. These two stations were the "Slaves" with the "Master Station" located at Point Grenville, Washington. Headquarters Detachment "G", which was in supervision of the District LORAN Units, operated with headquarters at Newport, Oregon. All stations operated on a 2H4 rate. Favorable reports were received from mariners who had picked up the pulse from the mobile units at great distances at sea.

Indirectly, the Aids to Navigation Section figured in installation of the LORAN on Spring Island off the coast of British Vancouver. Equipment to be moved to the Island from Seattle included trucks, jeeps, weapon carriers, Quonset huts, materials and equipment for clearing land as well as supplies for 34 men to be stationed there during temporary service. The only ship available in the District for the transporting of these supplies and men, was the tender BASSWOOD. The BASSWOOD made several voyages to transfer equipment until the tender was assigned to the South Pacific, (see tenders), and an Army freight ship was sent as relief. The completion of Spring Island as a LORAN Station added another link in the LORAN System covering the West Coast from Mexico through Alaska.

In addition to its previous peace time function, the Aids to Navigation Section, had expanded to include in its duties the 14 RACON Stations maintenance and operation as well as three LORAN Stations together with their Monitor Station. The assistance rendered by LORAN, for distances at sea to 1400 miles, was a far cry from the guiding light of the early LIGHTSHIP NO. 50 whose oil lantern set out a gleam a scant 10 miles. And, in addition, not only the sea but the air became safe as LORAN helped pilots fix their positions with pin-point accuracy. The Coast Guard had made the air, as well as the sea, safer for navigation.

LOCAL NOTICE TO MARINERS

A special function of the Lighthouse Service had long been the issuance of daily notices to localmariners concerning current data of District waters. After the consolidation, the Notice to Mariners continued to be published over the signature of the Commander, Seattle District and later, the District Coast Guard Officer.

Information for the notices was received from Coast Guard, Navy, Army Engineers, Merchant Vessels, Canadian Authorities or any unit or individual finding a discrepancy in any navigational aid or menaces to safe navigation. Misplaced buoys or extinguished lights, defective signals in sound or light, derelicts, logs, debris of any sort which constituted a menace, soundings of newly dredged areas, new regulations and limitations of restricted areas were the bulk of information published.

The Notices were numbered consecutively, number one being issued at the beginning of each calendar year. In 1944, there were 183 more notices published than in 1934, the increase being due to the war restrictions, floating rafts, unexploded depth charges and the submarine menace. Notices were not published on Sunday nor on days when no changes in aids had occurred. This data was broadcast, during the war, over local commercial radio stationd during a sponsored program for the Coast Guard. This program was discontinued at the close of hostilities. 1650 copies were distributed daily to a mailing list of 550 units or individuals in 1945. In 1939, 91 addressees received the Notice. This tremendous growth was due to the heavy war traffic of merchant and naval vessels.

Mariners depend whole heartedly upon these Notices as guides for safe navigation. Evidence of this has been shown in the alacrity with which operators notify the Aids to Navigation Section of discrepancies in aids or menaces which they have sighted during their activities.

CARD FILE SYSTEM

A card record system was developed in the Aids to Navigation Section for each buoy in the District, arranged geographically in a visual card file with visual color signals indicating the general progress in buoy relief work and other pertinent information.

TENDERS

In order to keep the navigational aids in proper working condition, a fleet of tenders was necessary to service buoys and lights throughout the waterways of the nation. With the first Congressional appropriation for buoys for the Northwest, a tender, the SHUBRICK, a wooden hulled, side wheeler, was assigned to the Pacific Coast. The SHUBRICK, as well as other early tenders, served double duty, acting as both buoy tender and revenue cutter. In her latter capacity, the SHUBRICK carried three 12-pound cannons as well as small arms. This single vessel serviced all aids along the coast until February, 1880, when the vessel was transferred to the lower Pacific Coast and relieved in the Seattle area by the first MANZANITA. Of historical interest is the fact that the SHUBRICK was the first vessel of considerable size to navigate the Columbia River beyond the present location of the Bonneville Dam.

As traffic in the Northwest waters increased, so did the need for navigational aids and, consequently, the work of the tenders. The first MANZANITA carried the burden alone until the COLUMBINE, a U. S. Army Engineers vessel, was assigned to the same area. This ship was built and maintained by the U. S.Army Engineers and operated by the Lighthouse Service for servicing aids of the Lighthouse Establishment. (As the Bureau of Lighthouses was previously called.) The MANZANITA was sunk off Warrior Rock in the vicinity of St. Helens, Oregon, in the Columbia River, and the COLUMBINE performed tender duties alone until the second MANZANITA was completed. These two together with the HEATHER, operated for several years until the COLUMBINE was transferred to the Honolulu District. The ROSE, and soon thereafter, the RHODODENDRON and FIR were commissioned and assigned to duty in the Seattle Area. When the FIR reported, the HEATHER was removed from duty and tied to the sea wall at the Lake Union Locks until the outbreak of the war. At that time, the Army borrowed her and she was never returned. The old MANZANITA lay for a considerable time a derelict, off Warrior Rock, but was raised, refitted and is still operating as a seagoing tug under the name DANIEL KERN. Two fine tenders were commissioned and attached to the 13th Naval District during the war, the BASSWOOD, 1944, and the BLUEBELL, the following year. The BASSWOOD was transferred after a year's general aids to navigation duty which involved servicing isolated units and the LORAN project in Vancouver Island. (See LORAN.) In addition to these large tenders, the CG-65302-D was engaged in buoy work and the maintenance of minor aids on the Upper Columbia River between The Dalles, Oregon and Pasco, Washington.

The jobs confronting the buoy tenders were much the same - relieve buoys annually, replace and recharge batteries, install acetylene accumulators and establish new aids. The routine, however, was never monotonous. Treacherous waters, dangerous shoals, fog, storms and the nature of the equipment made the task of the buoy men a hazardous as well as highly specialized operation. Winter activities were especially gruelling as sharp winds blew icy water on the men as they worked, while the rolling ship with it's slippery deck made each movement a hazardous one.

At the outbreak of the war, the MANZANITA was fitted out and supplied with special submarine cables for the laying of a protective loop across the approach to Dutch Harbor and again, she was loaned to the Canadian authorities for the laying of a similar cable at Prince Rupert. The tenders performed their regular duties during the war, but were equipped with small arms, depth charge racks and deck guns for protection against enemy submarines. This armament was removed following cessation of hostilities and the complements of the tenders thereby gradually reduced.

STANDARDIZATION OF MINOR AIDS

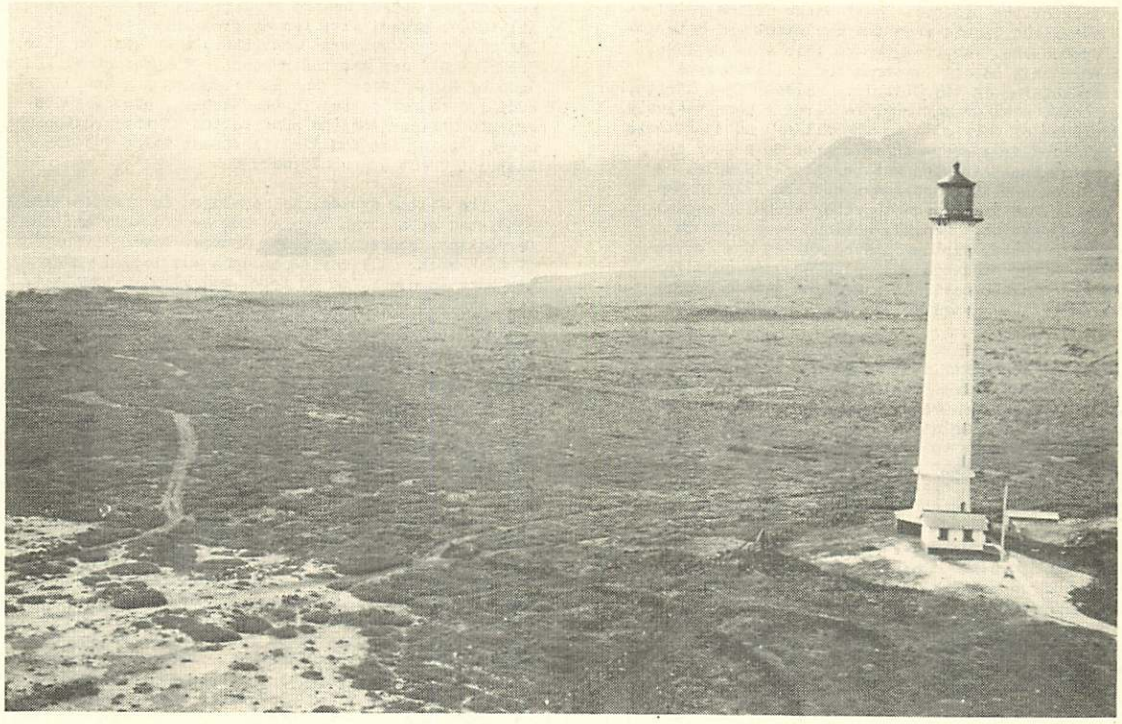
In order to avoid a heterogengous supply of lamps for spares and replacements, the Aids to Navigation Section received Headquarters' approval to replace 315 volt and 4 volt lamps in many of the stations with an 8 volt lamp. This change was prompted by a survey of lamps in the District which shows that the use of 3.5 volt lamps had almost been eliminated by the increased installation of the Willard cells and that the 4 volt lamp was used in a comparatively few number of stations. The four volt lamp could be used at stations having a fixed characteristic but, since the installation of 4 volt flashers had been avoided for several years, insofar as was practicable, the 8 volt lamp was favored from the standpoint of efficiency and utility. At stations where the 4 volt lamp had been required, an additional battery cell had been provided and placed in series with the main lighting battery, but wired to provide current for operation of the 6 volt flasher only. This practice had been entirely satisfactory, but while limiting the requirements for flashers in the District to only two types (6-8 and 12-15), was open to the objection of requiring one additional cell at each station where a flasher was used. This cell was not utilized to the full extent of its ability since only a small portion of its charge was consumed by the time the main battery was discharged.

The change in lamps was accomplished immediately in all stations where no change of flashers was required. In those lights where the change was necessary, the new lamp was installed at the time of the regular servicing of the station. The entire replacement was completed within six months after Headquarters' approval. By this program of standardization of minor lights, a uniform observed candlepower was maintained and the problem of servicing was materially lessened.

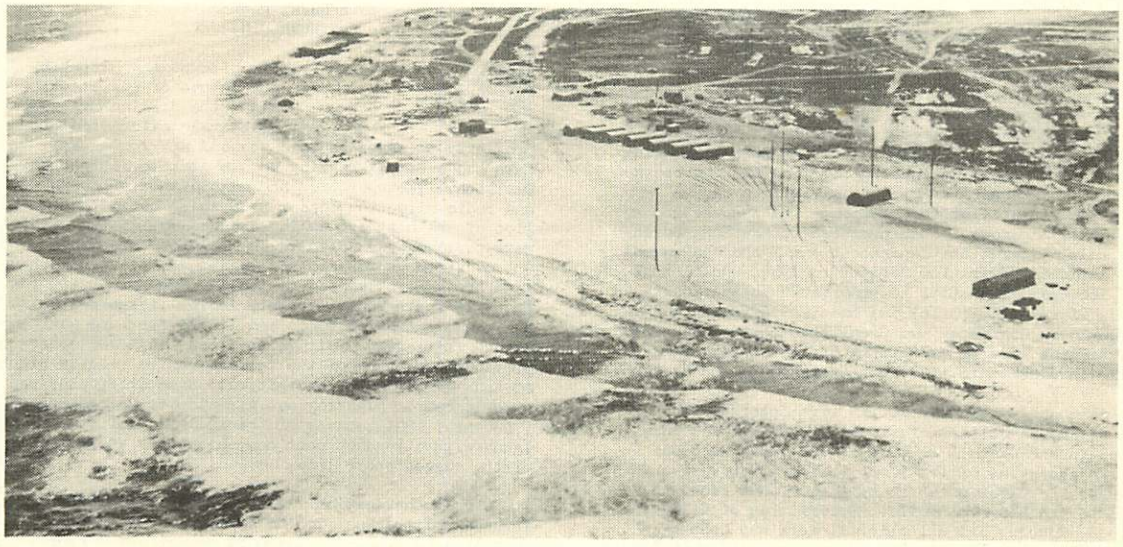
At the same time, Headquarters requested that the characteristics of flashing minor lights in all Districts be standardized as nearly as possible. The characteristics of light 0.4 seconds and dark 3.7 seconds and 0.3 - 0.7 was eliminated in favor of the light 0.4 seconds, dark 3.6 seconds and 0.4 - 0.6, respectively. It was the policy of Headquarters to show a fixed light where commercial current was available and where such a light could be readily distinguished against a background of other lights. The 0.4 - 3.6 flashing characteristic was used on lateral aids along the sides of clearly defined channels where the importance and class of vessel traffic was commensurate with servicing facilities. This characteristic was preferred for economical reasons and predominated in usage. Front range lights exhibited a flashing light 0.4 - 0.6 and the rear lights were fixed in cases where commercial electricity was used for rear light and batteries for front. Acetylene or battery electric lights generally showed a front light flashing 0.4 - 0.6 seconds and 3.0 - 3.0 seconds in the rear to save on illuminant. The rear characteristic was changed to 5.0 - 5.0 seconds on long channels 250 feet or more in width.

These changes were accomplished by the installation of new cams in the flashers of minor lights over a period of approximately four months, at the end of the time, the District minor lights conformed with Headquarters' standardization program.

Because of the servicing problems and the inadequate range covered, the oil lantern was replaced



NEW TRAGEDY FOR MOLOKAI
ISOLATED FROM THE NEARBY SETTLEMENT OF LEPERS,
THE 2,000,000-CANDLE POWER COAST GUARD LIGHT AT MOLOKAI, ISLAND IN THE HAWAIIAN GROUP
LOOKS OUT OVER THE SCENE OF RECENT OCEANIC FURY



LORAN AT BAKER ISLAND
THIS IS AN AERIAL PHOTOGRAPH OF CG UNIT 94, LOCATED ON BAKER ISLAND
OF THE PHOENIX ISLAND GROUP

whenever possible by the electric light. It was also the policy of the District Coast Guard Office to electrify acetylene lights when the equipment had deteriorated beyond use. Working toward this end, by 1945, there were only 63 oil lanterns and 111 acetylene lights remaining in the District. Electrified lights, either commercial or battery, required a comparatively small amount of servicing as the Willard cell batteries were relieved from every three months to a year and exchange of the batteries was relatively simple. A record of each battery cell was kept on file in the Aids to Navigation Section together with its serial number and station. Monthly notices were sent to responsible units, listing the batteries due for relief and, after each aid was relieved, the unit furnished the Aids to Navigation Section with a report of the batteries installed and those relieved.

In addition to the above program of lights and illuminants, the District completed a project which made the painted structures in the Columbia River uniform. This operation was undertaken in response to a request from the Columbia River pilots and other interested operators to furnish daymarks which could readily be seen against a dark background. It was also an effort to initiate a standardization program for the painting of minor aids in the District.

The lantern and top 12" of each structure was painted red, if on the starboard side of the channel, and black, if on the port side, entering from sea, for channel indication. The remainder of the house, railing, platform and platform bracing was painted white to provide maximum visibility of the daymark. These changes were made at each aid at the time of its next regular painting so the project was not completed for approximately a year.

This completed the District projects for minor aids during the war. The end of 1945 found the standardization policy of Headquarters as well established and operating efficiently in the 13th Naval District.

PERSONNEL

Prior to, and for almost a year following, the consolidation of the Lighthouse Service and the Coast Guard, the Aids to Navigation Section was administered by an Associate Mechanical Engineer with the assistance of two clerks and a stenographer. Both operational and engineering activities were combined in this section until the District was reorganized according to the Coast Guard organization plan. Engineering duties were then delegated to a separate Engineering Section and the operation and maintenance of aids to navigation became the responsibility of the Section. The Associate Mechanical Engineer, later promoted to Nautical Scientist, administered the department until the assignment of an Aids to Navigation Officer in 1944. Until that time, however, the staff had increased to two Coast Guard Officers (R) (male) and one SPAR Officer, 3 enlisted Coast Guardsmen and 6 enlisted SPARS. In 1945, an Assistant Aids to Navigation Officer, trained especially in electronic aids, was assigned to the Section.

Although particular duties were delegated to certain desks, an attempt was made to instruct all personnel in the overall working of the department so that in the event of transfer, leave, discharge, or illness, there was no obvious vacancy that required complete training to handle. Supervision of filing, typists, records and all clerical work was done by a SPAR Yeoman, 1st class. Field trips were made by the Associate Mechanical Engineer and the male officers to inspect aids, prepare forms 2609, for proposed projects, investigate new sites, confer with Pilots' Associations and, in conjunction with the Engineering Section, to determine the requirements of new aids. All tender orders were issued from this Section and the reports of tenders' activities were kept on file. The SPAR Officer was instructed in non-technical operation of RADAR Beacons and Radiobeacons and was, in addition to her duties in the Section, also a Hydrographic Officer for the compilation of the Arctic Ocean, Bering Sea and Aleutian Coast Pilot for the District Coast Guard Officer.

The filing system, as developed in the department, consisted of a rough running log kept weekly and transferred to a smooth log under another cover at the end of each week. All correspondence was logged under its correspondent (to or from) and also its subject. File numbers were assigned and folder designations were made from an Office Index. Pieces of correspondence, filed since the origin of the system in 1943, had passed the 15,000 mark by the end of September, 1945. Folders numbered to 730 with a transfer file of several hundred folders were necessary to jacket this correspondence. A photographic file of all minor and major aids in the District was kept current as new aids were installed, relocated, removed, or as old aids were improved or modified.

There was a little overlapping of activities between the Aids to Navigation Section and other departments, although its duties followed closely, in many instances, those of the Engineering Section, Vessel Operations, Port Security, Communications and Communications Engineering. These parallels were, respectively, in regards to surveying sites and determining structures, the movements of tenders, position of buoys and restricted areas, the monitoring stations at North Head and Meadowdale and the activities of RACONS and the LORAN System.

Careful avoidance of duplication of duties assigned to the various desks and a well-organized and carefully planned daily routine placed the efficiency of the Aids to Navigation Section in the top brackets.

14TH NAVAL DISTRICT
(HONOLULU)

AIDS TO NAVIGATION

The size of the District, the nature of its coast line, the distinctive geographical features and its proximity to major Pacific sea and air routes all have had a direct bearing on the Aids to Navigation Division. The operation and maintenance of Loran and radio direction finder nets which became a function of the District as it expanded during the war were particularly affected in the above respects. The mountainous terrain and rugged coastline together with the generally good visibility and relatively few seaports and harbors on the principal islands require a minimum number of buoys and lights for safe navigation. The easily distinguished headlands and other prominent features of the islands can be readily sighted and identified by navigators. Some difficulty was experienced in blacking out all aids to navigation on 7 December 1941 because of the isolation of some islands with attendant poor communications and because of the rugged shore line.

The aids to navigation facilities required for the invasion of the Pacific and Japanese islands were furnished by the Coast Guard by direct issue from Headquarters and the District had little part in the program. At several times technical assistance from the Coast Guard was requested by COMSERVPAC, and

finally a Coast Guard officer, Commander C. N. Daniel, was assigned to the Navy as Coast Guard Liaison Officer for aids to navigation for all Pacific bases and invasion bases.

In March, 1944, the District was first called upon to assist in the Loran program in the Pacific. This participation increased from month to month until it reached a peak by the end of 1945 when all twenty-four Loran stations had been turned over to the District for operation. The administration, operation and logistic problems incident to the control of the Loran stations scattered throughout the Pacific were the most far reaching developments in the District history. The size and geographical features of the District, expanded to include Loran installations throughout the Pacific, had an obvious and profound bearing on District problems. Isolation, distances, tropical conditions, inadequate port and dock facilities at Loran Stations created extremely difficult problems in connection with supplies, electronic maintenance, morale, transfer of personnel and communications. The most remote Loran stations were located as much as 4,600 miles away from District headquarters in Honolulu.

During the first part of July, 1945, it was decided by the Navy that the Coast Guard would operate a direction finder network in the Hawaiian Islands. Actual operation of the D/F Net was started in August of 1945. The net was composed of former Navy direction finder stations at Midway, Johnston, Palmyra, Port Allen, Kaneohe and Kailua. The circuit net was established at the District Radio Station, Wailupe. There were no special problems incident to the geographical nature of the District in connection with administration or operation of the direction finder net. The D/F stations were located in the Hawaiian Islands group and were capable of being served logistically along with other Coast Guard activities in the Islands.

The aids to navigation activity underwent no change of importance during the first year of the war. Some additional buoyage was provided primarily at Pearl Harbor and Kaneohe Bay. By the end of the war, however, the District became responsible for all aids to navigation at Naval Bases throughout the Pacific. This arrangement was made in Washington and appeared to be an ill-conceived plan, since the demobilization and attendant confusion of Service stabilization prevented the proper discharge of Coast Guard obligations and commitments in this regard. The net result was extremely poor accountability of aids to navigation materials in the Pacific, little or no attention to servicing of aids as well as loss of prestige to the Coast Guard. In 1944 concurrent with the added responsibility for aids to navigation at advanced Naval Bases the District began to acquire responsibility for the Pacific Loran stations.

LORAN

The need for a simplified, yet accurate method of position finding on the vast stretches of the Pacific Ocean became apparent during the early months of 1944 when greater numbers of men and supplies began pouring into the Pacific-Asiatic theatre of the war. Loran, (long range navigation) an electronic method for determining positions, was best qualified to fulfill this need as well as to provide accurate navigation to targets of aerial bombardment. The District Coast Guard Officer, 14th Naval District was first placed in contact with Loran when ordered by HQ to receive certain construction equipment from the Army on Baker Island. Lieutenant Alvin L. Loose, USCGR, was ordered to Baker Island 6 March, 1944, with a small party of men to receive the construction equipment, which was later used by Headquarters construction detachment for building a Loran station on that island. From this time on, the Loran stations in the Pacific were constructed and erected with increasing speed by construction detachments ments under the direct supervision of Coast Guard Headquarters. An extensive engineering base at Sand Island was constructed with the cooperation of the District to facilitate the work of the construction detachments in the Pacific. As the construction of the Loran chains moved further westward with the advancing front new engineering bases were necessary. A construction engineering base was established on Guam and late in 1945 and engineering construction base was established at Castillejós, on the Island of Luzon in the Philippines.[1]

As fast as the Loran chains were completed they were turned over to the District Coast Guard Officer for operation. The problems of administration of each Loran chain was met by delegating authority to a command unit in each chain. The command unit operated and had similar responsibilities to that of a Section Commander. The command unit which was generally quartered at the Loran Monitoring Station of the chain generally consisted of one or two line officers, a supply officer, a yeoman and one or two storekeepers, plus the usual watch standers.

The Loran chains were turned over to the District Coast Guard Officer by the construction detachment along with all personnel and public property on the following dates:

HAWAIIAN CHAIN — COMMISSIONED 8 NOVEMBER 1944

CGIRS, French Frigate Shoal (Unit 204)
CGIRS, Niihau Island (Unit 205)
CGIRS, Upolu Point, Hawaii (Unit 206)
CGLMS, Port Allen, Kauai (Unit 207)

PHOENIX ISLAND CHAIN — COMMISSIONED 15 DECEMBER 1944

CGIRS, Baker Island (Unit 91)
CGIRS, Gardner Island (Unit 92)
CGIRS, Atafu Island (Unit 93)
CGLMS, Canton Island (Unit 94)

MARSHALL CHAIN — COMMISSIONED 15 DECEMBER 1944

CGLRS, Kwadack, Kwajalein Atoll (Unit 82)
CGLRS, Roguron, Majuro Atoll (Unit 83)
CGIRS, Bakati, Makin Atoll (Unit 84)
CGLMS, Enigu, Majuro Atoll (Unit 85)

MARIANAS CHAIN — COMMISSIONED 1 MARCH 1945

CGLRS, Saipan Island (Unit 337)
CGIRS, Cocos Island (Unit 336)
CGIRS, Potangeras, Ulithi Stoll (Unit 338)
CGLMS, Ritidian Point, Guam (Unit 339)

PALAU-MOROTAI CHAIN — COMMISSIONED 22 JUNE 1945

CGLRS, Ngesebus (Unit 343)
CGLRS, Pulo Anna (Unit 344)
CGLMS, Morotai 'Unit 345)

JAPAN CHAIN

CGLRS, Kangoku, Iwo Jima (Unit 348)
Commissioned July 1945
CGLRS, Ichi Banare, Okinawa (Unit 350)
Commissioned July 1945
CGIRS, O'Shima Island (Unit 349)
Commissioned January 1946

1. See C. G. at War - Loran - IV - Vol. II.

The problem of supplying and administering the Loran Chains was enormous and became more difficult with the roll-up of Army and Navy activities which commenced on VJ-Day. The Loran chains were great distances from Honolulu -- 1,650 miles to the Phoenix Chain; 2,000 miles to the Marshall Chain; 4,600 miles to the most remote station in the Marianas Chain and 3,600 miles to the Palau-Morotai Chain. These distances were only to the main points of distribution in each chain and still further spaces of water had to be covered before the supplies actually were placed in the hands of personnel at individual Loran stations. No other Coast Guard District was faced with such problems of distance, supply, distribution and transportation. The assignment of the AK KUKUI and PB4Y-type aircraft late in 1945 helped to discharge the tremendous logistic responsibility for proper maintenance of the Loran stations.

While the overall operation of the Loran system in the Pacific may be considered a success, many difficulties and mistakes that are now apparent might have been avoided by proper planning. Due to the secret classification of all matters pertaining to Loran a code name was given to each Loran station. This resulted in considerable confusion and caused long delays in the delivery of high priority material. Normal surface transportation via such Army and Navy ships that were available took as much as six months or longer to some of the outlying Loran stations. As the Army and Navy facilities in the area decreased at the end of the war this problem became more serious. In many cases it was six months or more after the commissioning that officers from the District were able to visit and inspect the Loran stations. This resulted in poor supervision that was reflected by poor accounting of public property and slip-shod maintenance of many of the Loran stations by the end of 1945. In spite of this, usable Loran service time averaged 99% of the total time; in other words, the Loran system was available for use by navigators about 23 hours and 45 minutes of each 24-hour day. The relationship and cooperation between the construction detachment operating under Headquarters and the District office was not always as satisfactory as it might have been. It is felt by the District that smoother administration of the entire Loran program would have resulted had the work been done though the normal chain of command. The shortage of personnel that occurred immediately after the ending of the war created a grave military morale problem at the Loran stations. Eighteen months tour of duty was not uncommon for a man attached to a Loran station in the Pacific. This was too long a tour of duty for a small number of men at isolated and lonely Loran locations; the result was extremely poor morale late in 1945.

AIDS TO NAVIGATION

ACHIEVEMENTS — There was little expansion in this department and no spectacular or noteworthy achievements. Additional buoys were established as required by the Navy in the Hawaiian Island. Late in 1945 all aids to navigation at advanced bases in forward areas were turned over to the District and a survey conducted as ground-work to provide for efficient management of these newly acquired facilities.

MISTAKES AND LESSONS LEARNED — Aids to navigation was a routine affair after the blackout on 7 December, 1941, and little in the way of mistakes or lessons learned appeared in the records. It was apparent from the difficulty that was experienced in extinguishing some of the lights on 7 December, 1941, that continued attention to perfecting a District blackout plan should be pursued. As in the case of original installation of Loran it appeared that had the District Coast Guard Officer, 14th ND, been in closer contact with the war-time installations of aids to navigation at advanced bases, a smoother and more efficient transition to operation of these aids by the 14th ND would have been accomplished. As it turned out the District assumed control of all aids in the forward areas after an extensive survey in December, 1945, but due to shortage of personnel, ships and other facilities, little could be done to carry out the program. The net result was inability of the Coast Guard to live up to its commitments to the Navy and consequent loss of prestige.

LORAN

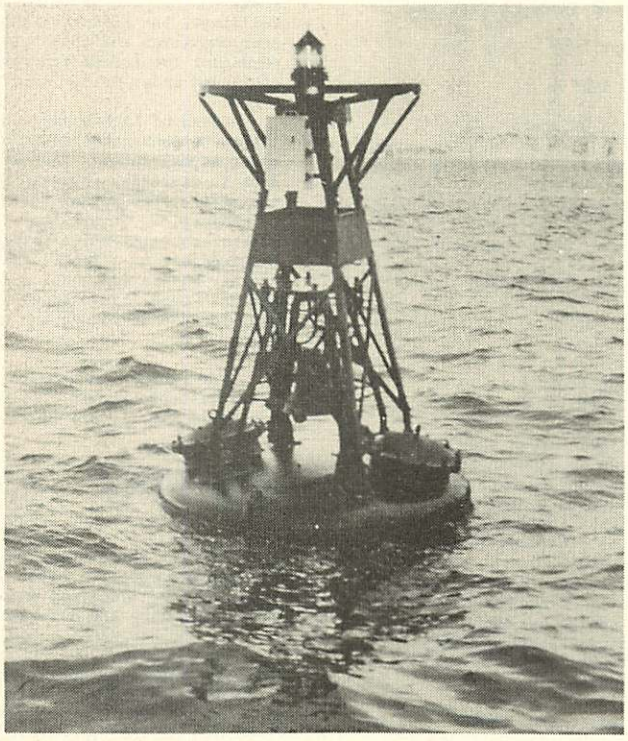
ACHIEVEMENTS — The principal achievement in the Loran program was in the rapid construction of Loran stations in forward areas. The siting and initial construction was frequently done under combat conditions. This phase of Loran with which the District had no part is covered thoroughly by "The Coast Guard at War LORAN IV, Vol. II". The commendable Loran operation record of the District is shown by letters of commendation.[1]

The Loran stations, due to their confidential classification and small size were practically unknown throughout the war except to the users of the Loran system. Even they, had no idea what the stations looked like or who was manning them. For the personnel who operated the stations there was no glory and no medals -- only dull, monotonous, routine watches and no knowledge of whether or not the Loran signals they were responsible for, were assisting some navigator in reaching his destination or reaching his target. The manner in which numerable difficulties and hardships were overcome at Loran stations is noteworthy. The personnel of the Ichi-Banare station at Okinawa fought the full force of a typhoon on 9 October, 1945, which demolished part of the station and carried away the main antennas on two occasions. In spite of typhoon wind estimated at 80 to 85 knots with 100 knot gusts, the Loran signals for Rate 4H4 were off the air only 23 1/2 hours during the typhoon. During this same typhoon it was reported that 30% of the military installations on Okinawa were damaged beyond repair, with the loss of about 120 vessels and a number of lives. The Loran station at Iwo Jima went through a similar experience without going off the air. After the typhoon had passed this rocky island, the only radio communication of all the military installations on Iwo Jima was at the Coast Guard Loran station. This station handled all radio traffic and kept the responsible military commanders advised of the situation for several days.

MISTAKES AND LESSONS LEARNED — In the spring of 1945 it became apparent that it would be advantageous to centralize the responsibility for administration and operation of Coast Guard Loran stations and other Coast Guard activities in the forward area under a conveniently located Coast Guard represen ative, probably at Guam. The stations in this area were on an average of 4,000 miles distant from the District Office. Procrastination and termination of the war prevented this logical administrative move until late in 1946. Many of the subsequent problems and difficulties would have been eased had this plan been put into effect when it was conceived in 1945.

1. See Appendix A

HONEYMOON CASTLE
FOR THOSE WHO WANT TO BE ALONE
WE RECOMMEND SOMETHING LIKE THE COAST GUARD'S TREE POINT LIGHT STATION
OFF THE ALASKAN COAST



ANRAC INSTALLATION ON LIGHTED BELL BUOY
HERE IS A LIGHTED BELL BUOY, ON STATION NEAR ATTU, THE ALEUTIANS,
EQUIPPED WITH A RADIO MECHANISM WHICH TURNS THE LIGHT ON OR OFF,
AS REQUIRED, FROM A CONTROLLING TRANSMITTER ON SHORE

POST WAR PLANS

The aids to navigation of the 14th District expanded during the war to include the operation of twenty-four Loran stations throughout the Pacific. It also framed policy for Coast Guard operations and maintenance of aids to navigation at advanced bases of the Navy. The proper administration and logistic support of these advanced base activities required the establishment of a Western Pacific Section of the 14th District at Guam which would be located at a buoy depot on Apra Harbor. Loran stations and aids to navigation work in the central Pacific and Hawaiian Islands would he administered and supported directly from the District office. This program was predicated on the maintenance in commission of five large tenders, one small tender, the WAK KUKUI and two aircraft detachments, one at Honolulu and one at Guam. It can reasonably be expected that the installation of automatic timers and improvements in logistics would cause a gradual diminishment of personnel at Loran stations with subsequent decrease in cost of operation. The continued operation and improvement of the District HF/MF direction finder net was contemplated.

District Coast Guard Officers, 14th District

Commander G. T. Finlay	March 1939 - September 1940
Captain E. D. Jones	September 1940 - May 1941
Captain G. T. Finlay	May 1941 - October 1942
Captain L. B. Olson	October 1942 - August 1943
Captain F. J.Sexton	August 1943 - July 1945
Commodore E. A. Coffin	July 1945 -

Assistant District Coast Guard Officers

Lt. Comdr. F. T. Kenner	December 1936 - January 1941
Lt. R. E. Stockstill	January 1941 - November 1941
Lt. Comdr. G. B. Gelly	November 1941 - October 1942
Comdr. F. K. Johnson	October 1942 - June 1945
Captain J. W. Ryssy	June 1945 -

17th NAVAL DISTRICT (KETCHIKAN)

LIGHTHOUSE SERVICE

As has been shown the Coast Guard as an Alaskan institution was not in existence until 1939. During the World War 1, the Coast Guard performed its duties in Alaska under the Navy. Similarly between 1919 and 1939 the establishment of the Coast Guard organization was new although the Lighthouse Service had a base at Ketchikan and the 14 light stations that were in existence when the service amalgamated with the Lighthouse Service. Captain H. Debrill, of the Lighthouse Service, retired when the District Coast Guard Officer took over the duties.

The Lighthouse Service was one of the Bureaus under the Department of Commerce. In 1911 Alaska was made a separate Lighthouse District and the installation and maintenance of aids to navigation in territorial waters was placed under the immediate supervision of the District Superintendent of Lighthouses at headquarters at Ketchikan.

The Depot maintained at Ketchikan included a large wharf, accomodations for light vessels, a store house, lamp shop, machine shop, carpenter shop, blacksmith shop and facilities for handling and servicing heavy buoys and other equipment. During recent years two seagoing steam lighthouse tenders, the CEDAR and the HEMLOCK, had been maintained on duty throughout the year supplying stations which had furnished transportation for personnel, constructing minor aids and servicing heavy buoys and other equipment. In the spring of 1939 a small tender, the ALDER, was placed in commission, this was a 72 foot boat with diesel engine power.

Recognizing the need for the safeguarding of marine navigation and the exceptional hazards encountered, it was the policy of the government to expand and improve the existing aids to navigation in Alaskan waters as rapidly as funds could be provided from appropriations made by Congress. New lights in charge of resident keepers were established in more important sites and the main expansion in the number of aids was in the line of unlighted buoys and automatic lights. The comparatively low initial and maintenance cost of these made it possible to provide, within reasonable expenditure, a large number of aids which were needed. Areas in which aids were maintained in 1939 included the mainland shore of the Bering Sea, part of the Arctic, the Aleutian Islands, in addition to the mainland and adjacent Islands bordering the Pacific Ocean.

Prior to the amalgamation, the Lighthouse Service had been engaged in a systematic rebuilding program, the purpose of which was to replace frame buildings, the Alaskan Light Stations which were in poor condition and of obsolete type, with modern permanent reenforced concrete structures. This was continued under Coast Guard administration.

Crews of Lighthouse vessels, and keepers of light stations rendered important services aside from their normal duties. They assisted vessels and persons in distress. Alaskan stations cooperated with the weather bureau and the Alaska Aeronautics and Communications Commission by furnishing regular daily weather reports, which information was disseminated by broadcasting agencies for the assistance of marine and air navigation and for the benefit of the general public. Some light keepers supplied data and specimens for use in connection with scientific investigation.

For further information on activities of Coast Guard cutters (tender class) in Alaskan waters during World War II, see PART III.

LORAN CONSTRUCTION IN ALASKAN WATERS

In February of 1943, the Senior Coast Guard Officer was given instructions with regard to possibilities of establishing Loran stations along the chain.[1] This officer proceeded to Dutch Harbor to discuss the existing conditions and determine the possibilities of coordinating the activities of the assigned units.

On 20 April, 1943, Lieut. Comdr. Martin, Commanding Officer of Loran Construction and Lieut. (jg) G. Horder arrived in Ketchikan to discuss the question of construction of Loran Detachment. The party left shortly thereafter for Dutch Harbor, where an office was established with CSK, James M. Santee in charge.

On 20 May, 1943, CO. PBY-189, under command of Lieut. Richard Baxter, Pilot and Ensign Harold Bennett, co-pilot reported for duty in Dutch Harbor.

1. See "C. G. at War - LORAN - IV - Vol. I" (RESTRICTED)

Captain F. A. Zeusler proceeded to Dutch Harbor to contact COMALSEC with the view of coordinating the activities of the Sector and those of the Loran Construction, and to plan the necessary operations for the use of Coast Guard vessels.

Lieut. Comdr. Martin had made an inspection of the proposed site on Umnak Island and at Cape Sarichef, it being impossible to continue inspection to the northward because of weather conditions. It soon became apparent that the original estimate of the situation of equipment and construction was too optimistic, and it was discovered that heavier and more tractors would be needed. At that time Dutch Harbor was being used as an assembly base for men and equipment in a campaign to drive the Japanese from the Aleutians. It was one vast storehouse of materials. Commander, Naval Operating Base, Dutch Harbor and Admiral Reeves promised assistance in the obtaining of equipment and supplies which was done constantly.

The first station undertaken was on Umnak Island. The landing was 6 miles from the site, which required a road to be constructed over tundra varying in depth from 2 to 12 feet. At St. Paul Island, the site was 16 miles to the westward of Village Cove. By making a survey it was possible to cut the distance to 7 miles, 2 miles of which had a constructed road. The balance was rugged terrain, tundra, heavily covered with volcanic boulders. At St. Mathew Island the site was within ¼ mile of the beach landing. The COMALSEC furnished a landing barge, but it was necessary to obtain engines in view of the fact that when the group of barges had been shipped to Alaska from Seattle they were not drained, and the engines were ruined from freezing. Lieut. Comdr. Martin contacted Seattle, and two Lincoln Zephyrs were flown to Dutch Harbor. These were installed immediately, and on 12 May, 1943, they were ready for action. The CGC CLOVER departed Dutch Harbor for Umnak Island with a cargo of equipment and supplies, and towing the LCM-2 landing barge. Just outside the harbor entrance the barge capsized. It was towed back into harbor, righted and work started immediately on tearing down the engines.

Because of this mishap and to expedite the work, the CGC CLOVER departed on 21 May, 1943, for St. Paul Island where it would be possible to unload, using barges owned by the Army garrison at that island. Two trips were required to transport the materials and equipment. Ensign Permar was placed in charge of the work.

On June 5, 1943, after repairs to the landing barge were completed, the CGC CLOVER departed for Umnak Island with cargo and construction crew under command of Ensign O'Meara. Landing was made on 6 June, and temporary camp established in Nikolski Village. A small barge 16' x 32' had been constructed in the meantime by carpenters in the crew. This barge made possible the landing of equipment.

On St. Paul Island, assistance in the way of two large Caterpillar tractors with trailers was made available by Lieut. Col. O'Reilly, U. S. Army, Commanding Officer of the Army Garrison. Without this assistance the completion of this station would have been materially delayed as the Coast Guard had only one small tractor which had been issued in accordance with the siting recommendations. All the materials were hauled from the dock to the end of the road by truck. From this point to the site, they were loaded on trailers and sledges which had been built by the crew, and hauled over rugged rocky terrain to the site. At the start of the construction, heavy snows covered the entire island. When this melted the conditions were indescribable. The District Coast Guard Officer and Captain Webster from Headquarters made an inspection with Lieut. Comdr. Martin at this time. The work progressed favorably and on 11 August, 1943, this station started testing.

The same rugged terrain condition existed in Umnak Island and this slowed progress materially. It was also discovered that the Loran timers and transmitters were in bad condition. Defective parts and poor connections caused trouble and because of a shortage of spare parts and test equipment considerable difficulty was encountered in getting both St. Paul and Umnak Islands stations on the air. This situation became so acute that the District Coast Guard Officer visited Dutch Harbor to contact Lieut. Comdr. Martin. It was then decided that the CO, Loran Detachment should fly to Seattle and obtain resistors, condensers and other small electrical parts available in order to remedy the situation. Admiral Reeves was intensely interested in completing the project, and offered all aid and assistance possible.

The ice having receded around St. Mathew Island, the CGC CLOVER sailed on 17 June, 1943. The PBY-189 made numerous trips to determine ice conditions, and on 28 June the first landings were made. The Army was contacted, and it was found that the first of that service were landed September, 1942, and had not received mail or supplies since. The Loran equipment was landed, and construction for the new station begun. The CGC CLOVER returned to Dutch Harbor for additional supplies and for mail and equipment for the Army personnel.

Because of the ice conditions and of the general terrain, it required over 600 sacks of cement for the foundations of the Quonset huts and generators. The weather was particularly bad and the original equipment received was too small. However, by 11 September, 1943, the station commenced testing.

On 22 July, 1943, steps were taken bo construct the Monitoring Station at Cape Sarichef, which was completed without incident because it was possible to use the existing quarters and storehouses. This was authorized by the DCGO at a conference in Dutch Harbor.

On 22 August, 1943, Lieut. Comdr. Martin received orders to join a party for the purpose of surveying sites for additional stations in the Western Aleutians. Using the PBY-189 the party, consisting of two Coast Guard Officers, one Army and one Naval Officer departed Dutch Harbor on 31 August, 1943, for Adak. There the situation was discussed with COMALSEC, Admiral Kincaid and the DCGO of the Sector Command. Admiral Kincaid furnished the necessary transportation by destroyer to Amchitka where a site survey was made. Upon completion of the work they proceeded to Attu for a similar survey. From there the party returned to Adak from which it departed for Kiska to investigate an alternate monitor site.

At this time information was received of the loss of six men from the St. Mathew Island Loran Station who had departed in a 30 foot boat for the Army Weather Station. Coast Guard planes and patrol boats assisted by Army planes searched the area thoroughly without success. It was the concensus of opinion of the Intelligence Department that these men probably were taken prisoners by the Japanese. As far as this officer knows, no other signs have been found.

The construction at Attu, Adak and Amchitka was the most difficult in view of the fact that it had to be carried on during the winter months. The assigned personnel performed an outstanding job, especially in view of the fact that it was impossible to obtain real

experienced men because of the extension of work in the islands. It was impossible to rate men for outstanding duty because of delays due to distance and slowness of mail, and serious personnel problems were constantly arising. A plan recommended to Headquarters was a formation of an independent unit similar to that established by the DCGO, 17 ND, in the overhaul, repair and construction of units throughout the area. The Coast Guard Sea-bees under Loran were to consist of units of 8 officers and 130 men each, these to be divided into 4 detachments of 30 men each under the command of a construction officer and each entirely self-sufficient. The personnel assigned was to include carpenters mates, motor machinists mates, cook, pharmacist mate, electrician mates and seamen. Detachment headquarters was to consist of yeomen, storekeepers and general duty men. This plan was finally approved, but only after considerable controversy with the various districts with regard to the assignment of efficient personnel.

On 22 September, 1943, CG Construction Detachment #26 was formed. The CO departed for Seattle, Washington, to assemble personnel, supplies and equipment for the contemplated new construction.

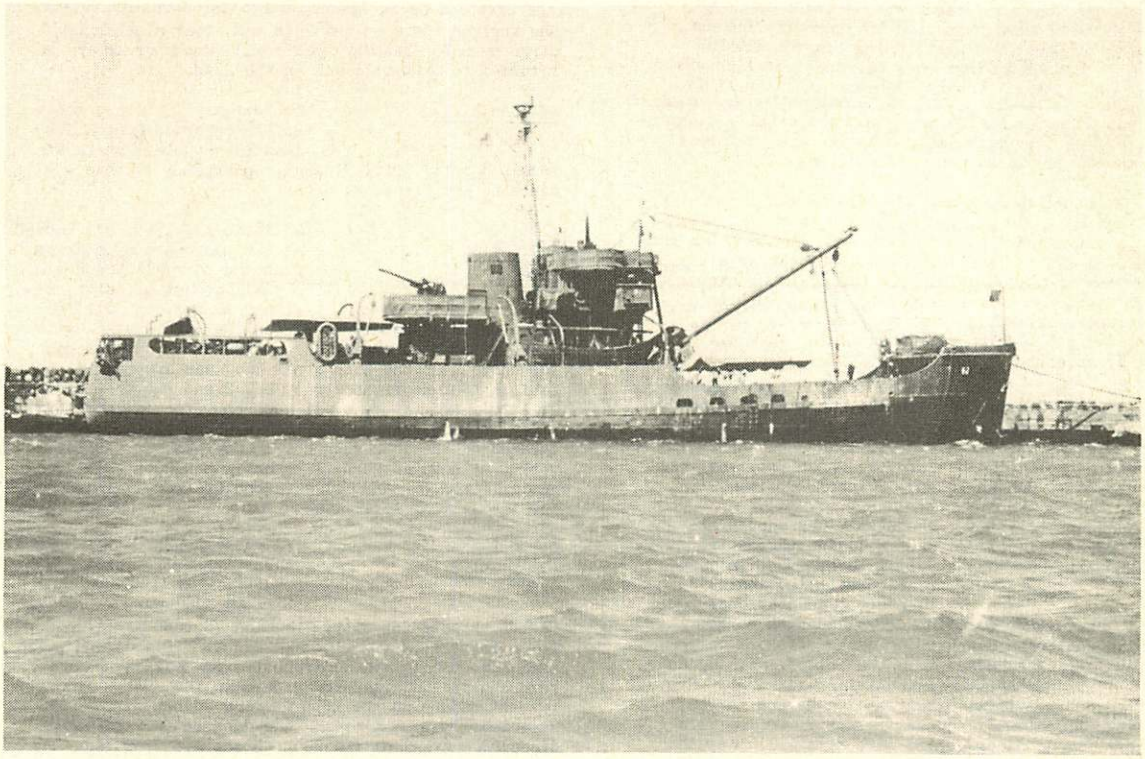
On 26 October, 1943, the PBY-189 was temporarily replaced by a JRF piloted by Ensign Harold Bennett. The supplies and equipment were sent to Alaska on the SS GEORGE FLAVEL, and the CGC CITRUS took over the duty from the CGC CLOVER. The CGC CITRUS departed Dutch Harbor on 4 November, 1943, for Attu with a cargo and construction crew as passengers. The JRF completed its mission and in returning to Kodiak was lost by crashing in the hills of the Alaskan Peninsula.

Lieut. (jg) Anthony Windheim was assigned as officer in charge of construction of the monitor station at Adak, Ensign John O'Mears at Amchitka and Lieut. (jg) Thomas Kiely at Attu. The later was a particularly tough construction job inasmuch as the materials and equipment would have to be handled by barge from Massacre Bay to a proposed landing on an extremely rough rocky beach on the east side of Theodore Point; 11 miles distant, then four and one half miles overland to the site on the tip of Theodore Point. The road to be constructed ran 10% to 15% grades and the last mile passed over an abrupt 1600' hill.

The construction of the three stations was an outstanding job for the Coast Guard. On 4 November, 1943, plans were made for housing and messing of personnel at Adak and Attu because of the fact that existing units belonging to the Army and Navy were overcrowded. Knocked down Quonset huts, materials and men were furnished by COMALSEC, and the work was completed in record time. On 24 November, 1943, the DCGO made an inspection of existing operations and contacted the new CO, Lieut. (jg) Horder who replaced Lieut. Comdr. Martin upon his departure for San Francisco, under orders to make surveys in the Hawaiian, Phoenix, and Marshall-Gilbert Island and Australia.

The work at Attu was carried on under the most adverse conditions. Heavy gales delayed the transportation of the supplies and equipment and most of the work was completed with 7 to 10 feet of snow covering the terrain. Three barges were smashed and lost. One man was killed by an accident with a tractor. The first materials were landed on 7 December, 1943, and the station was on the air by 11 February, 1944. Work on the other two stations proceeded without particular incident and the chain was completed by 20 February, 1944.

Both the PBY-189 and the JRF did outstanding work. The PBY-189 completed a total of 354 flying hours under adverse weather conditions. At all three destinations no handling facilities existed for the plane, it being necessary to anchor in the open sea. Approximately 200 hours of the total was instrument flying. One offshore rescue mission in the Bering Sea was made, and four injured men rescued from a wrecked Army plane. A total of 96 flights were made. Mail and passengers were flown for both Coast Guard and Army installations on the islands. This officer is of the opinion that the Construction crews and their officers should be given a citation for a difficult job efficiently handled under the most adverse conditions.



THE COAST GUARD CUTTER BALSAM
THE "MIGHTY MIDGET OF THE SOUTH PACIFIC"
MAKES A SHORT STOP AT A FLAT CORAL STRIP OFF AN ISLAND
BEFORE SETTING OUT FOR HER 50TH CROSSING OF THE EQUATOR IN 19 MONTHS

AIDS TO NAVIGATION

PART III

SHIP'S HISTORIES OF TENDER CLASS CUTTERS
SERVING IN PACIFIC AND ALASKA AREAS
AND ON ATLANTIC WEATHER STATIONS

CGC ALDER
(WAGL-216)

CHARACTERISTICS - AIDS TO NAVIGATION

The CGC ALDER (WAGL-216) was a lighthouse tender which came into the Coast Guard in 1939 when the Lighthouse Service became part of that organization. She was 72' long, 16' beam, with a draft of 7' 6", being built of wood. She had 80 tons displacement. She made a speed of 8 knots being powered with an 110 H. P. diesel engine. Her permanent station was Ketchikan, Alaska. During 1940 and 1941 the ALDER serviced aids to navigation in Southeast Alaska. This duty continued during 1942 and 1943. No war diaries of the ALDER are available.

CGC BALSAM
(WAGL-62)

COMMISSIONING

The CGC BALSAM (WAGL-62) was commissioned October 15, 1942, at Duluth, Minnesota. Her commanding officers have been Lt. T. A. Hurley, USCG, and Lt. H. T. Hendrickson, USCG. She proceeded to Norfolk with permanent station San Francisco. On April 24, 1943, she was ordered to report to Commander in Chief, Pacific for duty in the South Pacific to work on fleet moorings, navigational aids and related harbor facilities. On March 27, 1944, she was assign- to Loran construction work in the Phoenix Island Area and arrived at Canton Island on April 20, 1944.

AT CANTON BAKER AND GARDINER ISLANDS

The BALSAM was moored at Canton Island Lagoon from July 1 to 4, 1944, in connection with the installation of Loran stations. On the 5th she proceeded to Baker Island with cargo, unescorted and began discharging cargo offshore on the 7th into an LCM sent out from the island, working only in daylight and laying off the island at night. She departed on the 9th with two landing barges in tow, arriving at Canton Island on the 13th. On the 23rd she left for Gardiner Island with a tank lighter in tow and stood offshore there on the 24th discharging cargo by landing barge. She returned to Canton Island next day with the barge in tow, standing off until daylight of the 26th and moving to the main dock on the 28th. On the 31st she proceeded to Honolulu and moored to the Coast Guard Dock, Sand Island on August 7, 1944, moving on to Navy Yard, Pearl Harbor on the 13th for major availability for repairs.

AT CANTON, GARDINER, ATAFU AND TUTUILA

The BALSAM remained at Pearl Harbor undergoing repairs until November 15, 1944. After fumigation, cleaning and painting at Sant Island Depot, she proceeded to Canton Island on the 25th. On reaching Canton Island on December 2, 1944, she unloaded cargo and then departed for Gardiner Island on the 5th where cargo was delivered by No. 3 motor launch. She departed for Atafu Island that noon arriving on the 7th and again discharging about 4 tons of cargo by motor launch. Proceeding to Tutuila, Samoa, which was reached on the 9th, the balance of her cargo was discharged. Between the 10th and 25th, the ship's force assisted shore personnel in establishing and servicing all aids to navigation at Samoa. She departed for Canton Island on December 26, 1944, arriving there on the 29th.

FUEL DELIVERIES ATAFU AND GARDINER ISLANDS

On January 16, 1945, the BALSAM began loading gasoline and kerosene fuel in drums and departed for Atafu Island on the 17th heaving to off the island on the 19th. Delivery was effected by pushing the drums over the side on a 1½" line in strings of 12 and towing them by motor launch to a point just outside the surf. From here a heaving line was thrown to men inside the surf and they pulled the drums in. The BALSAM returned to Canton Island on the 21st and began loading cargo for Gardiner Island. She arrived there on the 25th and after discharging cargo by motor launch, took on 135 empty drums and returned to Canton Island on the 27th.

AVAILABILITY

On February 12, 1945, the BALSAM departed Canton Island for Honolulu where she remained until April 3, 1945, undergoing overhaul, cleaning and painting.

AIDS TO NAVIGATION - HAWAII

On April 11, 1945, she loaded six buoys and appendages, plus one carryall truck and a small amount of cargo consigned to various Coast Guard units at Kauai, T. H. On the 13th she moved to Nawiliwili, discharging cargo and making up moorings for buoys. On the 15th a new buoy was dropped at Lanipau Rock as lighted buoy No. 2 and she then picked up an old buoy at Makeweli Reef and proceeded to Port Allen to moor. A new station for Port Allen buoys was located on the 16th when No. 1 buoy was set. Buoy work continued at Port Allen until the 20th when the cutter moved to Sand Island, Honolulu for availability for the rest of April 1945.

CARGO FOR LORAN UNITS

The BALSAM remained at Sand Island, Honolulu, until May 8, 1945, when she reported to Commander, Service Force, Pacific Fleet, for duty. Loading 75 tons of cargo for Loran units at Majuro Atoll, Marshall Islands and Guam, Marianas, 8 enlisted men reported on board as passengers and she departed for Majuro on the 9th. She reached Majuro on the 19th where 4 of her passengers departed. After unloading she departed for Eniwetok stopping there from the 25th to the 26th and then proceeded to Guam, arriving there on the 30th. Here the other four passengers were disembarked and a 10 day availability was granted for overhaul and voyage repairs.

TO OKINAWA

The BALSAM remained at Guam until June 14, 1945, unloading 50 tons of cargo for Coast Guard Loran units at Guam and loading 50 tons of cargo consigned to various vessels. Carrying 14 enlisted men as passengers she departed Apra Harbor on the 14th and on the 21st debarked the men at Nakagusuku Wan, Okinawa.

ENEMY AIRCRAFT

An enemy aircraft identified as a "Tony" was sighted five miles away on June 22nd and ships within gun range opened fire. Later two more enemy planes were sighted in the area. One of these crashed into an LST seven miles from the BALSAM and the other approached to about eight miles before being driven off by ships in the anti-aircraft screen guarding the harbor entrance.

SALVAGE WORK — Forty foot timbers were loaded from a supply barge on to the BALSAM the evening of June 22, 1945, and on the 23rd she transferred navigational aids and equipment to the SWEETBRIER. On the 25th she proceeded to Unten Ko, under escort and after unloading cargo consigned to the WOODBINE on the 26th proceeded with escorts to Hagushi Harbor, Okinawa. Here on the 27th and 28th the ship's force salvaged Japanese chain and buoy gear from Naha and Inner Naha Harbor, anchoring each night in Hagushi Harbor. Gear for fleet tanker moorings was delivered by Navy work barges on the 29th and a location party selected the position of No. 1 tanker anchorage. Early on the 30th an enemy plane passed overhead and was fired on by shore batteries as it bombed the beach. All through July, 1945, the BALSAM engaged in aids to navigation work in Sunabe, Naho Ko and Hagushi Harbors.

FIRES ON PLANE - ASSISTS VESSEL — General quarters was sounded on July 21, 1945, and the BALSAM crew opened fire on a bogie bearing 340° relative distance 1000 yards. Other naval and merchant vessels in Naha Ko fired at the bogie, and the SS JOHN A. RAWLINS was hit. The BALSAM assisted in fire fighting, damage control and putting medical crews aboard. The fire on the RAWLINS was extinguished on the 29th and the BALSAM secured from pumping water aboard. On the 30th aids to navigation work was resumed and continued through August in Hagushi Harbor, except when the cutter sought shelter in Naha Ko on August 1, 1945, from a reported typhoon. September 1 found the BALSAM engaged in aids to navigation duty at Ie Shima, Okinawa.

ASSISTANCE IN TYPHOON — On September 16, 1945, the cutter got underway for Unten Ko, Okinawa to seek shelter from a reported typhoon. During the day and night, LCVP with working parties rendered mooring assistance to vessels entering the harbor during the heavy blow, receiving commendation from Commander, Task Group 39.3, Unten Ko. On the 18th, as the weather moderated, the BALSAM got underway for Ie Shima and further aids to navigation duty.

CGC BITTERSWEET (WAGL-389)

COMMISSIONED — The CGC BITTERSWEET (WAGL-389) was commissioned May 11, 1944, at Duluth, Minnesota, having been built by the Zenith Dredge Company there. Her commanding officers during the war were Lt. J. P. Gilhooley, USCG, and Lt. Comdr. W. H. Jackson, USCG. She arrived at Curtis Bay, Maryland, June 18, 1944, via the St. Lawrence, and on September 23, 1944, departed Norfolk for Seattle, via Panama Canal and San Francisco, arriving on October 23, 1944. She arrived at Ketchikan November 19, 1944, and departed Sitka for Adak on December 20, 1944.

ASSISTANCE — On January 5, 1945, the BITTERSWEET departed Adak for Kodiak, via Dutch Harbor, arriving on the 11th. On the 15th she departed to assist the YP-73 reported aground in the vicinity of Hanin Rocks. On arrival the cutter found the vessel breaking up on a reef. Six persons were rescued and transported to Kodiak, after which the cutter returned to the wreckage to search for six persons in a dory and three that were in a life raft. The nine bodies were recovered. The cutter then engaged in aids to navigation work in the vicinity of Kodiak.

DUMPS SURVEYED AMMUNITION — After dumping surveyed ammunition at sea on February 2, 1945, the cutter departed for Dutch Harbor, via Cordova, where she loaded men and supplies for Chernabura and then got underway for Squaw Harbor.

AIDS TO NAVIGATION — Departing Baralof Bay for Dutch Harbor on March 1, 1945, the cutter received aids to navigation gear from the CLOVER at Sand Point and proceeded to Dutch Harbor where she loaded heavy gear for operations at Cold Bay. From the 9th to the 17th she worked buoys in the Cold Bay area.

RESCUES SURVIVORS OF ARMY PLANES — On March 19, 1945, the BITTERSWEET proceeded to the vicinity of Kinzarof Lagoon to land a rescue party on the beach to proceed to the wreck of an Army plane. Later that night she was ordered to Bristol Bay for rescue operations of U. S. Army C-47, reported crashed in the vicinity of the Cathedral Mountains. Heaving to in the vicinity of Gerstele Bay on the 21st she remained there until the 24th when she lowered boats and took aboard a rescue party of 14 dogs and 2 Army men. Unloading the rescue party at Cold Bay she began working on aids to navigation until the 28th when operations were suspended because of a 45 mile wind. After removing motor launches from the USS BESBORO whose jumbo boom and dock derrick were disabled she resumed work on aids to navigation on the 31st.

AIDS TO NAVIGATION — After relighting Akutan Light on April 1, 1945, the BITTERSWEET loaded 25 tons of gear from the decommissioned Navy fueling station there and proceeded to Dutch Harbor. Buoy work at Attu and Shemya Islands engaged her for the rest of April. During May she delivered supplies to Cape Sarichef Light Station and then proceeded to Bristol Bay for aids to navigation operations returning to Dutch Harbor on the 15th to load materials and supplies working Mishagak Bay area the rest of May. During June she established a number of buoys, relit several lights before mooring at Dutch Harbor on the 4th for 10 days availability, servicing lights in Dutch Harbor in the interval. On June 15, she departed for St. George and St. Paul Islands with cargo which was unloaded slowly into "skin boats" at St. George as natives were engaged in sealing and boats were available only between 1 and 5 P.M. Returning to Dutch Harbor on the 28th, checking aidsen route, she took on Red Cross supplies and officials for St. Paul, unloading there on the 30th. The month of July was spent working aids to navigation in the Aleutian Chain. The first half of August she was on routine aids to navigation duty in the Unalaska and Kodiak Sectors.

ESCORTS RUSSIAN MEN-OF-WAR — On August 19, 1945, the BITTERSWEET was designated escort commander for convoy ZM consisting of nine Russian men-of-war. The convoy was dropped at the designated rendezvous in the Bering Sea before midnight. Returning to Dutch Harbor the cutter loaded supplies for Ketchikán arriving there on the 31st. On September 19, 1945, the cutter was engaged in searching for a log raft lost by the tug VANGUARD on the 13th. She was relieved on that date by the CYANE.

CGC BRAMBLE
(WAGL-392)

COMMISSIONING — The CGC BRAMBLE (WAGL-392) was built at Duluth, Minn. and commissioned April 22, 1944. Her commanding officer was Lt. Gabriel E. Pehaim, USCG. She arrived at Boston, May 24, 1944, via the St. Lawrence, and proceeded to New York next day. She struck a submerged object on June 13, 1944, and was delayed there for repairs. She arrived in Norfolk on July 9, 1944, reported for shakedown July 27, 1944. She was drydocked August 23, 1944, at Norfolk and on September 2, 1944, proceeded to San Juan. She arrived at San Pedro November 27, 1944.

RUNS AGROUND — On January 22, 1945, she proceeded to Seattle and arrived Ketchikan February 4, 1945. On February 16, 1945, the BRAMBLE ran aground at Lockwood Rock Point Light. Divers and diving equipment were put aboard the ATALANTA who proceeded to the BRAMBLE's assistance. The BRAMBLE floated free at 2112 the same day with all compartments free of water, except the main hold, before the dispatched vessels arrived. She proceeded to Wrangell.

TO PRIBILOFFS — On April 1, 1945, the BRAMBLE was loading cargo at Sitka and departed next day for Ketchikan, stopping off at Cape Decision en route to deliver emergency medical supplies off Cape Decision. She returned to Sitka on the 5th, taking aboard cargo and personnel for Dutch Harbor. En route she stopped engines for 5 minutes silence and prayer in respect for the late Commander-in-Chief, Franklin D. Roosevelt. After unloading at Dutch Harbor she departed for St. Paul Island, Pribiloff Islands on the 18th. St. George was visited on the 20th for delivery of mail, after which she returned to Dutch Harbor. A second trip to the Pribiloffs was made on the 24th and a third on the 30th.

MIDDLETON ISLAND - LANDING DIFFICULTY — Trips between May 1 and 10 continued between Dutch Harbor and the Pribiloffs. On the 11th the BRAMBLE departed Dutch Harbor for Seward where she commenced loading cargo of construction materials and crews for Middleton Island, towing a 50' Army barge for beach landing. A direction finder station was to be constructed here. Arriving on the 18th the barge was sent in with the first load but did not make the landing until noon of the 19th, due to lack of protection from the weather. An old fashioned anchor strung to a buoy was placed off the beach to hold a stern line on the barge, two dead men being placed on the beach to hold the bowlines of the barge. The heavy surf broke the 6" hawsers and in order to save the loaded barge it was sunk on the beach. After being unloaded it was floated, towed out to the ship, and pumped out. An amphibious barge, small enough to be carried in the deck well of the BRAMBLE, would have obviated the difficulty. Proceeding to Seward on the 22nd the tender again departed for Middleton Island on the 26th with a raft of 90' poles in tow and with construction personnel.

ASSISTANCE TO PLANE OCCUPANTS — Proceeding to Seward on May 29, 1945, the BRAMBLE set out on the 31st for Surprise Bay to aid a plane that was down there. En route she hailed the Army freight and supply vessel FS-243 to assist her in the search. A motor launch was sent to the head of Surprise Bay with the FS-243 and at 1010 the launch picked up the three occupants of the downed plane and transferred them to the FS-243. The survivors had sustained no injury and the plane was only slightly damaged. The BRAMBLE returned to Seward.

RAMMED BY ARMY VESSEL — The first half of June 1945 was taken up with transporting supplies and materials to Middleton Island from Seward. On the 13th while moored alongside the U. S. Army Dock at Seward, the U. S. Army vessel FS-252, while attempting to dock rammed the BRAMBLE in the stern. The port depth charge rack was damaged and an 18" hole punctured in the stern, which damage was to be repaired by the Army without cost to the Coast Guard. The rest of June was consumed in transporting personnel, supplies and construction personnel from Seward to Middleton Island, the LCM-3 now being used for beach landings being found very satisfactory. This duty continued during July, August and early September, 1945, and on July 27th the BRAMBLE made three runs around Middleton Island acting as a target for calibration tests of the newly constructed middleton Island direction finder station. During the latter part of September she transported supplies, materials and personnel from Sitka to Biorka direction finder station.

CGC BUTTONWOOD
(WAGL-306)

COMMISSIONING AND SHAKEDOWN — The CGC BUTTONWOOD (WAGL-306) was built at Duluth, Minn., and commissioned there on September 24, 1943. Her commanding officer throughout the war was Lt. R. W. Fish, USCGR. On November 1, 1943, she arrived at Coast Guard Yard, Curtis Bay, Maryland, for fitting out and on December 27, 1943, left on shakedown cruise. On January 22, 1944, she was assigned to the Pacific Fleet. On February 27, 1944, her commanding officer reported to Commander, South Pacific, as she was moored at Balboa, Canal Zone, undergoing alterations and repairs.

SOUTHWEST PACIFIC ESTABLISHES BUOYS — On March 5, 1944, the BUTTONWOOD, in company with the YPG-33, got underway from Balboa for Espiritu Santo, New Hebrides, where she arrived, via Galapagos Islands, on April 12, 1944, after a stop-over at Bora Bora. After an 8 day availability, she got underway with Task Unit 35.3.8 for Guadalcanal. Arriving there on May 1st she reported to Commander Task Unit 35.6 and was assigned to Commander Naval Base, Tulagi, for duty. She was assigned as a harbor craft to tend and establish buoys. On May 28, 1944, she was detached and assigned from the 3rd to the 7th Fleet for temporary duty.

AUSTRALIA - CONSTRUCTION AND ASSISTANCE — On June 1, 1944, she departed Guadalcanal for Brisbane, Australia arriving on the 7th. After an availability she proceeded to Frederick Reef Anchorage to repair and resurrect the light structure there. On July 1, 1944, she departed via Cairns, and Thursday Island for Bramble Cay, Torres Strait, stopping en route to inspect the light structure at Coconut Island. After two days spent in repairing the light at Bramble Cay, she departed on the 13th of July, 1944, for Double Island, Torres Strait, where her company were engaged in erecting a light structure until the 15th, when she departed for Thursday Island with an injured man, returning to Double Island on the 17th for four more days work. Her work was interrupted on the 22nd when she went to the assistance of the SS MINJAK TANAH, aground on Thrush Reef, Great

Barrier Reef. Next day she towed the vessel free at high tide and returned to Double Island where the work was completed on the 29th. On July 31, 1944, she proceeded to Ipili Reef, Torres Strait, to construct and erect a light structure. The work here was completed August 5, 1944. Returning to Thursday Island for water and supplies she proceeded to Dalrymple Island on August 11, 1944, to move and reerect the light structure. This was completed on the 13th and she proceeded to Cairns for drydock and repairs until September 16, 1944. On September 18 and 19, 1944, she repaired Waterwitch Reef and Coconut Island Lights.

PHILIPPINES - BUOY WORK - SAN PEDRO BAY

On September 22, 1944, the BUTTONWOOD departed Thursday Island for Milne Bay, New Guinea, inspecting a ship aground on Warrior Reef, Great Barrier Reef, en route. She arrived at Milne Bay on September 26th, 1944, where she moored until October 16, 1944, awaiting orders, working on aids to navigation in Milne Bay on two occasions during that period. Departing Milne Bay for Manus Island, Admiralties, she anchored in Seeadler Harbor on October 18, 1944, and after taking on navigational aid equipment departed October 24, 1944, for Hollandia and the Philippines as escort to convoy Love-9. She anchored in San Pedro Bay, Leyte Gulf, Philippine Islands, on November 4, 1944, during an air raid. During the rest of 1944 she was engaged in carrying out buoy, navigational aid and survey work in San Pedro Bay and at Guinan, Samar Islands, Philippine Islands, as part of task unit 70.5.1.

DAILY AID RAIDS - JAP BOMBERS HIT

During this period there were air raids in the area every day. On November 12, 1944, the BUTTONWOOD expended two rounds of 3" 50 caliber ammunition at Japanese aircraft, and, on the 18th, eight rounds. Again on the 23rd she expended 120 rounds of 20 MM AA with no visible hits and no casualties sustained. On the 24th there was an air raid at 0730 and the BUTTONWOOD is believed to have hit a twin engine Japanese bomber by fire from her 3" 50 caliber gun. The plane was seen to crash. Four men on the BUTTONWOOD were injured by shrapnel. All clear was sounded at 0930. Several other raids took place that day and, though the cutter engaged in anti-aircraft fire, no hits were observed or casualties sustained. In one of the raids on the 25th the cutter expended 120 rounds of 20 MM AA without observing any hits, though 3 men suffered shrapenl casualties. On the 26th, in another raid, numerous hits were observed on one Jap aircraft which crashed in flames off the starboard bow. There were no casualties on the cutter. The all clear sounded at 0117 after an hour and 3 minutes of action. At 0615, the BUTTONWOOD hit either wreckage or a coral head and severely damaged her sound head, beginning to take water slowly. On the 27th three other vessels joined the cutter for survey work. On the afternoon of November, 1944, 50 more rounds of 20 MM AA were expended at raiding Jap aircraft without observed hits or casualties. As November ended the raids were still going on. Work in San Pedro Bay was continued through December 25, 1944, except for a trip to do similar work at Guinan, Samar Island, on December 10th and 11th. Air raids took place every day except December 17th and 18th. On December 25, 1944, the BUTTONWOOD proceeded to Guinan, Samar Island for buoy and survey work in that harbor.

ASSISTS TORPEDOED SS SOMMELDIJK

While anchored in Guinan Harbor, Samar Island, Philippine Islands on December 25, 1944, the BUTTONWOOD was asked at 2100 to assist the SS SOMMELDIJK which was afire, having been hit by an aerial torpedo on the port bow. With HMAS GASCOYNE, the BUTTONWOOD went alongside and ran 12 fire lines aboard. The fire was confined to No. 1 hold which contained mostly lumber. Two hours later the cutter secured the fire lines and cast off with a load of Dutch troops who were transferred to landing craft and taken ashore. At 2400, she returned to the burning vessel to cool off the sides which by this time were cherry red. No. 2 hold containing ammunition was partially flooded. Because of hot plates and the fact that the cutter's main magazine was on her starboard side, it was necessary to lay off underway and direct hose streams against the side and in the hole made by the torpedo. As the plates cooled, it became possible to get in close enough, while still underway, and direct 12 hose lines on the sides and in the hole. By 0415 on December 26, 1944, the fire was out and all lines secured. All during the operation the area was under an air raid alert for most of the night, with blackout routine being followed. This added to the difficulties of fighting the fire.

AT GUINAN HARBOR WORKING MIDST AIR RAIDS

The CGC BUTTONWOOD continued to carry out buoy. navigational aid and survey work in Guinan Harbor, Samar Island, Philippine Islands, with HMAS ML-1074, SANDFLY and DART temporarily attached for survey work during this period. Air raids took place daily except on the 5th, 8th, 10th to 16th, 20th and 30th of January, 1945. Periodical trips were made to San Pedro Bay to pick up fuel, water and supplies. On February 15, 1945, the cutter moved to Lauaan Bay, Samar, Philippine Islands, for the same type of work and on the 22nd shifted to Dulag, San Pedro Bay until the 27th when she moved to Tacloban Harbor. There were air raids on the 3rd, 8th, 15th, 25th and 28th of February.

BRISBANE AUSTRALIA

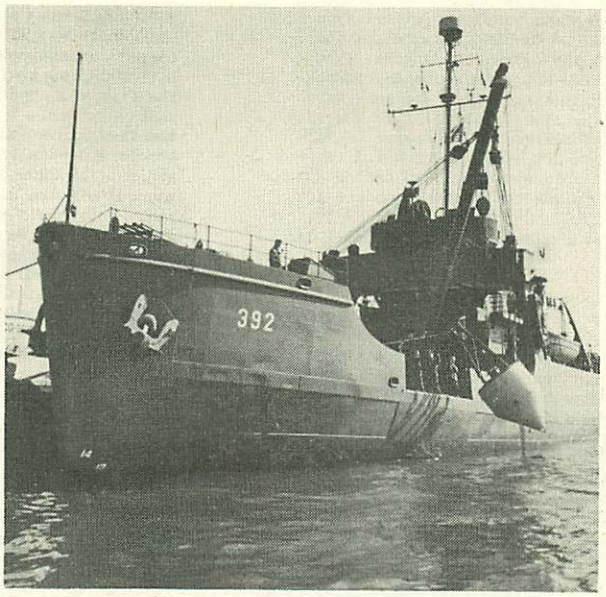
On April 1, 1945, she was inspecting buoys at Milne Bay while en route to Brisbane, Australia. She replaced a buoy in Jack Daw Channel and relighted Dorasi Shoal lighted buoy, inspecting Brumer Island Light which was found to be burning brightly. After relighting the Pana Wapana Island light she proceeded to Brisbane via Bouganville Reef, where she found the seas too rough to relight the light and proceeded to Brisbane. This was reached on April 8, 1945.

RETURN TO PHILIPPINES

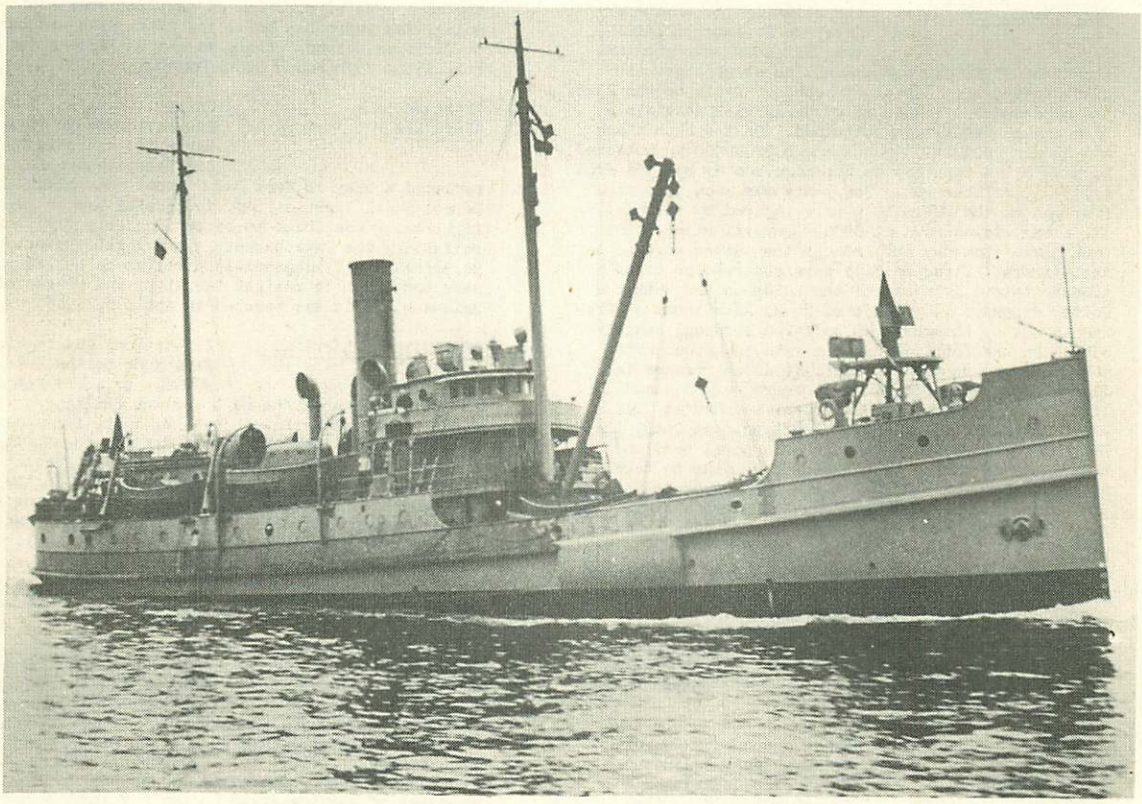
Alterations and repairs were made on the BUTTONWOOD at Brisbane until May 23, 1945, when she left for the Philippines via Manus, where she arrived June 12, 1945, for underwater sound repairs. Departing next day for the Philippines she arrived at San Pedro Bay on the 19th, Tacloban on the 20th, and Lauaan, Samar on the 21st. On the 22nd she proceeded to Tolosa Beach, Leyte, servicing aids to navigation en route and continued the same activity for the rest of the month in the Leyte Gulf area. On June 27, 1945, she was transferred to Commander, Philippine Sea Frontier. She continued to service aids to navigation in Leyte Gulf under this command until August 22, 1945.

TO OKINAWA

From August 23rd to 26th she fitted out preparatory to joining Task Group 71.2 for duty in Okinawa. On the 28th she got underway to rendezvous with the Task Force. En route to Okinawa on September 1, 1945, both generators went out of service but were repaired by the ship's forces. They went out of service again on the 2nd and she had to



THE COAST GUARD BUOY TENDER BRAMBLE
DEMONSTRATES AT LONG BEACH, CALIFORNIA, THE OPERATION FOR WHICH SHE IS BEST SUITED
THAT OF KEEPING IN REPAIR THE BUOYS WHICH MARK OUR HARBOR'S CHANNELS



THE COAST GUARD CUTTER CEDAR

be towed by the APD- 77 and ATR-10 to Buckner Bay, Okinawa, where she berthed on the 4th. She remained here until the 30th awaiting repair parts to shaft and generators.

CGC CEDAR
(WAGL-207)

PREWAR DUTIES IN ALASKA

The CGC CEDAR (WAGL-207) was built at Long Beach, California in 1917. She was 201 feet long, with a 36 foot beam, and a maximum draft of 14 feet. With a steel hull she had a displacement of 1370 tons and a speed of 12 knots. Her oil burning steam boilers enabled her engines to develop 1300 horsepower. Her permanent station on July 1, 1941, was Ketchikan, Alaska, to which she had been assigned in 1940, soon after she had been transferred to the Coast Guard with the amalgamation of that service with the Lighthouse Service on July 1, 1939. During 1940-41 many of the 14 light stations in Alaska which the CEDAR serviced were modernized and fuel oil tanks installed, thereby eliminating the need for handling coal, wood, gasoline, coke and kerosene. Instead, two kinds of oil only were needed. Other duties of the CEDAR during 1940-41 included attending all automatic and other aids to navigation, recovering buoys that were adrift, relighting lights that were extinguished, repairing and repainting day marks and recharging lighted buoys in the Bering Sea and Arctic Ocean areas. In addition, during peacetime, tender class cutters in the Alaskan area were called upon to perform numerous law enforcement duties for the various government departments and agencies. There were a great many active canneries in the area and cutters were constantly being called upon to render assistance to cannery and other smaller vessels.

WAR IMPACT

With the beginning of the war in December, 1941, the whole District was busy carrying out decisions made early in 1941 by Army, Navy and Coast Guard officials. These included plans for feeding the civilian population, evacuation of dependents and civilians, personnel, escorting shipping, establishing a patrol system, control of fishing vessels, developing and installing secret aids to navigation, marking minefields, suppressing coastal aids to navigation not required so as to deny them to enemy use, arming light stations against local attack, and removing certain hazards to navigation in the inland passage waters which would now have to be used continuously, until arrangements could be made for vessels to be escorted. The light stations in the Ketchikan sector and outposts were doubled in strength for 24 hour lookout, signal and communication watches and special lookouts placed to check on suspicious vessels, persons and activities. Scotch Cap and Cape Sarichef lights, fog signals and radio beacons were discontinued. Radio silence was ordered. The CEDAR was used on aids to navigation work and on weather patrol. She was also used in escorting vessels in patrolling and in establishing aids to navigation and Loran. The CEDAR along with the five Coast Guard patrol vessels, the two other tenders, the USS CHARLESTOWN and two 1917 destroyers constituted the only escort units available until the spring of 1943, when newly constructed PC's and destroyers arrived to help carry the escort burden. On December 8, 1941, all aids in the vicinity of Kodiak, Sitka and Dutch Harbor were extinguished. Wherever radio silence was ordered it was a signal for a blackout. The blackout of aids to navigation was generally carried out with success. Aids to navigation in the inside passage were continued lit after December 30, 1941, as these waters were extremely dangerous and the aids were essential to the safety of the vessels. A number of vessels had piled up due to reduced lighting. Blackout conditions continued in the inside passage of British Columbia, however, and vessels were grounded there every time the lights were put out when a Japanese submarine made its presence known.

ESCORT DUTY - BUOY WORK WEST OF DUTCH HARBOR

Reports of submarines were frequent both before and after the two air attacks on Dutch Harbor early in June and the CEDAR, in addition to its aids to navigation work was busy escorting vessels through exposed waters. In July the McLANE and YP-251 sank a Japanese submarine off Annette Island. A vessel was sunk by a sub south of Kodiak and an Army transport escaped from a sub attack with 47 medium caliber holes in her hull. During August, suspicious craft were reported off Coronation and Warren Islands. In September, 1942, a submarine was seen off Cape Decision and the McLANE dropped depth charges. In October search was made for a submarine off Dixon's Entrance by other Coast Guard units. In November, 1942, the CEDAR was assigned to duty with COMALSEC (Commander Alaskan Security Patrol) to begin planting buoys to the west of Dutch Harbor. With the coming of winter, authority was granted to operate certain of the light station beacons for vessels approaching from the west, as the weather was very bad and the steamers, being extremely light on their return trips, found navigation very difficult.

AT ATTU AND AMCHITKA

The Japanese had seized Attu, westernmost island of the Aleutian chain in June 1942. After an almost complete evacuation in September, 1942, they reestablished themselves sometime in the following October and had begun to seriously develop and fortify their positions. Several reinforcements were received during the ensuing months, the last attempt being thwarted by a small naval task force, 50 miles off the Komandorski Islands in the South Bering Sea on March 26, 1943. This Japanese convoy had been forced to turn back after several enemy vessels of a superior Japanese fleet had been damaged by our task force. Under a closely coordinated land, sea and air attack, our forces were landed on Attu Island during the afternoon of May 11, 1943. Within two weeks we had encircled Holtz Bay, occupied the landing strip and attacked the pass that connected the bay with Chicagof Harbor. By May 30th, 1943, all organized enemy resistance had completely collapsed. The CGC CEDAR under command of Lt. Russell Gowan entered Massacre Bay on the 20th of May, 1943, in a convoy. She was in the harbor during the Japanese counter attacks. During the first week of June, 1943, she was anchored in Constantine Harbor, Amchitka Island. The task assigned to her was to replace and install the torpedo net and set the net anchors. On June 12, 1943, she departed for Sweeper's Cove, Adak, Island, Aleutians.

AIDS TO NAVIGATION - ASSISTANCE - TO SEATTLE

The CEDAR was occupied with aids to navigation work west of Dutch Harbor during the early part of 1944. During this period she relighted buoys, recharged lights and established buoys. On March 8, 1944, she was ordered to proceed to the assistance of BSP-789, but that vessel later reported that she was out of danger and no longer needed assistance. On March 25, 1944, the CEDAR departed Ketchikan, Alaska by inside passage to Seattle, Washington, for drydocking and repairs.

AIDS TO NAVIGATION

Returning to Alaska, the CEDAR departed Ketchikan on June 4, 1944, on an aids to navigation trip in the Alaska Peninsula and Aleutian Islands. She left Dublin Bay for Cape Sarichef Light Station on July 18, 1944, being advised by radio of fair landing conditions there, and after unloading supplies reached Dutch Harbor on the 19th, recharging Akun Strait Light and Akutan Point Light en route. On the 22nd she arrived at Chernofski Harbor and recharged the light there. She arrived in Martin Harbor on the 29th, establishing new lights on Cape Chagak, Seguam Island and on North Cape, en route. Proceeding to Adak on August 1, 1944, she established Swallow Head Light and then proceeded to Amchitka on the 9th, relieving four entrance buoys and establishing a mid-channel buoy. She returned to Adak on the 14th and took 500 tons of cargo and 13 passengers to St. George Island, site of a Loran monitor station under construction, where she arrived on the 27th. Here a week was spent unloading cargo by skin boats when wind and sea permitted. She arrived at Dutch Harbor, September 9, 1944, to have her boilers inspected.

FALLING ROCKS DESTROY LIGHT - ASSISTANCE TO RUSSIAN VESSEL

The CEDAR departed Dutch Harbor September 15th, 1944, to relight Cape Chagak Light, but landing conditions forced her to proceed to Chernofski until the 24th when she was finally able to effect a landing and light the lights. She arrived at Dutch Harbor on the 24th, after stopping to correct the characteristic of Cheerful Light. On the 25th she departed for Akun Head Light, where it was discovered that falling rocks from overhanging bluffs had destroyed the light and it was considered impracticable to rebuild it. Proceeding to Ugamak Island to construct a new light she had to anchor in Trident Bay until September 28th because of the weather. On reaching the proposed site, it was found infeasible because of the vertical rock bluff and numerous slides, and the DCGO advised abandoning the project for the time being. On October 2, 1944, the CEDAR calibrated the service arc of Akutan Radio Beacon Station and next day relighted the Akutan Strait Light. On the 11th she went to the assistance of the USSR KOLOSNIK which had beached near the Akutan Fueling Station in a southeast gale. The CEDAR and CLOVER anchored 300 feet off the beached vessel, passed towing cable and after half an hour had refloated her, enabling her to proceed under her own power. Moving to Ikatan Bay on October 12, 1944, the CEDAR recharged Kabuch Point Light, relieved Cold Bay Bell Buoy No. 1, and recharged Kaslokan Point Light. This occupied the rest of the week. A short while later the CEDAR proceeded to Seattle for overhaul.

RETURN TO ALASKA

From January 1 to 21, 1945, the CEDAR was at the Winslow Shipbuilding Company, Seattle, Washington, undergoing overhaul, running tests on new equipment, swinging ship and loading cargo for the return trip to Ketchikan. She departed Seattle on January 22, 1945, reaching Ketchikan on the 26th. She remained at the Coast Guard Repair Base until February 8, 1945, loading and preparing for her forthcoming aids to navigation trip. On that date she departed for the Kodiak area. Departing Sitka on the 14th with men and oil for Cape St. Elias Light Station where she arrived on the 16th. Here she had landed the supplies by the 28th and removed personnel. During March, 1945, she serviced 25 aids to navigation in the vicinity of Prince William Sound and Resurrection Bay. During this period she stood by a beached YR-43 until released by the naval sector salvage officer. (No war diaries for the CEDAR were received for April, May or June, 1945).

LCM-3 USED IN LANDING MATERIAL

During July, 1945, the CEDAR loaded cargo at Dutch Harbor for delivery to Unimak Direction Finder Station which was under construction at Scotch Cap. She also transported equipment from Chernabura Racon Station, which was thereupon decommissioned, to Dutch Harbor and landed emergency equipment for the Unalga Radio Range Station. Mail and stores were supplied Akutan Village and the Racon Station there while en route Scotch Cap. Landing operations were made by the use of an LCM-3 and were expedited by good weather and favorable beach surf conditions. Landings at Akutan were made with the motor whaleboat and cargo boats. No landing or beach was considered more difficult than that at Scotch Cap. During August, 1945, cargo was loaded at Dutch Harbor for delivery at Unimak High Frequency Direction Finder Station, Scotch Cap Light Station, Akutan Radio Beacon Station, Cape Sarichef Light Station, and St. George, St. Paul and St. Matthew Islands. These trips involved the transportation of relief personnel to and from the various stations visited. The St. Paul High Frequency Direction Finder Station was calibrated during the latter part of August. Besides LCM-3 used in landings, an Army "J" boat was used at St. Paul, where, as well as at St. George and St. Matthews, bad weather, from the 10th to the 25th, hampered landing conditions. One man suffered a broken ankle while helping load the LCM-3 at St. Matthew Island. Cable straps, placed around the outside of the LCM-3 forward as a precaution, probably saved the boom and lifting tackle from being carried away when the pad-eye on the barge gave way as it was being lifted aboard at Scotch Cap on August 3, 1945. A portable fathometer for the motor whaleboat, where trips had to be made in waters where no soundings had been made, such as Chernabura and St. Matthews Islands, was recommended by the commanding officer of the CEDAR. During September, 1945, cargo was loaded at Dutch Harbor for delivery to Unimak, Scotch Cap, Cape Sarichef, Akutan and Unalga, with calibration of the Unimak High Frequency Direction Finder Station completed September 4, 1945.

CGC CITRUS (WAGL-300)

COMMISSIONING

The CGC CITRUS (WAGL-300) was commissioned April 3, 1943. Her commanding officer was Lt. Ralph Burns, USCG. She was assigned to Alaska Sector, Northwestern Sea Frontier, September 15, 1943.

CONSTRUCTION WESTERN ALEUTIAN LORAN CHAIN

Construction work on the Western Aleutian Loran chain was begun during the latter part of 1943. Men and materials began to arrive at sites 62 (Adak), 63 (Amchitka), and 64 (Attu), beginning early in November, 1943. The job had to be undertaken at the worst time of the year in order to make Loran service available as soon as possible to combat and supply forces who were in dire need of such service in the Western Aleutians. The CITRUS and two liberty ships, GEORGE FLAVEL and McKENZIE did the transporting. Coast Guard construction crews erected Quonset huts for construction Deatchment "A" at Massacre Bay, Attu and at Baxter Cove, Adak. Unloading was accomplished by means of 5 x 7 steel pontoon type barges at Adak. Arriving there on December 24, 1943,[1] heavy ground swell made

1. See "C.G. at War - Loran - IV - Vol. I."

unloading from cutter to barge precarious, but both barges made the beach about sundown, despite the report of a sudden squall. Temporary floodlights were then rigged and unloading operations continued until noon on Christmas Day. As the storm increased in intensity the CITRUS was unable to maintain her anchorage and was forced to return to Massacre Bay to remain there until the storm subsided January 2, 1944.

ASSISTANCE — Early in February, 1944, a five day storm swept Massacre Bay area with winds up to 125 miles per hour. Nine men were lost on an ATS tug which went down only two hundred feet from the Army dock at Sweepers Cove, Adak, with help unable to reach them from the shore. At Attu the CITRUS took nine men off a swamped ATS tug without loss of life and then sank the dying tug with gunfire. She also assisted in getting a liberty ship off the beach where it had been driven in a severe storm. The CITRUS arrived at Ketchikan February 7, 1944. On the 20th she was dispatched to assist the MARY D. hard aground on Point St. Albans Reef. After jettisoning some of the cargo of creosote piling, the MARY D. was finally floated with the assistance of the HEMLOCK and LT-151. More piles had to be jettisoned before an 18° list was corrected, and she could reach Ketchikan. Later on February 27, 1944, the CITRUS was dispatched to the assistance of the Army tug ST-169 in distress in Chatham Strait, with her crib tow raft lost. The tow was recovered by the LT-140 after the McLANE had floated it. The ST-169 was later located at the Todd Cannery, at the entrance to Peril Strait.

AIDS TO NAVIGATION — On May 5, 1944, the CITRUS departed Ketchikan with 75 men aboard for transportation to Sitka. Returning to Ketchikan she again departed May 19, 1944, on an aids to navigation trip, with supplies and equipment aboard for delivery to Cape St. Elias, Cape Hinchinbrook, Smith Island construction and Cordova, Alaska.

FIRE AT HOONAH, ALASKA — During June a fire started in the home of native at Hoonah, Alaska, who had poured gasoline on a fire over which he was smoking fish, thinking it was kerosene. As barrels of oil and gasoline were stowed under all the native's homes, built close together along the waterfall and elsewhere, and with the dry condition of the moss on the roofs, the fire spread quickly, the wind carrying it from one end of the village to the other. When the CGC SWIFTSURE arrived she sent two pumpers ashore, one on each end of the town. Two thirds of the town was burning by this time, but the pumpers checked it from spreading. 343 natives were made homeless and first aid was rendered to many of them. The commanding officer of the CITRUS took charge of the situation on arrival. The homeless natives were fed aboard the two cutters until order was restored.

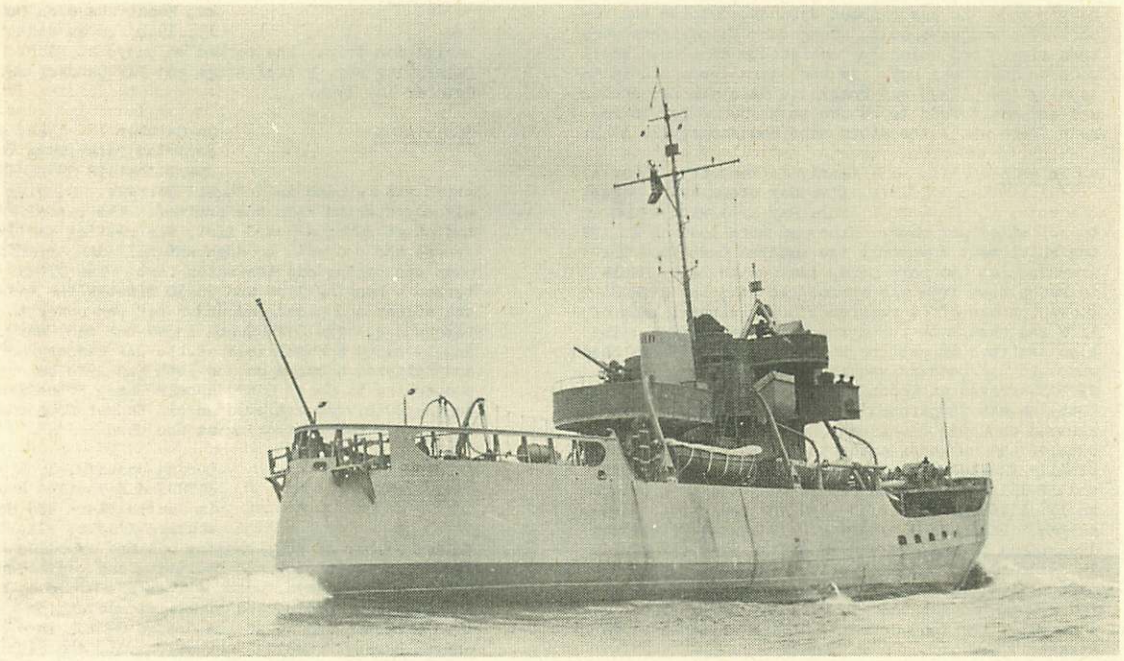
TO SITKA — On July 10, 1944, the CITRUS departed on an aids to navigation trip and on the 24th left for Sitka to take aboard personnel for Ketchikan. Arriving on the 25th she landed provisions for COTP Sitka and started loading 90 tons of supplies and lumber for Ketchikan. After recharging three lighted buoys in the vicinity, she took aboard 27 men and 2 officers and stood out of Sitka harbor on the 26th arriving at Ketchikan next day. Toward the end of the month she was loading materials at Smith Island.

BUOY WORK — The CITRUS departed Ketchikan Repair Base on October 13, 1944, on an aids to navigation trip. She worked on buoys at Blunt Point, Petersburg Bar, Milkof Ledge and PAF Cannery until October 16, 1944.

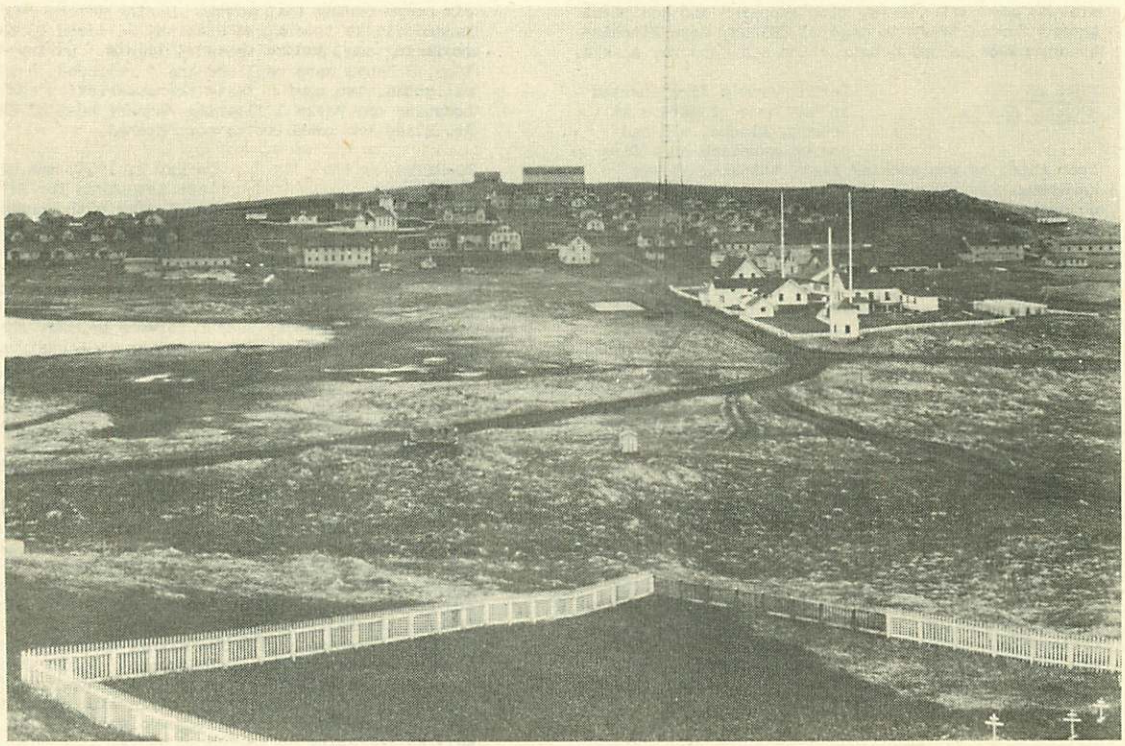
ASSISTANCE — On October 17, 1944, she departed Petersburg to inspect the ATS SS BRUNSWICK which was aground in Wrangell Narrows. Pumping had already started when she arrived. The vessel which had about 20° starboard list, was resting easily on gravel and mud with no apparent hull danger and the pump was taking out the water fast. The CITRUS attached a heaving line and in 10 minutes the vessel was afloat and proceeded under her own power to Petersburg. The CITRUS continued her buoy work loading 19 empty accumulators at the PAF cannery dock and relieved 4 buoys on the 18th and 19th before proceeding to Coast Guard Repair Base, Ketchikan. On the 20th, she assisted an oil tanker from one dock to another before mooring at the base.

AIDS TO NAVIGATION — During January, 1945, the CITRUS did routine cruising in Southeastern and Southwestern Alaska, clearing Valdez Harbor of ice, landing oil and supplies at five light stations, and relieving and replacing three lighted buoys. On the 17th she stood by the YP-251 which was in need of assistance and on the 19th assisted and towed the dredge GEORGE into Ketchikan Harbor. During February, 1945, she escorted two Coast Guard boats from Excursion Inlet, moved equipment from Fairway Island and quonset huts from Annette Island to Ketchikan. She assisted the BRAMBLE and escorted her from Wrangell to Prince Rupert, British Columbia, and went to the assistance of the SS ALEUTIAN in Wrangell Narrows. She relieved six buoys during that month. During March, 1945, she landed oil at five light station, relieved 13 buoys, replacing one, and relighted 3 lights. During April, 1945, 3 buoys were replaced and 9 relieved, 4 lights relighted, two having their characteristics restored. Locating the Parks 1 floating cannery west of Cape St. Elias she towed it to port Etches.

TO SITKA, KODIAK AND ST. ELIAS — On May 1, 1945, the CITRUS left Ketchikan for Sitka and Kodiak with construction equipment, relieving five unlighted and establishing and replacing two lighted buoys, servicing ten shore lights and establishing the Barwell Light. She returned to Ketchikan on the 31st. During June 1945, after a one day search for the MADURA, she departed on the 20th to land supplies and construction materials at Cape St. Elias, a wooden pot scow being used to land heavy pieces of equipment on the flat, rocky, boulder strewn shore, midst continuous surf. In recharging Martin Island Light the men sank into what was apparently quicksand when carrying the accumulators. During July, 1945, she landed supplies at stations from Kodiak to Amchorage and Cape Hinchinbrook, recharged 16 shore lights, landing oil for 7 more, relieved 3 lighted and 3 unlighted buoys. The LCM-3 was used to good effect in landing oil drums at Cape Hinchinbrook. During August, 1945, she recharged 11 shore lights, relieved 4 lighted buoys and 16 unlighted buoys in the Kodiak sector. From the 7th to the 16th an officer and 2 motor machinists worked on repairs to the fog signal compressor engine at Cape Hinchinbrook Light Station, During September, 1945, the CITRUS serviced 68 aids to navigation, recharging 31 shore lights, relighting one and establishing Humpback Rock lighted whistle buoy, as well as relieving 30 unlighted buoys.



THE COAST GUARD CUTTER CLOVER
USED AS BUOY TENDER AND ICE BREAKER BESIDES ITS MANY OTHER DUTIES



ST. PAUL VILLAGE - ST. PAUL ISLAND

CGC CLOVER
(WAGL-292)

COMMISSIONING

The CGC CLOVER (WAGL-292) was commissioned on November 9, 1942. Her commanding officer was Lt. Richard E. Walker, USCG. The CLOVER and BASSWOOD became active under Commander, Alaskan Security in escorting vessels, patrolling and assisting in establishing aids to navigation and LORAN with the FOX and the HATFIELD, the only escort units available until the Spring of 1943.

CONSTRUCTION OF BERING SEA LORAN CHAIN - ST. PAUL ISLAND (SITE P-1)

Equipment and about 100 Coast Guard construction and technical personnel were on the USS JONATHAN HARRINGTON which sailed from Seattle in mid-April, 1943, reaching Dutch Harbor on the 25th where she unloaded. The CLOVER had been assigned to assist in transporting cargo on to the four sites in the Bering Sea Loran Chain at St. Paul ("Peter"), (Site P-1) St. Matthew ("Mike"), (Site P-2) Umnak ("Uncle"), (Site P-3) and Cape Sarichef ("Yoke"), (Site P-4) where a monitor was to be established.[1] On May 16, 1943, the CLOVER sailed fron Dutch Harbor for St. Matthew Island, towing a small tank barge. The barge capsized about 12 miles out and was towed back into the harbor and beached. Next day the CLOVER was ordered to sail for St. Paul Island which she did on the 17th arriving on the 18th. Here unloading was started immediately. She returned to Dutch Harbor for a second and final load of supplies and Army Air Corps officers who were to establish the correct geographical position of the various sites and again departed for St. Paul on May 24, 1943, arriving next day. She finished discharging cargo on the 27th, with the aid of the Army Detachment stationed on St. Paul's Island, and arrived at Dutch Harbor on the 28th with four Army officers and six men attached to the Coast Guard Construction Detachment. She began loading cargo again on May 31, 1943.

UMNAK ISLAND (SITE P-3)

Cargo loading at Dutch Harbor continued until June 5, 1943, when the CLOVER completed loading materials for Loran Site P-3 (Umnak Island, Aleutian Chain) as well as Army freight for Chernofski and departed with a 42 foot steel landing barge in tow. On the 6th she discharged Army freight at Chernofski and loaded additional supplies for delivery at Nikloski, Umnak Island, anchoring in Nikolski Bay the same day. She landed Army cargo on the 7th but the long, shelving, shallow beach and soft sand one mile south of Cape Starr made it impossible to land articles of any weight there for the Loran construction job, so the CLOVER shifted back to Nikolski Bay and discharged cargo via steel landing barge and 32 foot wooden barge. She departed on the 10th for Dutch Harbor arriving there next day. A second load of cargo for Loran Site P-3 on Umnak Island was loaded and she departed on the 13th and arrived at Nikolski next day, but was unable to discharge her cargo because of strong winds and a choppy sea. The CLOVER experienced the same trouble at all the Loran sites. The weather was so uncertain in all four areas that she often had to stand off for several days before being able to unload. Within ten minutes, so variable was the weather at most seasons, that the same spot would experience bright sunshine, rain, then snow and then fog. Construction was proceeding simultaneously at all four Loran sites and the difficulties encountered at one, were often duplicated, at some time, at all of them. On the 15th the CLOVER changed anchorage to Nikolski Bay and completed unloading on the 16th. Then she took both the wooden and steel barge on deck, and proceeded toward Dutch Harbor, where she arrived on June 17, 1943.

COOPERATION WITH THE ARMY - ST. MATTHEW ISLAND SITE P-2

In return for the assistance of U. S. Army forces in the Loran construction projects at St. Paul and Nikolski, the Coast Guard had agreed to help the Army transport freight and passengers, so the CLOVER left Dutch Harbor again on June 17th for Chernofski where she loaded freight and Army personnel destined for St. Paul and St. Matthew Army posts. She returned with this cargo to Dutch Harbor on the 18th and again began loading Loran construction equipment, this time for Site P-2 (St. Matthew Island). The loading crew worked day and night and by the 21st was underway for St. Paul Island where next day Army passengers and cargo were discharged and 150 drums of diesel oil picked up for St. Matthew for which she departed on the 23rd. Arriving off Site P-2 on St. Matthew Island on the 24th she was again unable to land cargo for two days because of wind and sea. She completed discharging her cargo, and a 24 man detail, however, on June 27th. Here the beach was favorable for landing cargo but the terrain and that of Site P-2 was composed of extremely soft and shaky tundra, over which heavy equipment could not be moved without difficulty. On the 28th the CLOVER moved to a bight off the south side of St. Matthew Island to discharge Army supplies and personnel. She departed St. Matthew on the 29th and after stopping at St. Paul and St. George Islands arrived at Dutch Harbor on July 1, 1943.

CLOVER SERVICES CONSTRUCTION SITES

All during July 1943, and up to August 24th, 1943, the CLOVER made frequent trips to the Loran construction sites in the Bering Sea Chain. By July 15, 1943, the station on St. Paul Island was ready to go on the air for testing and the Coast Guard officer in charge of construction departed on the CLOVER for Dutch Harbor. Here he picked up a load for the station being constructed on Umnak Island and on reaching there, remained, supervising construction for a month until that unit was also ready to go on the air. When the stations did go on the air for testing their true fixes proved that the location of the various islands on existing charts to be as much as several miles, in some cases, out of position and the Hydrographic Office of the Navy found it necessary to rechart practically the entire area.[1]

COMPLETION OF LORAN CONSTRUCTION DETAIL

The CLOVER finished her work with the Loran construction detachments on September 11, 1943. Returning to Dutch Harbor on August 31, 1943, from Umnak Island she departed September 2, for St. Paul Island arriving next day. Standard speed could not be maintained because of mechanical difficulties, the vessel now being seven months out of drydock, having cruised nearly 20,000 miles in some 1900 hours of standard speed cruising. She did not arrive at St. Matthew Island until the 5th, when she landed cargo and next day embarked Coast Guard personnel. Stopping at St. Paul next day she loaded more Loran construction battalion equipment and on the 8th made the 80 mile round trip to St. George to bring back Army personnel. Next day she departed St. Paul and on the 9th anchored at Naginak Cove, Anderson Bay, waiting for the weather to moderate. She arrived at Dutch Harbor on September 10, 1943, and next day discharged all equipment. The CLOVER's mission in helping establish the four Loran

1. See "C.G. at War - Loran - IV - Vol. 1.

1. See "C.G. at War - Loran - IV - Vol. 1"

sites now was complete and she was headed for availability and extensive overhaul.

AIDS TO NAVIGATION — The CLOVER, after availability, reported to the 17th Naval District Coast Guard Officer on November 24, 1943, and was assigned to maintenance of aids to navigation west of Dutch Harbor, and also to patrol and submarine search. On December 20, 1943, when the PC-780 touched bottom in Gastineau Channel, she was towed to Prince Rupert by the CLOVER. Both propellers had been damaged.

ASSISTANCE — On January 12, 1944, a dispatch from Cape Spencer Light Station reported that the US ATS vessel COLUMBIA QUEEN had lost her propeller twenty miles off Lituya Bay and requested a tow. The CLOVER from Ketchikan and the YP-152 from Port Althorp were dispatched to assist her, and she was towed to Port Althrop by the YP, arriving on June 13, 1944. On March 26, 1944, the CLOVER relieved the McLANE of the escort of the SS HAMAQUA which the McLANE had been escorting through an area where an underwater contact had been made (56° 18' N, 134° 34.5' W). Three and a half hours later the CLOVER returned to the area and assisted the McLANE in the search which continued throughout the day. On May 16, 1944, the CLOVER departed Ketchikan on an aids to navigation trip in Bristol Bay and the Bering Sea areas. Three days later she reported that her small boat, which had been dispatched to the assistance of the fishing vessels ALASKAN and LOANGEN, in answer to a distress signal, had not returned. Extensive air, sea and land search was begun and continued throughout May 1944. The missing personnel consisted of two officers and five enlisted men. The boat and nine lifejackets, which were in addition to those worn by the CLOVER's personnel, were recovered. The CLOVER continued on aids to navigation work throughout 1944 in the 17th Naval District.

NEW BUOY SYSTEM MASSACRE BAY - AVAILABILITY AT SEATTLE — During January and February the CLOVER established an entirely new buoyage system, all ANRAC equipped in Massacre Bay, Attu Island, Aleutians. She relieved and relighted numerous other buoys and lights, and brought 30 tons of salvage gear from Adak and Dutch Harbor to Ketchikan. On February 28, 1945, she departed Dutch Harbor for Seattle, Washington, via Ketchikan for drydocking and repairs. She remained on availability in the Puget Sound area until May 14, 1945.

BACK TO ALASKA — The CLOVER loaded freight for Ketchikan on May 14, 1945, at Seattle, and after delivering it to destination returned to Seattle and loaded one LCM-3 barge and departed for Middleton Island where the barge was to be used in landing operations in connection with the construction of a direction finder station. The enlisted men aboard the CLOVER, except for some key petty officers and seamen, were new to seagoing life, having been taken on at Seattle in exchange for the old crew which had completed their tour of duty in Alaska. The new men were put through an extensive program of drills. After delivering the barge and six day availability at Ketchikan, the CLOVER, loaded to capacity with buoys and other aids to navigational equipment, left Ketchikan June 14, 1945, for the buoy depot at Dutch Harbor. Then on the 25th she loaded freight for St. George, St. Paul and St. Matthew Islands.

ASSISTANCE TO TP-127 - OTHER BERING SEA ACTIVITIES — On July 1, 1945, while commencing landing operations at St. Matthew Island, the CLOVER was ordered by dispatch to proceed immediately to the assistance of ATS vessel TP-127, with tow, which was reported aground between Cape Newenham and the west shore of Nelson Island. Proceeding immediately the CLOVER contacted the stricken vessel by radio and learned that she was afloat at high water but listing severely at low water, with a 1¼" wire towline fouled in her propeller. Aside from being unable to determine her own position she was undamaged and in smooth water, with the wind at 25 knots, indicating that she was behind some of the numerous sand bars along the eastern shore of the Bering Sea. After cautioning the tug not to move too much at high water and find enough water to float in at low tide, the CLOVER finally located the tug by various radio bearings and gave directions on a rising tide to get out from behind the sand bars. By July 2, 1945, the TP-127 was off the shoals and proceeding to his destination, the towline having been cleared from the wheel while aground during one of the low tides. The main difficulty was in locating the tug which could transmit on no lower frequency than 2110 kilocycles while the CLOVER's direction finder would only receive up to 550 kilocycles. A makeshift loop was constructed by the CLOVER AND lashed to the direction finder loop and bearings taken on the tug, using the TRC-115 at 2670 kilocycles. Using these bearings, and the tug's bearings taken on the CLOVER's MO's, the cutter located the grounded vessel without too much difficulty. During the remainder of July the CLOVER landed cargo at St. Matthew's, recharged two Bering Sea lights, landed cargo at Nome Lifeboat Station, a bell buoy and supplies at St. Michael and transported a district medical party who administered emergency medical treatment and visited St. Matthew, St. Lawrence and King Islands and also St. Michael and Hooper Bay on the mainland. At the same time the CLOVER gathered local pilot information for the U. S. Coast Guard Alaska Pilot.

AIDS TO NAVIGATION - VJ-DAY — During August and September, 1945, the CLOVER reestablished a light, relieved, recharged and replaced buoys in the vicinity of Adak and Massacre Bay, relieved and serviced aids to navigation at Amchitka and transported a 45 foot Navy picket boat and a 40 motor launch from Amchitka to Adak and 14 tons of freight from Adak to Dutch Harbor. Six days of progressive maintenance availability were taken at Adak during August where the vessel was drydocked and repairs made to the Q.C.U. sound gear head. A half day holiday was observed on VJ-Day, August 14, 1945.

CGC CONIFER (WAGL-301)

COMMISSIONING AND SHAKEDOWN — On May 4, 1943, the CGC CONIFER, (WAGL-301), one of the CACTUS class tenders was commissioned at Duluth, Minnesota, by Lt. John Donnelly, USCG, who became her first commanding officer. She had been built by the Marine Iron and Shipbuilding Yard, Duluth, Minn., where she remained until May 22, 1943, for tests and machinery adjustments. On that date she began the 830 mile trip to Cleveland where she remained for the rest of May, 1943. She proceeded thence to Boston via Buffalo and the St. Lawrence River, picking up the EVERGREEN in Quebec on June 16, 1943, and arriving at Boston on the 23rd. Proceeding to Coast Guard Yard, Curtis Bay, Maryland, she remained there until July 25, 1943, being equipped with radar and sound gear, before departing for Norfolk and Bermuda for shakedown training. Here she arrived on July 31, 1943, and a week later she was ordered to report to Boston for assignment as a weather vessel.

ATTACKS SUB

On August 8, 1943, while proceeding to Boston, a submarine conning tower was reported coming to the surface, broad on the starboard bow, distance 3 miles. As the sub dived all hands on the CONIFER came to general quarters. The sub was picked up on the sound gear and a depth charge dropped, after which the cutter circled, made a contact run and dropped a second charge. Two minutes later after a second run she dropped a pattern of six charges. After that contact was lost but there was no indication that the submarine had been hit and the CONIFER set ship on course for Boston which was reached on the 9th.

WEATHER PATROL

After being altered for weather patrol duty, the CONIFER departed Boston on August 13, 1943, for Weather Station No. 1 where she relieved the MENEMSHA. She was relieved by the SEA CLOUD on September 4, 1943, returning to Boston where she remained until September 26, 1943, when she departed for Weather Station No. 2. En route her radar went out of commission and she changed course for Argentia to effect repairs during the rest of September and until October 6, 1943. On that day she departed for Weather Station No. 2 relieving the MENEMSHA and turning the station over to the SEA CLOUD on the 23rd. On November 26th she departed Boston for Weather Station No. 1 relieving the SORREL where she continued on patrol until December 18, 1943, returning to Boston for the balance of December.

SEARCHES FOR CANADIAN PLANE

Departing for Weather Station No. 2 on January 10, 1944, the CONIFER changed course for Argentia on the 13th to repair radar, arriving at Station on the 16th to relieve the SORREL. On the 17th ice five inches thick was removed from the ship's bow and well deck. On station on the 18th the sea was very rough necessitating that the ship heave to on the 19th and portions of days following. When relieved on February 5, 1944, the CONIFER was proceeding toward Boston when she was ordered to proceed to the assistance of a Canadian PBY-5A down off Labrador. Next day the cutter made visual contact with an RCAF Liberator who directed her to the position of the downed plane 20 miles away, but by 1640 visibility had been reduced to one quarter of a mile by snow squalls. Arriving at the position given an hour later the CONIFER started a grid search and fired star shells, flares and Very pistols, all without results. The cutter also used her 24" searchlight to sweep the ice. The search continued the next day with three RCAF planes aiding, assisted by the TAMPA from the 8th to the 11th. Search was not abandoned until the 12th when the CONIFER proceeded to Boston.

WEATHER STATIONS THREE AND FOUR

By March 8, 1944, two more weather stations had been added as the CONIFER departed for one of these, No. 3. She arrived on the 14th and continued on station until relieved on April 3, 1944. Returning to Boston she was equipped with a new sound boot and departed on the 20th for another of the new stations, No. 4. She was relieved by dispatch May 17, 1944, and returned to Boston for overhaul until June 13, 1944.

STATIONS ONE AND TWO

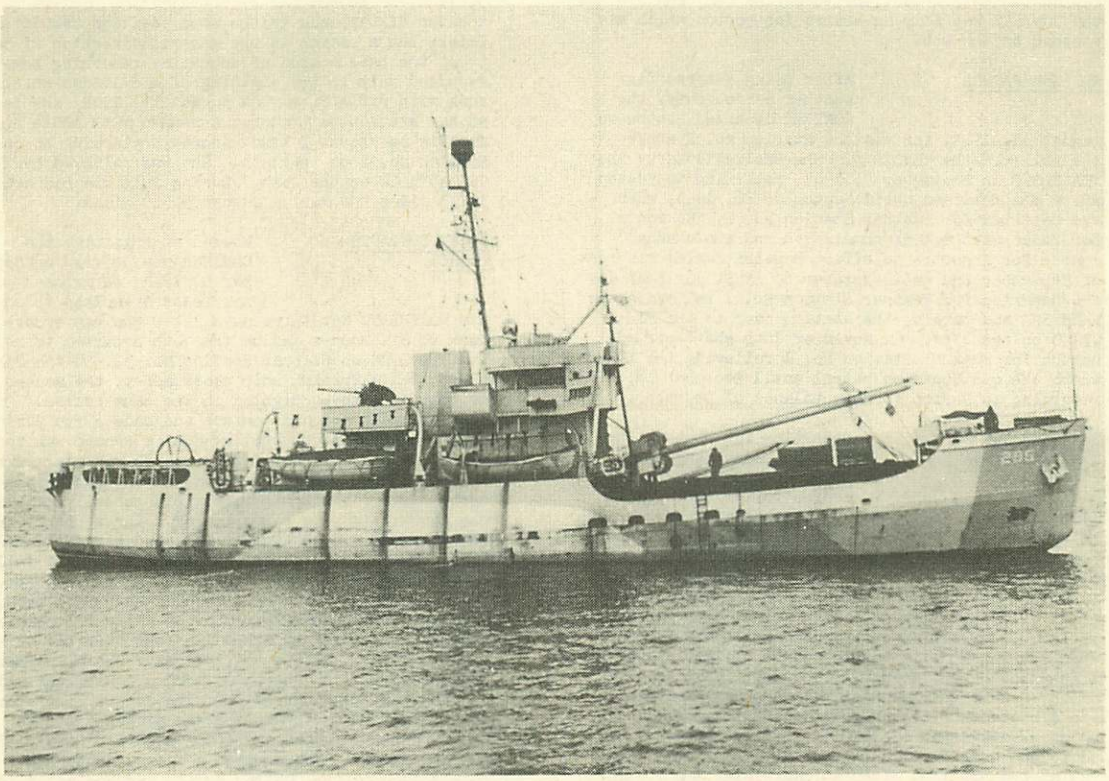
On June 20, 1944, the CONIFER departed for Weather Station No. 1 to relieve the BIG HORN and remained on patrol until July 5, 1944, cruising from 139 to 168 miles each day. On the 6th she departed for Bermuda with an appendicitis case. She was met on the 7th by HMS ML-369 who took the patient to the Naval Hospital, Bermuda, while the CONIFER returned to her station. Here she was relieved on July 14, 1944, by the USS NOTABLE and arrived at Bermuda on the 16th. Next day a hurricane warning was received and the cutter stood by to get underway until the 19th when the hurricane passed to the west. She remained in Bermuda until the 31st and then departed for Weather Station No. 2. While proceeding to station she was within eight miles of reported submarine position but made no contacts. Arriving on station on August 5, 1944, an object was reported on the horizon with a water disturbance in the same position two days later, but a search in the general direction of 60° true, the base course of submarine returning home, resulted only in the sighting of a cylinder which was sunk with rifle fire. On August 13, 1944, she departed her station to transfer a seaman with acute appendicitis to Flores Island, Azores, returning to patrol Station No. 2 on the 16th. She was relieved by the USS NOTABLE on the 25th. During July she had cruised 3,133 miles and during August 5,766 miles.

SOUND CONTACTS - PLANES

Moored at Argentia, the CONIFER was ordered on September 8, 1944, to proceed to northeast Greenland to assist the NORTHLAND but three days later she was ordered back to St. John's and on the 14th departed to relieve the BIG HORN on Weather Station No. 3. On the 21st she passed a Spanish ship close aport, the second neutral ship to be sighted on the same course. On the 22nd she made a sound contact and made a run firing four rocket projectors, followed by a second run and four more projectors. A grid search was started but abandoned with negative results in an hour as she resumed patrol. It was impossible to tell whether the contacts were a submarine or a large fish. Another search without result followed a radar contact. Next day a radar contact 12 miles distant was followed by a neutral vessel who passed two miles to port. On the following day a convoy heading west exchanged calls. On September 26, 1944, an unidentified plane that resembled a PBY passed 150 feet over the cutter lighting her up with a searchlight. Gun crews were ordered to fire if the plane turned toward the ship again but it disappeared. On the 28th a Liberator dropped six flares searching the area and a B-24 Liberator was sighted and challenged repeatedly but did not answer. She dropped a flare and turned her searchlight on the CONIFER as the commanding officer sent a message notifying them that they would be fired upon if they passed over the ship without answering her challenge.

SEARCH FOR PERISCOPE - INVESTIGATE OIL SLICK

On September 29, 1944, the CONIFER zigzagged for a reported position of a periscope and making a sound contact fired eight 7.2 rocket projectiles with negative results. Starting a grid search of the area she made radar contact on a B-24 Liberator who exchanged challenges and dropped flares to mark the area. The CONIFER continued the search with the B-24 for the rest of the day. Next day the search was continued with a B-17 and B-24 in the vicinity of 42° 24' N, 36° 19' W. At 0825 a plane notified the CONIFER by radio of an oil slick bearing 025° T and 30 miles distant. The CONIFER proceeded to the reported area and started a grid search and at 1230 a patrol bomber reported an oil slick 300° T at 15 miles distant. Entering the area, oil covered water was found for 2½ miles. At 1333 a "periscope" reported, turned out to be a burned out flare case. A depth charge set at 200 feet was dropped in the centre of heavy oil with another on the windward edge and more oil seemed to come to the surface. The area was



COAST GUARD BUOY TENDER EVERGREEN
THIS SNAPPY LITTLE 180-FOOTER, THE EVERGREEN
BELONGS TO THE FLEET OF COAST GUARD BUOY TENDERS

sounded in half mile squares but no sound contacts were made. Flying Fort R-2 and Liberator 1Ll4 were in the vicinity throughout the day and night. At 1653 another depth charge set for 300 feet resulting in more oil over the same area. At 1725 the cutter gave the USS CARD the position of the oil slick which was marked with flares and the CARD and five DE escorts made a sound search of the oil slick to the southwest. The CONIFER remained searching in squares covering 10 miles square.

WEATHER STATIONS THREE AND FOUR — As October 1944 began, the CONIFER continued patrolling Weather Station No. 3 searching by radar and sound but abandoned search after 26 hours. On the 5th she was relieved of Weather Station No. 3 by the USS NOTABLE and set course for Argentia. On the 6th a C-54 plane was sighted. On the 22nd the CONIFER proceeded for Weather Station No. 4 where she remained throughout October 1944. On November 6th a plane reported flares at 55°N, 50° W and the CONIFER proceeded toward this position. The position of the flare was later corrected to 180 miles west at 52° W and the CONIFER reduced speed and remained in the northwest quadrant of the station. She was relieved by the GROTON on November 9th, 1944, mooring at Argentia on November 12th, 1944.

WEATHER PATROL — On November 20, 1944, the CONIFER proceeded to Weather Station No. 5 to relieve the BIG HORN, cruising in this European area until December 9, 1944. On the 7th a large oil slick was sound searched with negative results. On the 13th she transported 42 enlisted men from Argentia to Sydney and returned to Argentia with 29 others. On December 21, 1944, she again proceeded to Weather Station No. 5 relieving the DEARBORN.

SEARCH FOR LANCASTER — On December 29, 1944, she was alerted to aid in search for the LANCASTER. She cruised on the northwest edge of her station until the 31st when the search for the vessel was abandoned. She resumed patrol of Weather Station No. 5.

ICE BREAKING — The CONIFER remained on Weather Station No. 5 and on January 2, 1945, made radar contact on a large convoy bound east. On the 6th she entered an oil slick and made a sound search with negative results. The oil was very dirty. On the 8th she was relieved by the BEAUFORT, mooring at Argentia on the 12th. On January 20, 1945, she proceeded to Curtis Bay, Maryland, via Boston and Cape Cod Canal, arriving on January 25, 1945. Here she was ordered to report to Task Group Commander SASSAFRAS, and on February 2, 1945, was under way to break ice and assist vessels in the upper Chesapeake Bay.

CGC EVERGREEN (WAGL-295)

COMMISSIONING — The CGC EVERGREEN (WAGL-295) was commissioned on March 17, 1943. Her commanding officers were Lt. John E. Klang, USCG, Lt. D. W. Moore, USCGR, and Lt. F. D. Hilditch, USCGR.

WEATHER PATROL. — On August 18, 1943, the EVERGREEN departed Boston en route Weather Station No. 2. Arriving at Argentia, Newfoundland on the 21st, necessary repairs were made to the radar equipment. She arrived on station on the 24th. Next day she had a sound contact at 1300 yards which was lost three minutes later and believed to be fish. On September 8, 1943, a mine was sighted but darkness and sea conditions made any attempt to sink it unsuccessful. She was relieved of the station on the 12th. She arrived at Boston on the 18th. Her next duty on weather patrol began when she left Portland, Maine, on October 14, 1943, en route to Weather Station No. 1, situated at 39° N, 59° W. She arrived on station on the 18th and the patrol was uneventful until the 31st when a full gale from the SW made weather observations impossible. They could not be resumed until November 4, 1943, and the patrol was then resumed until the 7th when she was relieved. She arrived at Boston November 11, 1943. On November 29, 1943, the cutter again departed Boston en route Weather Station No. 2, where on December 5, 1943, she relieved W-276. On December 26, 1943, she was relieved by W-296 and proceeded to Boston.

FIRE - WEATHER PATROL — (War diaries of the EVERGREEN for the first five and one half months of 1944 are not available). Soon after the EVERGREEN departed Boston on May 13, 1944, fire was discovered in the upper engine room but was extinguished by 0045 on the 14th. She had returned to Boston by 1030 that day for close examination and repairs. Departing again for Weather Station No. 1 on the 15th she departed station on the 18th with an appendectomy case for Bermuda. En route back to station she encountered the THOMAS S. GORTON, a British schooner, and reported her to CTF 24 who gave her clearance. The EVERGREEN patrolled Weather Station No. 1 until June 2, 1944. Returning to Argentia she left again for patrol of Weather Station No. 2 on the 19th. She was relieved on July 12, 1944, and returned to Argentia.

ESCORT DUTIES - GREENLAND PATROL - EAST GREENLAND — The EVERGREEN arrived at Argentia, Newfoundland, on July 15, 1944, from weather patrol duty. On July 26, 1944, she departed Argentia in company with the FREDERICK LEE to escort the merchant ships BISCAYA and ARAGON to Greenland. On the 30th the ARAGON was detached in the custody of PG-70 and next day the BISCAYA proceeded with the FREDERICK LEE. At 1612 on July 31, 1944, the EVERGREEN made a contact and fired 16 anti-submarine projectiles, maneuvering afterwards to regain contact. Then she made numerous runs on what all indications pointed to as either whales or cold layers of water. She reached Narsarssuak on August 1, 1944, and on the 2nd delivered cargo to Gamatron Island returning to Narsarssuak next day to continue unloading and loading. On the 4th she escorted the BISCAYA to Kungnat Bay and moored at Gronne Dal, returning to Narsarssuak on the 6th. Next day she departed to assist a disabled plane but was secured at 0818 returning to moorings. On the 12th she proceeded to Fredericksdal to deliver cargo and had to remain there until the 19th because of unfavorable weather conditions. She then proceeded to Comanche Bay and then to Ikateg Sound to await parts for a thrust bearing. Here her motor launches serviced Deception Pass lights and daymarks and Ikateg sound beacons.

ICE AND SNOW HAMPER PATROL — The EVERGREEN remained anchored at Ikateg, undergoing repairs until September 9, 1944. Getting underway she encountered heavy weather on the 10th and 11th but contacted the EASTWIND on the 16th and was instructed to patrol the area between Cape Pansch and Great Koldewey. She was relieved on the 19th and after replenishing food supplies, fuel and water at Dove Bay took over patrol

of the Cape Pansch - Cape Wynn area on the 22nd. She had to anchor in Clavering Straits a number of times to make minor repairs and also because the ice pack, poor visibility and snow, prevented patrolling.

TOWS NORTHLAND TO REYKJAVIK AND THEN TO NARSARSSUAK

During this time, however, she maintained radar search and on the 30th she took the NORTHLAND in tow with the STORIS screening and proceeded to Reykjavik, Iceland. The NORTHLAND proceeded under her own power to the dock. On October 20th the EVERGREEN again took the NORTHLAND in tow and with the STORIS screening set out for Narsarssuak. Heavy seas and high winds on the 23rd caused the hawser to part and, early on the 24th, the EVERGREEN lost radar contact with the other two vessels not regaining it until the 27th. She was then assigned to guard the starboard quarter of the NORTHLAND, now being towed by the STORIS. The vessels reached Narsarssuak October 31, 1944, and discharged four German prisoners of war in the custody of the Provost Marshall, U. S. Army.

SUPPLIES FOR D/F STATION

On November 6, 1944, the EVERGREEN proceeded to Fredericksdal Harbor and on the 8th was en route to Prince Christian Radio Direction Finder Station where she discharged personnel and moved to Kangerdluk Fjord on the 10th to await moderation of the wind. When the weather permitted on the 11th, she resumed unloading supplies for the station. On the 15th she stopped at Cape Adelaer and on the 16th at Caroline Amalie Harbor. On the 19th she dispatched a landing party of 27 men, under direction of Lt. (jg) V. G. Heichel, to Torgilsbu, (Greenland east coast) to investigate possible enemy activity. The investigation was negative and the vessel proceeded to anchor in Kangerdluk Fjord. On the 20th operations at the D/F station were carried out and the cutter anchored in Fredericksdal Harbor, completing construction of the range lights there on the 21st and returning to Narsarssuak on the 23rd.

ICE BREAKING AND TRANSPORT

Delayed by an appendectomy case the EVERGREEN left Narsarssuak on November 28, 1944, and discharged cargo at Gamatron and Simiutak Cove, dispatching a cargo boat on the 30th to pick up two Army chaplains. The boat had to remain there because of high winds as the EVERGREEN sought a suitable anchorage, unable to continue operations because of the wind. Setting out for Simiutak on December 1, 1944, she had to turn back because of high winds and proceeded to Gamatron on the 3rd and then to Simiutak expediting cargo, mail and personnel in Narsak Cove on the 4th. Ice breaking in Tungdliarfik Fjord was carried out on the 5th and 6th. Next day she set out to await the TAMPA and X-16 to escort them through the ice to Narsarssuak. Ice breaking again on the 12th and 13th she again delivered cargo, mail and personnel to Simiutak and Gamatron. On the 16th she delivered personnel to Fredericksdal.

SET FAST IN ICE

On the 18th she again headed for Prince Christian D/F station but had to reverse course because of high winds and set fast in the ice in Kangerdluk Cove, later being grounded when the entire ice field moved. She was afloat on the 19th with no apparent damage sustained. On the 20th she had to back out of heavy, thick ice and on the 22nd reversed course after a leak developed in the main hold, starboard side while she was maneuvering through the ice pack. She started out again on the 25th but turned back under heavy seas and high winds. On the 26th she was finally able to complete her mission. High winds and ship icing delayed her return to Fredericksdal. She moored at Narsarssuak on the 30th. Next day she broke ice in the main channel to clear the way for the SS LINDA.

ICE BREAKING

On January 3, 1945, the EVERGREEN began a series of ice breaking operations in the approaches to Narsarssuak and in Arsuk Fjord, being twice set fast in the ice while en route to and from Gronne Dal. From the 20th to 23rd she assisted the NORTHLAND through the ice en route Narsarssuak and on the 25th assisted the ALGONQUIN. En route Gamatron with cargo she was again beset. On the 30th, having completed fueling the mine at Ivigtut, she departed for Argentia in company with the ALGONQUIN and MOHAWK. On February 10, 1945, she moored at Portsmouth, New Hampshire, Navy Yard for 30 days availability.

RETURN TO GREENLAND

The EVERGREEN continued on availability until March 20, 1945, when after a ten day training period at Casco, Maine, she once more departed for Greenland. (April 1945 War Diary not available). On May 1, 1945, she was en route to Gronne Dal whence she departed on the 4th with the EASTWIND, ALGONQUIN and ARUNDEL to hold inspection at on sea on the EASTWIND. Returning to Narsarssuak, she remained there until the 5th when she took an inspection party to Gamatron and Simiutak. Returning to Narsarssuak on the 11th she took another inspection party to Narsek on the 19th. She then proceeded to Ivigtut on the 31st to fuel the mine.

TRANSPORTATION

Underway in Brede Fjord to Narsarssuak on June 1, 1945, the EVERGREEN left on the 5th en route Marrak, Greenland in company with the FS-111. Here she delivered 75 tons of cargo on the 7th and returned to Narsarssuak where, on the 13th, she had loaded another 185 tons for Marrak. She returned to Narsarssuak on the 22nd by way of Gronne Dal and on the 25th departed for Gamatron where she delivered 50,985 gallons of fuel oil before again returning to Narsarssuak on the 27th.

TO FREDERICKSDAL - HULL DAMAGE

On July 4, 1945, the EVERGREEN departed for Frederisksdal with the SORREL and from there proceeded to Prince Christian Army Base with that vessel in company. She returned to Kangderluk Cove, however, after encountering extra heavy ice until the 10th when a second attempt had to be abandoned. Again proceeding on the 11th growler ice forced the ship on to a large piece of blue ice and damaged her hull, a 36" crack running longitudinally across frame No. 68 below the ice belt. She returned to Narsarssuak and remained there until the 23rd when she again got underway for Fredericksdal with the SORREL. She anchored at Kangderluk until August 1, 1945. On that date she again got underway for Prince Christian Army Base, stood into Natsek Cove and unloaded cargo, returning to Narsarssuak on the 7th. On the 17th she again proceeded to Fredericksdal and on the 18th was underway for Comanche Bay with the SORREL. From there she proceeded to Ikateg on the 25th. On the 30th she escorted the ANNIK through the ice in Angmagssalik Fjord to Deception Pass to work on beacons.

TO CAPE DAN

On September 2, 1945, she proceeded for Cape Dan to evacuate personnel. On the 3rd she anchored in Angmagssalik Harbor repairing aids to navigation and then proceeded to Ikateg. Unloading the SS ANNIK until the 9th she returned to Angmagssalik for a day and then was back at Ikateg, resuming

unloading of the ANNIK until the 15th. On the 22nd she got underway for Cape Dan, but the seas were too heavy to work small boats and she returned to Ikateg. Anchored in Angmagssalik on the 23rd she visited Ikerssak Sound next day but returned on the 25th to await calmer seas. On the 26th the EVERGREEN anchored in Cape Dan and Tunog Passage sending working party to Kulusk and on the 28th completed evacuation of personnel from Cape Dan. Proceeding to Ikateg on the 29th where she loaded cargo, and then got underway for Narsarssuak on September 30th, 1945.

CGC HEMLOCK
(WAGL-217)

CHARACTERISTICS - PREWAR ACTIVITIES

The CGC HEMLOCK (WAGL-217) had been built at Seattle, Washington, in 1934, as a Lighthouse Service Tender. She became a Coast Guard cutter (tender class) on July 1, 1939, when the Lighthouse Service was amalgamated with the Coast Guard. She was 175 feet long, with 32 foot molded beam and a maximum draft of 12 feet and 7 inches. She had a displacement of 1005 tons, a steel hull, and her 1000 HP engines were driven by oil burning steam boilers, with twin screw propellers. She had a speed of 12 knots. Her permanent station under the Coast Guard was Ketchikan, Alaska. In 1940 she was one of three tender class cutters in the Juneau District, the others being the CEDAR and the ALDER. Her duties at that time consisted of attending all automatic and other aids to navigation, recovering buoys adrift, relighting lights estinguished, there being many automatic lighted aids in the District, and replacing and recharging buoys. 1941 plans for the protection of Alaska in case of war included developing and installing secret aids to navigation through minefields for the guidance of friendly shipping, suppressing coastal aids when not required for our uses in order to deny them to enemy assistance in his navigation, and utilizing the 14 light stations as coastal observation ports, with suitable automatic weapons furnished them as a means of protection against local minor attacks, establishing such outposts as were necessary. On November 29, 1941, the light stations in the Alaska Sector of the 13th Naval District, the Coast Guard having become part of the Navy on November 1, 1941, were doubled in strength for 24 hour lookout, signal and communication watches, and special lookouts were placed to check on suspicious vessels, persons or activities. When war broke out on December 7, 1941, the HEMLOCK was actively engaged in carrying out these war plans.

PEARL HARBOR IMPACT

On declaration of war on December 8, 1941, the Dixon Entrance Patrol was established with four cutters. Harbor patrol was augmented by small craft taken temporarily from the Reserve. The Cape Spencer Patrol was established with two cutters and other smaller craft. Scotch Cap and Cape Sarichef Lights, radiobeacons and fog signals were discontinued. Radio silence was ordered except for military operations. All lights were maintained in the inside passage, but all aids to navigation in the vicinity of Sitka, Kodiak and Dutch Harbor were extinguished. A blackout of all important lights and the discontinuance of all radiobeacons was ordered. A radio blackout was observed on December 10, 1941. Next day all lights except Cape Sarichef, Scotch Cap and those in Sitka, Kodiak and Unalaska were relighted. All vessels in the inside passage were directed to resume their usual runs. Instructions were issued to all light stations in case of attack. On the 12th the St. Paul's Island radio station was directed to discontinue radio transmission. On the 13th all vessels in Seward and to the east of Seward were authorized to proceed on their regular journeys. On the 21st the CYANE narrowly escaped an armed encounter with a Canadian bomber due to not having recognition lights. A submarine was reported off the Pacific coast. All Japanese owned vessels were investigated and detained. The Seattle-Ketchikan-Seward cable went out of commission and was found to be short-circuited due to an improper connection at Twelve Mile Arm. Steps were taken to evacuate those persons not having homes in Alaska. Recommendations were submitted for licensing boats and issuing identification cards to their personnel; also for maintaining certain outstanding canneries as outposts. Where these were located in very crucial positions and were fully equipped with radio, they were to be manned with service personnel.

ASSISTS ARMY TRANSPORT

On January 13, 1942, the U.S. Army Transport DAVID W. BRANCH grounded near Hamar Island. The HEMLOCK proceeded to her assistance and on the 15th reported that she had her forepeak and chain locker holed. A deck cargo of lumber was jettisoned in order to pull her off at high tide. After four days of failure to float her, she was turned over to a salvage company for further operations and eventually floated. The HEMLOCK continued to service aids to navigation in Southeast Alaska.

TO SEATTLE

During the week ending November 21, 1942, the HEMLOCK proceeded to Seattle to obtain necessary equipment to complete work in the northern sector of the Sitka sub sector.

AVAILABILITY FOR OVERHAUL - TOWS TRANSPORT

Returning to Alaska the HEMLOCK again departed Ketchikan via the inside passage for Seattle for general overhaul and installation of permanent degaussing equipment. On December 17, 1942, at 0350 she came alongside the U. S. Army Transport TEXADO with a damaged screw and took her in tow, mooring at Bell Street Dock, Seattle, Washington, on December 18, 1942.

RETURN TO KETCHIKAN - AIDS TO NAVIGATION

The HEMLOCK returned to Ketchikan on March 2, 1943, after completing overhaul and installation of new equipment at Seattle. All during 1943 the cutter was engaged in aids to navigation work in Southeastern Alaska. On trips from the Coast Guard Repair Base at Ketchikan that usually lasted a week, she serviced light stations bringing them supplies of equipment, ammunition, food, fuel, etc. She replaced and serviced buoys, relighted non-attendant lights and recharged and relieved lighted buoys. Passengers carried included relief personnel and others entitled to transportation service. For example, on September 7, 1943, the cutter transported the Coast Guard Band, together with civilian entertainers from Ketchikan to Wrangell, thence to Petersburg and Juneau. After working buoys and servicing lights until the 12th she again picked up the band and entertainers and transported them to Sitka, working buoys and relighting lights en route. Then she brought the group back to Ketchikan on September 16, 1943.

ASSISTANCE TO SS PRINCE RUPERT

On September 26, 1943, the HEMLOCK, with four divers on board, departed for Tamgas Harbor to salvage an R.C.A.F. Strauier plane that had 14 on board at the time of the crash, four of whom were lost. The plane was hoisted out of the water by wire pennants, placed by the divers, and carried on the boom to the U. S. Army Dock, Annette Island. On

October 1, 1943, while working in Wrangell Narrows, the HEMLOCK was ordered to proceed to Petersburg to render assistance to the SS PRINCE RUPERT which had struck Prowley Rock and was in a sinking condition. The vessel, by this time moored at Citizens Wharf, had a 20° list with two holes in her hull, one in the engine room and one in the steering room aft, the latter being made by a propeller strut that had torn loose when she struck the rock. The crew of the HEMLOCK manned pumps and rigged a collision mat, reducing the list to 9°. Here it was held to keep the ship from reversing the list, as had already happened times before the cutter's arrival and which would have damaged vessels lying on the RUPERT's port side. On the 3rd, divers reported that the bilge keel had been torn loose from the ship's hull and had flattened against the ship's side. This was bent back so that the hole could be patched. Inflow of water in the steering engine room aft was temporarily stopped by oakum and cement was poured. The vessel was then thought seaworthy enough to proceed to either Prince Rupert or Vancouver. Two Coast Guard pumps, and the men familiar with them were left on board at the request of the master. Next morning fire broke out on the dock where the vessel was laying, having started in the boiler room of a food company on the same wharf. The HEMLOCK towed the vessel into mid-stream out of danger of the fire and, with the assistance of other vessels, the city fire department and the COTP detail put the fire out in six hours. Then the cutter escorted the PRINCE RUPERT to Ketchikan and next day the vessel proceeded to Prince Rupert, British Columbia, unescorted.

ASSISTS SS WILLIAM L. THOMPSON

The HEMLOCK started out on a regular tour of aids to navigation on the West Coast of Prince of Wales Sound and in Clarence Strait on January 17, 1944, and, after cruising 457 miles, she had relieved 30 buoys and relighted one light by the time she returned to Ketchikan on the 22nd. Four days later she was called upon to render assistance to the SS WILLIAM L THOMPSON who was aground at the south end of Bold Island. After an hour of pulling, during which the tow line parted, she got the THOMPSON free. Then the HEMLOCK left for Alaska dock to pick up a portable pump as the THOMPSON was leaking badly with 15 feet of water in hold No. 1. An hour later the pump was working aboard the THOMPSON as the HEMLOCK towed her to Ketchikan and began pumping the water out of her hold. Next day a temporary patch was placed on the outside of the vessel's bottom by divers and the THOMPSON was assisted to the Coast Guard Repair Base, Dock where her crew repaired the hold. A letter of commendation was sent Lt. Comdr. Jens J. Jensen for this work.

AIDS TO NAVIGATION - WRANGELL, PETERSBURG, JUNEAU AND SITKA - ASSISTANCE WORK

Another tour of aids to navigation at Wrangell, Petersburg, Juneau and other points, with enlisted men and civilians for these points began on January 31, 1944. En route, buoys were relieved and light relighted, supplies delivered and passengers transported. When Sitka was reached on February 8, 1944, many men had to be removed to NAS sick bay with food poisoning. The cutter returned to Ketchikan on the 11th. On a succeeding trip, begun February 18, 1944, the HEMLOCK helped refloat the MARY D. at Point St. Albans and escorted her to Ketchikan. On the 24th she went to the aid of SS CRICKETT, aground on the south end of Pennock Island. The vessel floated under her own power at high water, however. Another trip which lasted until March 25, 1944, took the cutter to Kake, Hood Bay, Sitka, Deep Bay, Funter Bay, Lindenberg, Port Althrop, Port Armstrong and other points where aids to navigation were serviced. On another aids to navigation trip early in April to Wrangell Narrows, the cutter went to the assistance of the DOROTHY, in distress, but learning that a Coast Guard boat was on way from Wrangell to tow her, the HEMLOCK proceeded. While en route to Five Fingers Light Station, nine men were thrown into the water as the low ring hold of the whale boat snapped while it was being lowered. All men were rescued within ten minutes. Aids to navigation servicing work continued until June 15, 1944, in southeastern Alaska.

ANTI-SUB PATROL

On June 15, 1944, the HEMLOCK got underway for anti-submarine duty at Dixon's Entrance, where she assumed a position off Black Rock, and escorted shipping through the open water of the entrance. This duty continued until July 1, 1944.

AIDS TO NAVIGATION YAKUTAT, CORDOVA, KODIAK - MEDICAL AID

During July, 1944, the HEMLOCK serviced aids to navigation at Lincoln Rock, Cape Spencer, Yakutat, Monte Bay, Cape St. Elias, Resurrection Bay, Sunny Cove, Ebrington Passage, Saw Mill Bay, McClure Bay, Smith Island Virgin Bay, Two Moon Bay, Cordova, and Kodiak, which was reached on the 21st. Buoys in Women's Bay were worked and by the end of July the cutter had cruised 907 miles, been underway 109 hours, and relieved, relighted or changed characteristics on 42 buoys. Work on aids to navigation continued throughout August, 1944, first in the Kodiak area and later en route Ketchikan which was reached on the 8th. While at Petersburg the cutter was directed to intercept a tug in Summer Strait which had requested medical aid for one of the crew. The crew member, taken to Petersburg, was turned over to the Public Health authorities there. On the 13th while servicing aids, a special trip was made to Annette Island to deliver a 15 ton tank truck and other cargo to the air station there. Buoys at Amelius Island, Calder Rock and Idaho Rock were relieved before returning to Ketchikan on September 1, 1944.

ASSISTANCE TO F. W. S. BRANDT - CONGRESSIONAL PARTY

On September 3, 1944, while anchored at Tee Harbor, the cutter was instructed to go to the assistance of SS F. W. S. BRANDT who was stranded in Glacier Bay. The HEMLOCK, with the assistance of the CG-57010 placed a six inch hawser aboard her. Meanwhile the Coast Guard boat went aground and the HEMLOCK assisted her in refloating. By this time it was late in the afternoon and low water, so the HEMLOCK anchored in 15 fathoms and with the towing hawser fast on the BRANDT, waited for the next high water. Early on the morning of the 4th the BRANDT signalled she was ready to come off. A slight strain on the hawser caused it to part and two towing hawsers were made fast and high water awaited. At 3 P. M. on the 4th, the BRANDT was floated and the HEMLOCK proceeded to Port Althrop. On the 16th the cutter got underway to take on a congressional party at Prince Rupert, British Columbia, arriving there late that evening. On the 18th the party was aboard and arrived at Ketchikan on the evening of the 18th. The rest of September, 1944, was taken up with aids to navigation work at Idaho Rock, Potter Rock and Cape Decision Light Stations and buoys relieved at Snow Passage, Strait Island, Mitchell Point and Point Harrington. Aids to navigation work continued throughout the rest of 1944.

UNDER REPAIR SEATTLE - RETURN TO ALASKA

On January 2, 1945, the HEMLOCK departed Ketchikan for Seattle where she was

drydocked for repairs until February 22, 1945. She then returned to Ketchikan and during March was engaged in aids to navigation work in areas surrounding Stephen Passage, Lynn Canal, Juneau, Icy Straits, upper Chatham Straits and Tongass Narrows, during which she cruised 1351 miles and relieved or relighted 14 buoys and recharged 35 lights. During April similar work was accomplished in Felice Strait, San Alberto Bay, Sumner Strait, Peril Strait and Sitka Harbor when she serviced 27 buoys and 2 lights. During June she transported freight and passengers to various stations and construction projects in southeast Alaska relieving a few buoys en route. In July she worked shore lights and buoys along the outer coast of southeast Alaska, the assistant District Coast Guard Officer on board inspecting light stations and other units en route. 32 lights and 10 buoys were serviced and one new beacon established.

FIRE FIGHTING KETCHIKAN - END OF WAR

During August, 1945, the HEMLOCK served aids to navigation in the vicinity of Yakutat, Sumner Strait, Peril Strait and Chatham Strait. Eight lights and nine buoys were worked in a cruise of 1632 miles. When on availability for boiler repairs on August 9, 1945, the HEMLOCK was ordered to Petersburg to replace Prowley Rock Buoy which was adrift. Returning to base, repair work was again interrupted to fight a fire at Cold Storage Dock, Ketchikan on the 13th. With the end of the war on August 14, 1945, six of the HEMLOCK's crew, being eligible for discharge under the point system were transferred to discharged centers.

CGC IRONWOOD
(WAGL-297)

COMMISSIONING AND SHAKEDOWN - BREAKS DOWN EN ROUTE KEY WEST

The CGC IRONWOOD (WAGL-297) an icebreaker and lighthouse tender was built at the Coast Guard Yard, Curtis Bay, Maryland, and was commissioned there on October 11, 1943. Her commanding officer throughout the war was Lt. Comdr. Magnus G. Magnusson, USCGR. First assigned to Boston as permanent station she was later re-assigned to San Francisco to become effective on the date she departed the Coast Guard Yard. On December 14, 1943, she reported for her shakedown cruise to Commander-in-Chief, Atlantic Fleet and remained on shakedown and post shakedown availability until January 4, 1944, when she got underway from Norfolk, Virginia, in company with the CGC MESQUITE for Key West, Florida. En route on the 7th the IRONWOOD began losing headway and it was found that her propeller shaft was broken. She anchored off Jupiter Inlet Light and notified NOB, Key West that she was disabled. She was towed by DE-51 on the 8th and later taken in tow by YMS-245 sent for the purpose from Key West. At Miami the YT-230 towed her to the Coast Guard Depot where she underwent repairs until January 28, 1944, when she departed for Key West arriving there on the 29th.

TO NEW CALEDONIA

From January 29, 1944, until February 3, 1944, her personnel underwent instruction at the Fleet Sound School at Key West, Flordia, and the vessel underwent repairs until the 12th. On February 12, 1944, she got underway for the Panama Canal Zone, leaving Balboa on the 21st, operating independently for Noumea, New Caledonia via Bora Bora and Pago Pago. She arrived at destination on March 24, 1944.

ASSISTANCE TO SS JOHN LIND

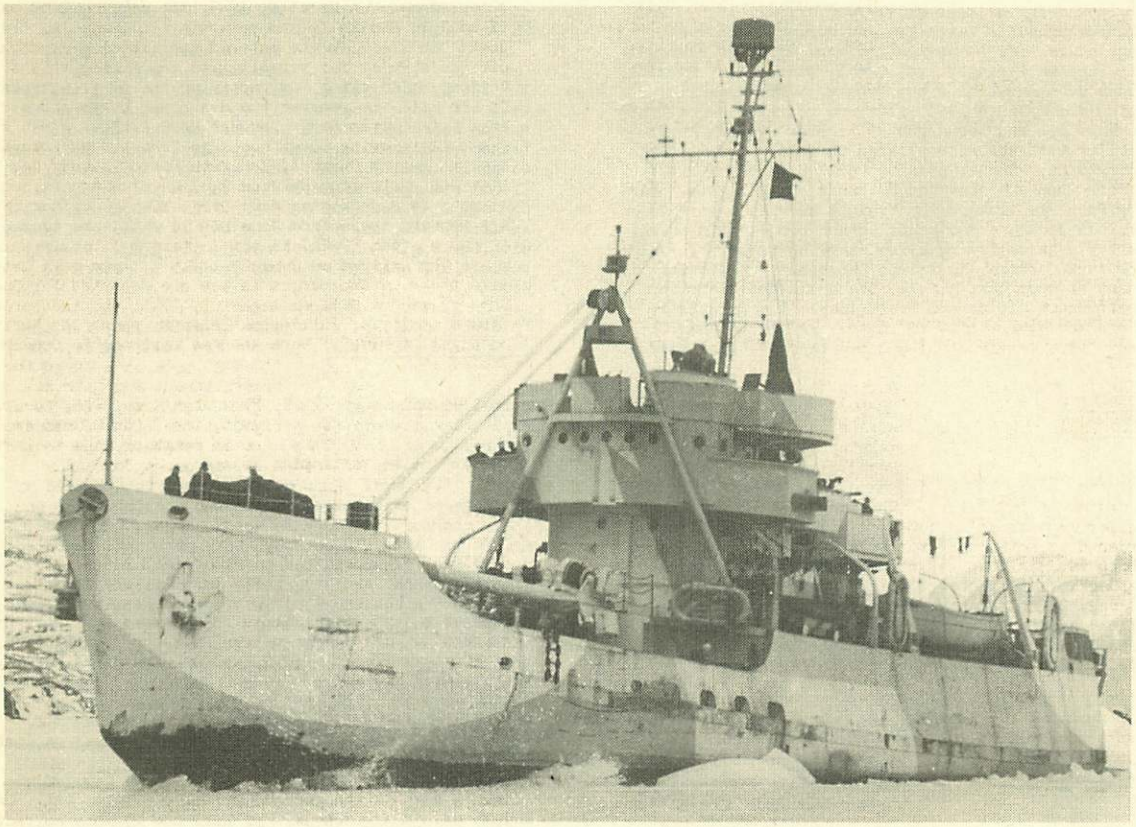
On March 26, 1944, the IRONWOOD left Noumea to assist the SS JOHN LIND, grounded on a reef at 22° 28' S, 166° 36' E. Her attempts to pull the vessell off being unsuccessful she removed 65 Navy and Marine personnel from the vessel on the 28th and transported them to Noumea next day. Here she remained until April 2, 1944, when with Navy tugs SIOUX and YT-463 she again proceeded to the reefed ship, the SS JOHN LIND, and from 0855 April 2, 1948 until 0751 April 6, 1944, was engaged, with the YT-463 in tandem with the tug SIOUX in refloating the LIND. Finally successful, the IRONWOOD was ordered to return to Noumea.

TO SAMOA, FIJI, AND ELLICE ISLANDS

After availability for alterations and repairs, the IRONWOOD took on a cargo for transshipment and then departed Noumea on April 26, 1944, for Suva, Viti Levu, Fiji Islands where she arrived on the 29th. Unloading her cargo of 30 tons of seed potatoes, she took on 51,975 pounds of miscellaneous cargo for Wunda Point, Viti Levu. From May 1 to 9, 1944, the cutter was engaged in removing battleship mooring buoys and their moorings in Tomba Ko Nandi Harbor, Viti Levu, and on the 10th, 10 enlisted Navy personnel reported aboard for transportation to Pago Pago, Tutuila, American Samoa, arriving there on the 13th. From May 14th through the 23rd she removed 12 anti-torpedo net buoys and 2 cruiser mooring buoys and all their moorings, proceeding on the 24th to Apia, Upola, British Samoa where she arrived next day to remove 18 anti-torpedo net buoys and their moorings. She left Apia on May 28, 1944, for Nanomea, Ellice Islands, arriving there June 2, 1944, and set a mooring buoy the same day, but the moorings slid into deep water and sank the buoy. On the 5th she arrived at Funafuti and towed anti-torpedo nets from the north end of the harbor to the net depot. On the 7th she departed for Nanomea with a new buoy and mooring equipment which had been set by the 10th. She departed for Noumea on the 13th arriving at Little Roads Harbor on the 18th and left for Great Roads Harbor on the 28th shere she entered drydock for painting, inspection and repairs through August 9, 1944.

AT NOUMEA AND HAVANNAH

On August 10, 1944, she departed for Port Nepui towing a Navy pile driver. She returned to Noumea on the 13th and next day was released by Commander, Service Squadron, South Pacific to Commander, Naval Base, Noumea for temporary duty. The cutter, thereupon, proceeded to remove, with its moorings, buoy A6 and reestablished it in anchorage area A3 as mooring buoy A3. This was followed by the removal of Buoy A2. On the 18th she proceeded to Great Roads Anchorage, Noumea. On the 22nd she departed for Havannah Harbor, Efate Island, New Hebrides, arriving on the 23rd to remove buoy #16 and its moorings. Buoy #4 was found too heavy for the IRONWOOD's equipment. From August 28th through September 28th the cutter was engaged in removing underwater harbor defenses and fleet moorings in Havannah and Fila Harbors, Efate, New Hebrides, including in all 12 buoys and 800 tons of mooring chains, as well as 180 anti-torpedo nets. On the 29th she departed Havannah Harbor towing a pontoon barge which she discharged in Fila Harbor and proceeded to Noumea. Arriving at Noumea October 1, 1944, and after an availability, for repairs until the 13th, she was assigned to CNB, Noumea departing on the 17th to replace three channel buoys and two obstruction buoys in Havannah Passage Channel. On the 23rd she towed a Navy pile driver to Nepui, New Caledonia, returning to Noumea on the 25th, where she remained until November 4, 1944.



THE COAST GUARD BUOY TENDER LAUREL
IS HERE SHOWN IN A GREENLAND FJORD
SMASHING OUT A PASSAGE FOR OTHER SHIPS

TO FIJI ISLANDS — Proceeding to Suva, Viti Levu, Fiji Islands on November 4, 1944, she reported to CNB, Fiji Islands for temporary duty and until the 15th was engaged in removing harbor defense installations. On the 16th she departed for Vunda Point towing a Navy Pontoon Barge. Here she removed BB mooring buoys in Tomba Ko Nandi anchorage and reestablished buoys in Vatia Harbor and Nandi waters. On the 29th she began removing underwater Sonar cable from Nandi waters. On December 1st she moved to Lautoka where she removed underwater sonar cable, proceeding to Noumea on December 3, 1944, with mail and 9 Navy men aboard. En route she changed course to investigate a radio distress signal but was unable to locate the vessel and continued toward Noumea arriving on December 6, to disembark passengers and transfer anchors and chain salvaged to a Navy barge.

SOLOMON ISLANDS — On December 15, 1944, the IRONWOOD departed Noumea for Guadalcanal and reported to Harbor Defense Officer, Tulagi area, Gavutu Harbor, Gavutu Island, Solomon Islands. On the 21st she removed and reset two mooring buoys in Purvis Bay, Florida Island, and on the 27th laid nine buoys at Dona Cove, Guadalcanal. Returning to Gavutu she reestablished one buoy at Tulagi Harbor entrance and reset another before moving to Gavutu Net Depot Dock on December 31, 1944.

RAISES JAP SUBMARINE — Serving under Commander Service Squadron, South Pacific, the IRONWOOD proceeded on January 3, 1945, to Cape Esperance, after picking up two divers and some mooring materials for use on a salvage job. From January 4th to the 9th she was engaged in raising a Japanese two-man submarine submerged in about 30 feet of water off Cape Esperance. During these operations she was moored by three lines leading from the port side to moorings and by three lines leading from the starboard side and secured ashore. Divers, working from a small boat, used water pressure hose and crowbars to clear a space under the bow and stern of the sunken submarine. By the 9th a space was cleared under the ship's bow and a 1½" chain sling was rigged around the bow of the underwater craft. Returning to Gavutu until the 19th she again anchored off Cape Esperance on the evening of the latter date where the divers had completed rigging the submarine for lifting, connecting the chain around bow and stern with a chain bridal. On the 20th the IRONWOOD got into position alongside the sunken sub, lowered the main hoist over the starboard side and hooked it to the chain bridal. When the cutter had broken the submarine clear of the bottom and raised it to position, the sub was secured alongside and the IRONWOOD towed it in that position into Hutchinson's Creek, Florida Island, Solomon Islands and anchored for the night. On the 21st she moved to a new anchorage where the sub was transferred to a U. S. Navy crane barge.

WORK ON AIDS - SOLOMON ISLANDS — Proceeding to Doma Cove, Guadalcanal the cutter removed 21 small craft moorings, then removed the moorings at Cape Esperance used in salvaging the Japanese sub. On January 28th, 1945, she proceeded to Banika Island, Russell Islands, Solomon Islands, where she loaded materials for the Net Depot at Gavutu Island. During February, besides transporting mooring materials again from Bakina to Gavutu and to Kukum Dock, Guadalcanal, she established two mooring buoys in Purvis Bay for the Navy ARD-18 (Floating Drydock) and then anchored off Lunga Point, Guadalcanal for painting, repairs and alterations. On March 8, 1945, she carried 2000 bags of mail to Banika Island returning to Gavutu on the 10th. On the 25th she entered the floating drydock off Lunga Point for scraping and repainting ship's bottom and checking and repairing the sonar equipment. On the 28th she removed two destroyer buoys and moorings from Purvis Bay. Through May, 1945, she was engaged in removing fleet moorings from the anchorage area at Segond Channel, Espiritu Santo Island, New Hebrides, departing on June 1, 1945, for Renard Sound, Russell Islands towing Navy Barge YC-698. After voyage repairs there from June 4th to 12th, she took the YC-698 and the YF-247 in tow in tandem for Eniwetok, where she arrived on June 22, 1945. Three days later with the same two barges in tow she departed for Guam. She arrived at Guam on August 2, 1945, and then proceeded to Leyte, Philippine Islands, where she arrived on August 6, 1945. Here she was assigned to Commander 7th Fleet.

PHILIPPINES — From August 6, 1945, to July, 1946, the IRONWOOD was employed in renewing aids to navigation in the Philippine Islands.

CGC LAUREL (WAGL-291)

COMMISSIONED — The CGC LAUREL (WAGL-291) was built by the Zenith Dredge Company, Duluth, Minnesota, and commissioned on November 24, 1942. Her commanding officers have been Lt. John T. Cherry, USCG, Lt. Curtiss Howard, USCGR, and Lt. Judson H. Carver, Jr. USCG.

TO GREENLAND - ICE BREAKING — On January 1, 1944, the LAUREL, as a member of Task Unit 24.8, was proceeding from Boston to Portland, Maine, where she underwent trials until the 6th. On that date she got underway, with the MOHAWK, en route Argentia, Newfoundland. The MOHAWK was delayed until the next day in making her final departure and the LAUREL proceeded to Argentia alone, mooring there on the 11th to take on mail and depart next day for Narsarssuak, Greenland. Here she moored on the 16th and broke ice in Skov and Tunugdliarfik Fjords until the end of January.

CARGO AND PASSENGER TRANSPORT — All during February and March 1944, the LAUREL was engaged in cargo and passenger transport. For this purpose she made trips to Simiutak, Fredericksdal, Gamatron and Gronne Dal. She broke ice in Tunugdliarfik Fjord until February 9th and then returned to Narsarssuak where she took aboard 58 enlisted men and five officers for transfer to the USAT FAIRFAX, making trips from the main dock to the army transport with cargo and passengers until the 26th. After a trip to Fredericksdal she departed for Gronne Dal on March 8, 1944, and continued to make continuous trips carrying cargo and passengers between Gronne Dal and Narsarssuak until the 26th when she carried cargo to Simiutak and Gamatron Islands. On March 27, 1944, she got underway searching unsuccessfully for the sources of flares that had been reported and returning to Narsarssuak for the rest of March.

TO BOSTON - BOMBS CONTACT — After spending the first three weeks of April, 1944, at Narsarssuak, engaged in repairing ship and overhauling engines, she proceeded to Gronne Dal to load passengers and cargo for Argentia, departing in convoy on the 25th. On the 29th she had a radar contact

bearing 350° and dropped two depth charges on a contact before returning to convoy. Another contact on the 30th, in which the ARLUK joined in the search, was lost. At Argentia she went into drydock until May 5th and then took on a cargo for Boston proceeding in convoy on the 10th and arriving on the 13th.

RETURN TO GREENLAND — She returned to Argentia with cargo on the 26th and then picked up the JULIUS THOMSEN at St. John's and escorted her to Gronne Dal, Greenland arriving on the 5th. On June 18, 1944, the LAUREL got underway en route Argentia in convoy stopping at St. John's arriving at Argentia on the 28th. She went into drydock until the 30th.

TO LABRADOR AND FORT CHIMO, QUEBEC - AIDS TO NAVIGATION AND ESCORT — On July 7, 1944, as a member of Task Unit 24.8.19 she departed Argentia for Battle Harbor to deliver cargo. Unloading there until the 17th she departed for Gronne Dal, Greenland. After a short trip on the 27th to lengthen the chain on a mooring buoy, she got underway for Fort Chimo, Canada via Ungava Bay, Quebec, and the Koksoak River. Here she anchored as August began and on the 2nd began planting spar buoys in the Koksoak River. On the 7th she departed for Arcadia Bay, Labrador, to await convoy. On the 12th she met four merchant vessels and escorted them to Fort Chimo on the 13th. Next day she escorted another merchant vessel to Koojesse Inlet, Frobisher Bay and on the 18th got underway to plant spar buoys near Bartlett Narrows. On the 20th she escorted another merchant vessel from Savage Island to Koojesse Inlet, escorting a second vessel through the narrows. On the 23rd, after moving a barge, she remained in the inlet for the rest of August, 1944.

IN FROBISHER BAY - CONTACT — On September 1, 1944, the LAUREL escorted a merchant vessel to Savage Harbor. On the 4th, en route to rendezvous with another merchant vessel, the LAUREL dropped depth charges on a contact and then searched the area without result. Next day she contacted the merchant vessel and escorted her to Koojesse Inlet, stopping overnight off Culbertson Island on Frobisher Bay and arriving at destination on the 7th. On the 9th she was underway for Padloping Island where she picked up a merchant vessel for escort to River Clyde, Quebec, returning with her to Padloping Island on the 25th. On the 26th she escorted the same vessel to Fort Chimo, Quebec.

ASSISTANCE TO GROUNDED VESSELS SURVIVORS — October 1, 1944, was spent in picking up buoys as she got underway to Hebron, Labrador, to meet the same vessel who was now reported aground, just off the weather station at Cape Harrison. The vessel (SS IRIS), it was found, had to be abandoned so loading of personnel, gear and of 83 survivors was begun. On the 6th the LAUREL departed for St. John's where she moored on October 8, 1944.

TO GREENLAND — On October 10, 1944, the LAUREL began escorting the SS ROCHA and SS BLOOMFIELD to Gronne Dal, arriving on the 15th, shuttling to Ivigtut with fuel for the creolite mine and also transporting passengers and cargo from Narsarssuak to Gamatron and Fredericksdal.

TO BOSTON — On November 3, 1944, the LAUREL departed for Battle Harbor, Labrador, anchoring in Autill Cove, St. Charles Channel on the 5th awaiting weather conditions to remove equipment and personnel. Then she moved to False Harbor where 20 passengers and equipment came aboard for Argentia, where she arrived on the 14th. Next day she stood out for Boston where she remained until the end of December in repair status.

RETURN TO GREENLAND — The LAUREL departed Boston on January 4, 1945, for the Portland Training Area and after a week's training exercises was en route Gronne Dal, Greenland where she moored on the 16th. The rest of January was occupied with local transport duties and ice breaking in Tunugdliarfik Fjord, based on Narsarssuak. Ice breaking continued with cargo movements to Gamatron and Simiutak in February, interspersed with relighting a light in Brede Fjord and trips to Frederiscksdal and Gronne Dal. Early in March she escorted the LARAMIE to Narsarssuak. A period of local transportation of passengers and freight followed during which she visited Gronne Dal, Karjarvalik Light, Ivigtut, Narsak, Simiutak and Gamatron.

RUNS AGROUND — On March 21, 1945, she ran aground on an uncharted rock en route Fredericksdal and after pumping water from her fresh water tanks forward was able to back off and proceed. Returning to Narsarssuak she proceeded through storis ice to Gamatron where she discharged mail and picked up passengers for Narsarssuak. Later she took an inspection party to hold emergency drills in Tunugdliarfik Fjord.

WEATHER PATROL — Proceeding to Gronne Dal early in April she stood down Arsuk Fjord on the 7th to relieve the TAHOMA on weather patrol. Next day she relieved the MOHAWK on Weather Station No. 6, returning to Gronnel Dal on the 15th.

TO BOSTON — On the 19th she left for Argentia and after discharging cargo got underway with the USS GROTON for Boston where she moored April 30, 1945. She remained in Boston until 20 May undergoing repairs and replacement of personnel, after which she reported to Casco Bay for maneuvers.

RETURN TO GREENLAND — The LAUREL departed Boston June 3, 1945, for Argentia and Battle Harbor, Labrador. She anchored in False Harbor on the 12th, unloading cargo for Navy 35 and then proceeded to Narsarssuak. The rest of July was occupied with local transport and escort duty from that point. On July 3, 1945, she proceeded to Gamatron to bring an emergency case to the hospital and then left for Julianehaab and Fredericksdal before returning to station.

TO FORT CHIMO — On the 22nd she departed for Gronne Dal and then to Fort Chimo, Quebec, Canada, where she anchored in Ungava Bay off the entrance to the Koksoak River on the 26th. On the 31st she laid two buoys in the river. On August 5, 1945, she departed to rendezvous off Resolution Island with a merchant vessel escorting her to Koojesse Inlet, Frobisher Bay, Baffin Land, Canada. On the 10th she stood down Frobisher Bay to rendezvous with a second merchant vessel escorting her to Fort Chimo. Then she returned

to Koojesse Inlet to pick up and escort the first vessel to Ungava Bay and then escort the second vessel to Koojesse Inlet. Returning to the mouth of the Koksoak River on the 30th she took aboard two officers and 12 U. S. Army men and proceeded, escorting one of the merchant vessels to Lake Harbour, Baffin Island. Having parted with the merchant vessel in Hudson Straits she reached Lake Harbour on September 1, 1945, and remained there until the 6th when she returned to Frobisher Bay where she escorted one of the merchant vessels out to sea. Returning to Koojesse Inlet on the 10th she took on water and cargo and on the 13th, with Army personnel aboard, she departed, escorting another merchant vessel for River Clyde where relieved personnel came aboard. On the 25th she departed for Padloping to unload cargo and transfer Army personnel. Taking on cargo and fuel oil she proceeded to Fort Chimo on the 27th, anchoring in Ungava Bay on the 30th.

CGC MESQUITE
(WAGL-305)

COMMISSIONING AND TRAINING

The CGC MESQUITE (WAGL-305) was commissioned August 27, 1943, at Curtis Bay, Maryland. Her first commanding officer was Lt. A. H. Sheppard, USCG. He was succeeded on October 11, 1945, by Lt. M. N. Cobb, USCG. Successive commanding officers were Lt. (jg) O. D. Nelson, USCG, and Lt. R. A. Iversen, USCG. First assigned to DCGO, 5th ND, for aids to navigation work on September 11, 1943, she left New York on September 28, 1943, for Coast Guard Yard, Curtis Bay, Maryland, for availability. On December 13, 1943, she reported to Commander Training Group 23.8 at Hampton Roads, Virginia, for shakedown. On December 28, 1943, she was ordered, upon completion of training in the Chesapeake Bay area, to report to Commander Task Group 23.3 at Key West, Florida, for sound training. After this she was assigned to duty in the Pacific area.

IN SOUTHWEST PACIFIC AREA

The MESQUITE arrived at Milne Bay, New Guinea on April 16, 1944, for aids to navigation work. On June 19, 1944, she arrived at Wakde Island and was engaged in servicing aids to navigation in that area until September 9, 1944, when she arrived at Manus Island. She returned to New Guinea on October 5, 1944, and was back at Manus Island on October 7, 1944.

IN PHILIPPINES

On July 15, 1945, the MESQUITE was servicing aids to navigation in the Philippine area, arriving at San Pedro Bay on July 19, 1945, for an availability for repairs which expired August 4, 1945. Proceeding to Guinan for supplies she loaded there and on the 8th at Tacloban. On August 10, 1945, she was standing off Silino Island Light preparing to service it.

PHILIPPINES

From August 10, 1945, to July 1946, the MESQUITE was employed in renewing aids to navigation in the Philippine Islands.

CGC PAPAW
(WAGL-304)

COMMISSIONING AND ALTERATIONS

The CGC PAPAW (WAGL-304) was commissioned on October 12, 1943. After commissioning she underwent alterations and repairs at the Coast Guard Yard, Curtis Bay, Maryland, until April 1, 1944. On that date she proceeded to Coast Guard Moorings, Berkley, Virginia, and until April 17, 1944, was at that location and at Norfolk and Portsmouth, Virginia, for further repairs, when she departed independently for the Canal Zone.

BRINGS UP CYLINDRICAL OBJECT WITH DEPTH CHARGES

En route to the Canal Zone on April 21, 1944, the PAPAW made an echo ranging contact which revealed propeller sounds and she immediately dropped a full pattern of depth charges, holding her attack course until all the charges had exploded and then changing course 180° to pick up the sound again. When she was again abeam of the depth charged area, a large air plug, or area of bubbles, broke the surface and a dark, cylindrical object about 60 feet long broke water about 500 yards abeam, showed about 5 feet above the surface and sank before gunfire could be started. The PAPAW cruised in the area for an hour, making faint contacts and dropping charges at various depth settings but the full contact was not regained, although discolored water and oil showed on the surface.

TO HAWAII

Proceeding to Guantanamo Bay on April 22, 1944, the cutter replenished depth charges and continued toward the Canal Zone which was reached on the 25th. Transiting the canal she reached San Diego, California, May 9, 1944, and remained there until June 4, 1944, making repairs to engines, sound and radar gear. On that date she proceeded independently to Pearl Harbor where she moored June 12, 1944, her commanding officer reporting next day to Commander Service Force, Pacific Fleet.

TO MARSHALL ISLANDS

Remaining in Honolulu until July 9, 1944, taking on buoys and ship's stores, she was designated Task Unit 16.16.2 by Commander, Task Force 16 and along with the USS ANCAPA (AG-49) proceeded to Majuro Atoll, Marshall Islands. Arriving on the 21st she began escorting the SS CHESTER SUN to Eniwetok, Marshall Islands and delivered her to ComServRon 10 on the 25th. On the 30th she was ordered to proceed independently to Saipan, Mariana Islands, where she arrived August 3, 1944, and moored portside to a Japanese wrecked freighter.

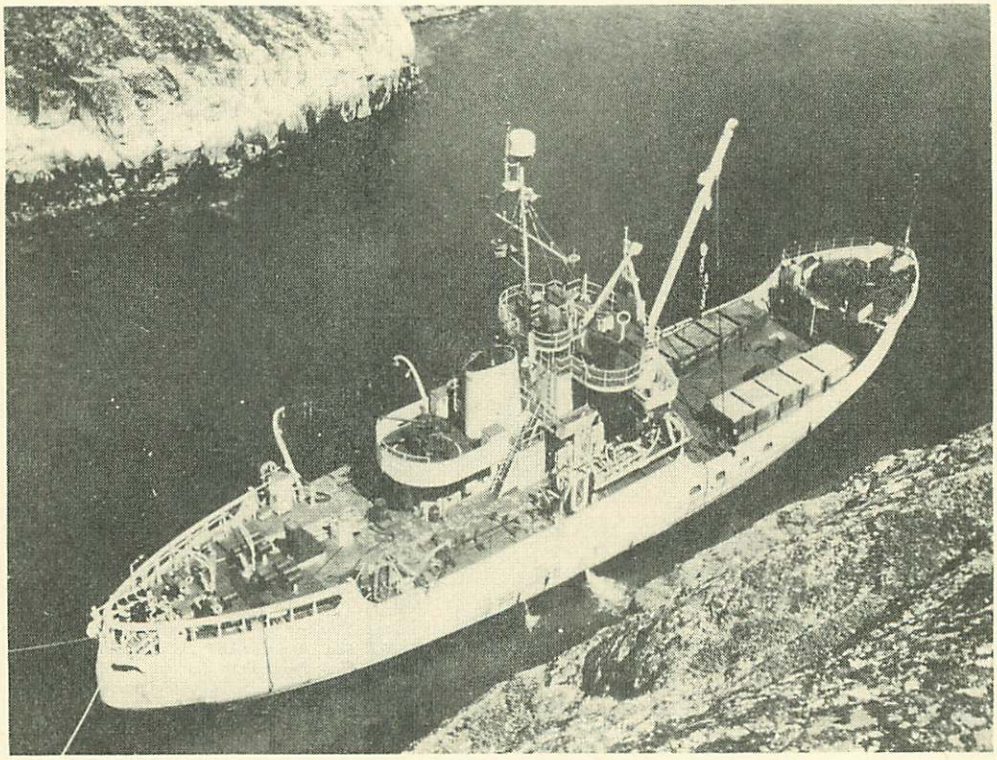
IN MARIANA ISLANDS - JAPS HIDE IN WRECKS

From August 3, 1944, until August 11, 1944, she was engaged in various aids to navigation duties in the vicinity of Tanapag Harbor, Saipan Island. These included lighthouse inspection, taking aboard old Japanese buoys, placing of obstruction buoys, taking up and placing of mooring buoys and moorings and setting breasting off mooring buoys. On the 11th she departed independently for Guam anchoring in Apra Harbor on the 12th, returning to Saipan on the 13th with chain and mooring gear which was stored in the Japanese wreck. After four days of establishing and replacing buoys, on August 19, 1944, the fire boat supervised the burning of Japanese wooden wrecks in Tanapag Harbor. Two Japanese were discovered hiding aboard wrecks, which were mined and filled with booby traps. One of these men was killed but the other escaped under cover of darkness. On the 26th the PAPAW sent two Hanley fire boats and crews to an ammunition dump fire in the harbor. The rest of the month was spent in buoy and mooring work.

TO GUAM

On September 1, 1944, the PAPAW proceeded to Guam with three other vessels. The rest of September was occupied in buoy work, unloading concrete barges, towing duty, assembling destroyers moorings, making survey and taking soundings for new buoy position and other work on the Apra Harbor project.

ICE BREAKER AND BUOY TENDER MESQUITE
THIS COAST GUARD VESSEL IS A DUAL-PURPOSE CRAFT
DESIGNED FOR ICE-BREAKING AND FOR BUOY TENDING



COAST GUARD CUTTER IN GREENLAND
THE COAST GUARD CUTTER SORREL LIES MOORED IN ONE OF THE
TREACHEROUS FJORDS OF GREENLAND'S ICY COAST

TO PELELIU

On October 1, 1944, the PAPAW, along with YMS-216, left Apra to escort Task Unit 57.3.8 consisting of USS HYDROGRAPHER and USS PAKANA, with ARD-16 in tow for Peleliu Island. The YMS-216 returned to Guam next day with engine trouble. On the 3rd because of heavy seas and wind up to 70 miles per hour, which were typhoon proportions, the PAPAW lost contact with the vessels she was escorting. Buoy concrete moorings and other gear on her well deck broke loose and her holds took in water through her hatch covers. Her sound gear and radar were out of order. The PAPAW changed course to put the sea on her quarter. The gale abated on the 4th and the water was pumped from her holds and she changed course to rejoin the task unit. She contacted another vessel, however, and escorted it into Ulithi. After cleaning and restowing her holds the PAPAW departed Ulithi on the 12th escorting the USS ZUNI towing the ARD-16 and the HYDROGRAPHER, with the USS ACREE screening. The Task Unit was dissolved on the 14th as it entered the Kossol Passage, Palau Islands and the PAPAW escorted the ZUNI with APD-16 in tow to Peleliu.

PALAU ISLANDS

Loading navigational buoy equipment from the BURROWS as well as gear for transfer to the 301 Naval Construction Battalion Unit, gear was transferred to pontoon barges which were towed to Angaur Island. Departing for Kossol Passage on the 23rd, she worked the passage until November 5, 1944, removing and placing buoys, surveying site for launching, construction, erecting and securing a navigational beacon 25 feet above the water on the East Shoal of the Northern Entrance. On the 5th of November, 1944, the PAPAW moved to Barnum Bay, Peleliu. On the 6th the wind increased to a gale of typhoon velocity and continued until the 9th accompanied by heavy seas. The PAPAW took the disabled LCT-371 in tow from the 8th until 1510 on the 9th. Survey operations under the directions of a party from the HYDROGRAPHER were conducted from the 11th through the 16th. On the 14th the PAPAW assisted in moving YOG-28 from the beach.

TO GUAM - RETURN TO PELELIU

On November 17, 1944, the PAPAW departed for Kossol Passage and on the 19th departed for Guam with the USS ANACAPA, SC-1363 escorting. At Ulithi the YTB-270, with USS HEROLD escorting, joined the task unit which reached Guam on the 26th. Here navigational aids and other cargo were loaded and the PAPAW departed Apra Harbor on December 7, 1944, escorted by DE-409, arriving at Peleliu on the 11th, after changing escorts to YMS-320 on the 10th. On the 13th the PAPAW reported to the commanding officer of the HYDROGRAPHER (AGS-2) at Schonian Harbor, Palau Islands. Until the 21st she did buoy work in Shonian Harbor and then proceeded to Barnum Bay to receive buoy equipment from GROPAC NINE, Peleliu Island and moved to Schonian Island.

EXPLOSION ON BOARD

On December 24, 1944, an explosion occurred at 0325 while the PAPAW was anchored in Schonian Harbor. On investigation, a hole 4 feet long and 2 feet wide at the 13 foot water line in the fore peak tank was found and temporary repairs made. The explosion was thought to have been caused by a floating Japanese demolition mine. During the rest of Decemoer the PAPAW installed navigational aids off Peleliu and Angaur Islands, installing a light on the south end of the former, completed vessel repairs, and replaced temporary navigational buoys in Kossol Roads.

TO GUAM

On January 2, 1945, the PAPAW moved to Kayangel Island to place navigational buoys returning to Kossol Roads on the 5th. On January 6, 1945, she departed for Guam, proceeding independently and reached Apra Harbor, Guam, on the 9th. Here her commanding officer reported to Commander Service Squadron 12 and on the 13th began assembling and placing mooring buoys. These activities continued late in April when she proceeded to Iwo Jima.

AT IWO JIMA

From May 1 to May 27, 1945, the PAPAW worked on aids around Iwo Jima harbor on moorings and nets. From the 28th she carried out diving operations, salvaging parts of a Japanese twin engine (Peggy type) shot down in the raid of May 21, 1945, for purposes of identification.

CGC SORREL (WAGL-296)

COMMISSIONING

The CGC SORREL (WAGL-296) was commissioned on March 18, 1943. Her commanding officers have been Lt. F. D. Hilditch, USCGR, Lt. D. H. Weiher, USCGR, and Lt. John D. Clifford, 3rd, USCGR.

WEATHER PATROL

On June 1, 1944, the SORREL was patrolling Weather Station No. 2, departing station on the 5th for Argentia. She departed for Weather Station No. 3 on the 19th, relieving the SEA CLOUD. On July 14, 1944, she was relieved on Weather Station No. 3 by the MANHASSET, having dropped a depth charge on a sound contact identified as non-submarine on the 11th. Returning to Argentia she again set forth on the 30th for Weather Station No. 4, relieving the SEA CLOUD on August 2, 1944. She patrolled the station until relieved by the MANHASSET on the 22nd when she proceeded to Boston for repairs and alterations.

RETURNS TO WEATHER PATROL

She remained at Boston through September and after completing repairs left Boston on October 4, 1944, relieving the USS OPPONENT on Weather Station No. 1 on the 7th. On the 25th she was relieved by the MANHASSET and proceeded to Bermuda. November 1, 1944, saw her again leaving for Station No. 1 arriving there on the 7th to relieve the MANHASSET. On the 24th she was relieved by the USS PERIL and proceeded to Argentia. Heading for Weather Station No. 3 the SORREL left Argentia December 6, 1944. The USS PERIL relieved her on the 26th and she returned to Argentia.

WEATHER PATROL

The SORREL was underway on January 7, 1945, for Weather Station No. 4 to relieve the USS CHARLOTTE. Returning to Argentia she set out for Weather Station No. 5 on February 5, 1945, relieved the USS HINGHAM, to be again relieved by the CHARLOTTE on the 23rd and return to Argentia.

TO ICELAND - ATTACKS CONTACTS - SEARCHES FOR RAF BOMBER

On March 1, 1945, the SORREL left Argentia for Reykjavik, Iceland, and on the 15th was en route to Weather Station No. 7. At 1145 on that date she made a sound contact and attempted to verify it. Dropping 5 depth charges, with no visible results or re-contact, the contact was classified "non-sub." Relieving the USS COURAGE on Weather Station No. 7 her patrol was interrupted from the 17th to 19th to search for an

RAF bomber reported down, but results were negative. Relieved by the USS COURAGE on the 23rd she returned to Reykjavik, only to depart for Weather Station No. 7 once more on the 27th, relieving the USS COURAGE. On April 3, 1945, she again made a doubtful sound contact but lost it due to short range, with a negative search that finally classified it as having been caused by water conditions. She departed for Argentia on the 5th, relieved by the SHREVEPORT. Arriving at Argentia on April 11, 1945, the SORREL took on general cargo for Boston where she entered the ship yard at East Boston on the 17th for 30 days availability.

TO GREENLAND

She departed Boston on May 28, 1945, for a training period at Casco Bay, Maine, and after an inspection on June 5th and 6th, she returned to Boston to receive cargo and personnel for Greenland, mooring at Bluie West One on the 20th. On the 28th she proceeded to Simiutak in company with the LAUREL for damage control exercises, inspection and tactical exercises.

TO PRINCE CHRISTIAN ARMY BASE

Taking on cargo for Prince Christian Airway Station and Fredericksdal she was underway on July 4, 1945, with the EVERGREEN and anchored in the latter harbor on the 5th transferring cargo and pumping oil ashore. On the 6th, she proceeded to Prince Christian but, due to heavy ice, moored in Kangikitsok Fjord until the 9th. On the 10th the EVERGREEN received an ice hole in the main hold and the SORREL's damage control party stood by with portable pumps, shifting the EVERGREEN's cargo to the SORREL, and pumping fuel aboard from her. Then, on the 12th she anchored in Kangikitsok and returned to Bluie West One on the 13th, where on the 14th the Army removed the EVERGREEN's cargo from the SORREL. On the 23rd, in company with the EVERGREEN, she got underway for Fredericksdal and Prince Christian again, anchoring in Kangikitsok Fjord on the 24th and proceeding next day to Prince Christian to disembark 20 Army personnel. Then she shifted anchorage to Kangderdluk Fjord and on the 30th proceeded to Natsek Cove but returned without unloading because of ice conditions. On August 1, 1945, she was again underway for Prince Christian Airway Station, where she discharged cargo but was forced out of Natsek Cove next day by incoming ice. Next day she returned to Natsek Cove, discharged cargo and on the 6th got underway for Bluie West One. On August 15, 1945, holiday routine was observed in recognition of Japan's surrender. On the 17th seven Army personnel reported aboard for transportation to Comanche Bay and the SORREL got underway with the EVERGREEN, stopping at Fredericksdal on the 18th. On the 20th very heavy ice necessitated considerable maneuvering as the SORREL, anchored in Comanche Bay, unloaded cargo and passengers. On the 26th, she proceeded to meet the FS-111 which was unable to reach Comanche Bay due to heavy ice. The SORREL transferred cargo from her and returned to the bay, unloading on the 27th and getting underway same day for Cape Adelear, Greenland. Back to Natsek Cove on the 30th, she discharged fuel oil ashore to the Army Base and next day shifted anchorage to Kangderdluk, Prince Christian Sound.

TO EGDESMINDE

The SORREL departed Kangderdluk for Narsarssuak on September 1, 1945. On the 6th she proceeded to Simiutak and loaded cargo for Marrak. After unloading there she proceeded to Cruncher Island to receive 9 Army personnel and on the 14th was en route Egdesminde, crossing the Arctic Circle with appropriate ceremony to enter that harbor on the 15th. On the 19th she proceeded to Tupilak, Iceland to load Army cargo and return to Egdesminde. On the 20th she proceeded to Bluie West Eight and took on cargo for Bluie West Seven until the 23rd, mooring there on the 25th. Proceeding to Bluie West One she remained there until the end of September, 1945.

CGC SWEETBRIER
(WAGL-405)

COMMISSIONING AND SHAKEDOWN

The CGC SWEETBRIER (WAGL-405) was commissioned July 26, 1944, at Duluth, Minn. Her first commanding officer was Lt. (jg) E. Toifl, USCG, who served throughout the war. She arrived at Curtis Bay, August 31, 1944, via the St. Lawrence River. On September 24, 1944, she proceeded to Erie Harbor for shakedown. On October 24, 1944, she departed for Eureka, California via the Panama Canal, arriving there on December 10, 1944. She left there January 3,1945, for Oakland, California.

TO PEARL HARBOR

After undergoing alterations, repairs and drydocking at Oakland, California, through the 8th of February, 1945, she moved to the Coast Guard Base, Government Island, Alameda, California, to make ready for sea. On the 14th she took on ammunition at Mare Island, after moving to Coast Guard Base, Yerba Buena, San Francisco, and on the 18th departed San Francisco, stopping at Port Hueneme, California, and stood out to sea on the 19th proceeding independently to Pearl Harbor.

TO GUAM

Arriving at Pearl Harbor on February 27, 1945, the cutter remained there until March 5, 1945, when she was routed on to Eniwetok Atoll, Marshall Islands, again proceeding independently. En route a low flying unidentified plane was sighted and was thoughtto be making a torpedo attack until identified as a friendly plane a few minutes after the cutter had gone to general quarters. The cutter reached Eniwetok on the 14th and by the 18th was underway again en route Apra Harbor, Guam, as Escort Commander of Task Group 96.3.10. On the 25th the convoy stood into Apra Harbor and the SWEETBRIER immediately began preparations to proceed to Port Merizo, Guam, on the 30th. Here an armed boarding party searched the hull of the USS OREGON for possible hidden Japs but without result. A survey party began work ashore and was transported back to Apra Harbor on April 1, 1945. Next day the cutter assisted in freeing LST-846 which was aground off the western shoals and assisted another vessel aground on the 7th. She was also engaged in aids to navigation work. On April 27, 1945, she stood out of Apra Harbor escorting along with AM-81 and PC-1128 a convoy bound for Okinawa, consisting of three LCT's and the ATF-81, towing ARD-28 and dump scow 3.

KAMIKAZE PLANE SHOT DOWN

The first few days of the journey were marked but nothing more exciting than an underwater contact on May 2, 1945, which turned out to be non-sub, the encountering of a spent torpedo floating on the water which the SWEETBRIER sank with gunfire, a gasoline tank also suck and a 15 man Navy raft with no survivors which was hauled aboard. On May 6, 1945, in the vicinity of Keramo Rhetto, a Japanese plane dived at the ARD-28 at 0905 and the SWEETBRIER's crew expended two rounds of 3" 50 anti-aircraft in its direction but the plane was brought down by two Corsair fighters, hitting the crane on the end of the ARD-28 in its dive and crashed into the sea beyond. Later that day the SWEETBRIER screened the entrance of the ATF-81 and

ARD-28 into Nakagusuku Bay, Okinawa, later, on the 7th, moving to Chimo Bay, returning to Nakagusuku Bay on the 8th and 9th to unload a number of buoys and tow them ashore by small boat.

ANOTHER PLANE BROUGHT DOWN

At about 2120 on May 9th an enemy plane began circling the northern end of the bay making low glide runs over the vicinity of the ship's anchorage. On an especially low glide the plane was sighted on the starboard bow, coming in parallel to fore and aft line of the cutter. Within 5 minutes from first sighting, the SWEETBRIER opened fire, along with LST's 31 and 40. The plane was hit and disappeared into a bank of smoke screen. A few seconds later his engine suddenly died out and observers on the far side of the smoke screen saw the plane crash into the water.

WORK AND FIGHT - LST-808 HIT

The SWEETBRIER now began a period of alternate work tasks which were fitfully punctuated by repulsing air attacks. On May 14, 1945, she took aboard 27,400 pounds of dynamite and proceeded to an anchorage south of Ie Shima, Okinawa, where blasing operations were begun on the 16th by a party of See Bees on coral heads off the south coast of that island. On the 18th she proceeded to an anchorage off Hagushi and took aboard miscellaneous buoys from an LST transporting them to Sesoko Harbor. After a See Bee working party had blasted the mast of a sunken ship marked by an obstruction buoy, the cutter returned to Ie Shima. At 1935 on the 18th she opened fire on an enemy plane to port without apparently inflicting any damage. At 2202, however, an enemy plane flew at low altitude over the anchorage but was not seen because of the smoke screen. A few seconds later a tremendous explosion was heard and the LST-808, located about 500 yards from the SWEETBRIER's port bow was hit, either by a bomb or torpedo. Later the LST was beached to keep her from sinking. The Navy See Bees continued their blasting operations off the south coast of Ie Shima on the 20th.

THREE ENEMY PLANES SHOT DOWN

A Japanese plane attacked shipping in the anchorage at 1832 on May 20, 1945, and was hit in mid-air by concentrated AA fire; broke in two and crashed into the water. Two minutes later a second enemy plane attempted a suicide crash on a Dutch merchantman but hit the water just short of the target due to heavy AA fire. Three minutes later, a third Jap plane dove through the SWEETBRIER's AA fire, 60 per cent of which was seen to have hit the plane and crashed into the now beached LST-808, causing fire which was soon brought under control by fire boats.

THREE MORE PLANES SHOT DOWN WHILE THE WORK GOES ON

On May 21, 1945, an unidentified plane appeared suddenly through the low clouds and a few moments later was shot down by ships in anchorage, the SWEETBRIER expending seven rounds of 22 MM. It was not until it was shot down that it was identified as one of our own "Hellcats." On the 23rd the cutter moved to Nakagusuku Bay and on the 25th a Japanese "Zeke" was brought down by ships in the anchorage. Later on that day the rest of the dynamite for blasting was taken ashore for the See Bee working party. On the 26th the cutter began working on navigational aids in Nakagusuku Bay, setting first class lighted buoy NB 1 in charted position and returning to anchorage. Early next morning she opened fire on a "Val" which was brought down by the combined gunfire of all the ships and crashed into the water, short of its suicide target. The SWEETBRIER then got underway to set the buoys in their charted position.

PLANES FALL AS BUOYS ARE SET

When the merchant ship JOHN OWENS was hit by an enemy suicide plane on May 28, 1945, the cutter was out of range and did not fire, but later in the morning she did fire on one that dived into or near another merchant ship, escaping by soaring into the clouds. Then at 0746 she helped bring down another enemy plane. Still another was brought down 10 minutes later, the SWEETBRIER not firing as the plane was out of range. At 1805, however, she joined in firing on another enemy plane which crashed into or near a merchant ship anchored to port. Then the SWEETBRIER took advantage of a temporary lull to resume her duties, setting two buoys in position and hoisting two others aboard. Additional buoys were set on the 31st and temporary buoys were removed. This work continued in Nakagusuku Bay through June 3, 1945.

ASSISTS GROUNDED YP-41

On June 3rd a plane was shot down by the combined firing of ships at anchor four miles to the north of the cutter's position but too far out of range for her to participate. Next day anchorage was shifted because of an approaching typhoon and at 1455 the SWEETBRIER got underway to assist YP-41 after three LCM's had been unsuccessful in floating her. A small boat was sent with a working party to shore up the YP and she floated clear of the reef next day at high tide. Work proceeded until the 11th, setting buoys in various positions in Nakagusuku Bay, a pontoon barge adrift in the bay, being delivered to the USS BOWDITCH on the 5th. On the 13th, she proceeded to Chimu Wan and set several buoys in that area before returning for further buoy work. On the 15th she proceeded to Naha Harbor and then to Hagushi anchorage, where she daily salvaged miscellaneous buoy gear at Naha, anchoring over night in Hagushi anchorage. Time out was taken to commemorate the planes she had shot down on May 18 and 20, by painting two small Jap flags on each wing of the cutter's bridge. The work of setting buoys began on the 20th in Naha Harbor and on the 23rd she returned to Nagasuku Bay and set mooring buoys in Baren Ko until July 8th. On the 9th she again moved to Chimu Bay for aids to navigation duties for the rest of July.

TOWING, SALVAGE, AND BUOY WORK

The SWEETBRIER on August 1, 1945, stood out of Buckner Bay to carry out the typhoon plan in the face of a threatening blow and returned on the 3rd. On the 5th after towing three pontoon barges alongside for stowage, she began setting fleet mooring buoys on the 6th, assisting the USS SHELLBACK (AN-67) in assembling gear on the 9th, and 10th. Shifting anchorage on the 12th she towed a pontoon barge to Baren Ko on the 13th and five mooring buoys to Buckner Bay on the 14th, and after transferring concrete sinkers from one barge to another set a mooring buoy on the 18th. On the 19th she began salvaging the screw and shaft of the USS PENNSYLVANIA, which were on the bottom of Buckner Bay. Receiving buoy gear from the LCT-1018 on the 23rd, she proceeded to take them to the buoy anchorage for stowage. Buoy work continued until the end of August, general quarters being called several times during the month because of enemy aircraft in the vicinity.

CGC TUPELO
(WAGL-303)

COMMISSIONING

The CGC TUPELO (WAGL-303) was commissioned on May 19, 1943. Her first commanding officer was Lt. W. U. Fulcher, USCG. He was succeeded by Lt. C. O. Hefferen, USCGR. After a period of training under Commander, Fleet Operational Training Command, Atlantic Fleet, she reported to the Coast Guard Yard, Curtis Bay, Maryland, on August 11, 1943, for conversion into a fire boat.

CONVERSION TO FIREBOAT

On April 1, 1944, the CGC TUPELO was moored at Coast Guard Yard, Curtis Bay, Maryland, while the yard force continued alterations and repairs; converting the vessel into a fireboat. On the 7th she departed for Portsmouth, Virginia, and on the 12th was underway for her long voyage to the Pacific via the Panama Canal. She arrived at Miami on the 16th, after receiving warning of an enemy sub, whose position, however, was 180 miles away at the time. After repairs at Miami she got underway for the Canal Zone on the 25th, arriving on the 30th. After repairs for refrigeration she was directed to proceed to Pearl Harbor, via San Diego and, along with the WOODBINE and PAPAW, was assigned to Service Squadron 2 for administrative control and to Commander, Service Squadron 12 for temporary operational control after reaching Pearl Harbor.

ASSISTANCE TO TUG

At 0905 on April 11th, an SOS was received from the tug ATENGO in position 14° 04' N, 93° 31' W and the TUPELO was instructed to tow her to the nearest port. The TUPELO took her in tow on the 12th for Salina Cruz, Mexico. The towing hawser parted in a strong gale on the 13th, and a seaman on the tug mangled his hand, medical advice being flashed to the tug from the cutter, because the seas were too rough to transfer the man in a boat immediately. By 1800 the sea had moderated enough to bring two injured men from the tug to the TUPELO. Salina Cruz was reached next day and the ATENGO delivered while the TUPELO proceeded to San Diego. There on the 23rd, the cutter was drydocked until the 26th for repairs to the outer oil seal. She departed June 3, 1944, for Pearl Harbor where she arrived on the 11th. After loading buoys and equipment at Sand Island Base, she departed on the 19th for Majuro Atoll, Marshall Islands arriving at her destination on the 29th. Here she was routed on to Eniwetok where she arrived July 3, 1944. Here she was assigned to Task Unit 57.14.5.

BARGE FIRE EXTINGUISHED

On July 13, 1944, she was ordered to proceed to South Anchorage, along with the WOODBINE, to help a landing barge that was on fire there. On arrival the barge was found to be loaded with smoke bombs on fire from bow to stern. The TUPELO and WOODBINE extinguished the blaze and the barge was taken alongside the TUPELO to get at the smouldering fire that was under the smoke bombs and also under the after part of the deck. The fire was completely extinguished within 9 minutes after arrival. From the 14th to the 25th the TUPELO was servicing and replacing buoys until relieved by the PAPAW.

AT GUAM AFTER INVASION

On July 26, 1944, the TUPELO began escorting the USS PAKANA, with the ARD-17 in tow and they proceeded toward Guam. En route an unsuccessful search was made for an underwater contact had by the PAKANA.

As the TUPELO approached Guam on August 1, 1944, an American Task Force was sighted bombarding enemy positions on the island, the first landings on the island having been made on July 21, 1944. The TUPELO entered Apra Harbor and reported to Commander Service Squadron 12, as part of Task Unit 57.14.12. On the 3rd, the cutter dispatched a fireboat with crew to extinguish fire on a coal pile at Piti. Except for sniping, enemy action in the vicinity of Apra Harbor had ceased. For the next two days, the TUPELO was engaged in establishing buoys in Agano Channel, while a marine battery bombarded an enemy position in the vicinity of Barrigada, Guam. Aids to navigation work continued through the rest of the month. All lighted buoys were lit on the 13th as all vessels in the harbor sortied due to an expected typhoon. They were turned off again on the 14th. On September 2, 1944, the cutter participated in the work of widening the Mamaon Channel, Port Marizo, Guam, investigating coral heads preparatory to placing the dynamite. Later she established mooring buoys there. On the 18th she helped tow the USS OREGON through the channel and moored her to the mooring buoys, a difficult task in the narrow channel, muddy from recent rains which made it difficult to see coral heads and reefs. Channel marking continued through September.

ASSISTS VARIOUS VESSELS

During a heavy gale early on October 3, 1944, a report came that the SS MANDILLO and SS Mc FARLAND needed help. The TUPELO, with the USS GEAR, arriving alongside the latter vessel at 0510, found she had parted her mooring from the buoy and had dropped her starboard anchor. This had dragged until she took up alongside the anchored SS MANDILLO dangerously near Calahan Reef. With lines from the TUPELO and GEAR, bow and stern, the vessel was pulled clear and secured to a mooring buoy. Next day the two vessels, with a tug, helped unmoor another vessel. On October 6, the TUPELO cleared the anchor of the SC-1325, caught in a submarine cable in Apra Harbor, and dispatched a motor launch to pick up three men washed overboard from a pontoon barge. They had been picked up when the launch arrived.

TO PELELIU AND RETURN TO GUAM

After loading 100 tons of dynamite from the USS OREGON on October 13, 1944, the TUPELO proceeded to Peleliu with convoy Guam-Ulithi I, escorted by a DE and a YMS. At Ulithi as the sound equipment on her escort was inoperative, the TUPELO laid over until the 17th when she was escorted by the USS BRUSH in convoy Ulithi-Palau II. Arriving off Peleliu on the morning of the 19th, she proceeded independently and reported to Commander Service Squadron 12, aboard the USS BURROWS, where a working party was picked up off Orange Beach and she proceeded to Saipan Town, Angaur Island, to unload the cargo of dynamite into LCM's. After being unloaded, she proceeded to Purple Beach, Peleliu, and thence to Ulithi under escort where she took on board a rearming boat and reached Guam on the 26th.

AIDS TO NAVIGATION

During November and December the TUPELO was engaged in aids to navigation work in Apra Harbor and the Guam area. Working with the USS CINCHONA she picked up, repaired and replaced buoys, which, with their ground tackle, weighed as much as 35 tons each. She lengthened and shortened riser chains, assembled navigational buoys for use of the PAPAW, lifted LCVP's from pontoon barge to water after repairs, and from water to pontoon barge for repairs, and established both mooring and navigational buoys, as well as telephone mooring buoys. On December 31, 1944, she went to the assistance of the disabled SS ALFRED C. TRUE five miles off Apra entrance and directed its towing into the harbor.

better than on the previous day. When the surf boat drew near to the wreck the crew began leaping into the water and an LCM was requested to aid in the rescue. Within a few minutes several LCM's and LCVP's were in the vicinity giving aid. The entire crew was saved, 14 of the survivors being picked up by the motor surfboat.

PIPE LINE REPAIRS

Buoy work was continued until October 28, 1944, when the WOODBINE was again called upon for work on the Charan Kanoa pipe line, which had been broken in two places during the heavy blow earlier in the month. The cutter furnished a working party and signalman for the diver's work barge and acted as communications center for the repair job. On the 31st, she proceeded to Magicienne Bay to replace damaged hose at the end of the pipe line. The hose had been damaged while a tanker was discharging and was still secured to the tankers rail. The WOODBINE had to move close aboard the tanker, anchor and pass a stern line to hold the ship in position, so that the hose could be dropped in place after the repairs were completed. The cutter then returned to Charan Kanoa to resume her work of helping in the repair of the pipe line at that place.

ENEMY AIR RAIDS

While still engaged in this work the cutter went to general quarters for an hour and twenty minutes on November 4, 1944, because of an air raid. During the raid several 50 cal. shells struck the ship, one shell making a hole in the side of the No. 1 surf boat and another shell damaging a section of fire hose. Work was then resumed on the pipe line repair but again on the 7th there were two more air raid alarms, one at 0047 and one at 0329. At 0407 the WOODBINE's port 20 MM gun opened fire on an unidentified plane close by on the port side and at 0410 the port and starboard 20 MM gun fired on an unidentified plane forward of the ship. 71 rounds of ammunition were expended during the raid. The vessel was not secured from general quarters until 0444. Work was then resumed on the pipe line.

WORKS ON TINIAN PIPE LINE

On November 12, 1944, the WOODBINE proceeded to Tanapag Harbor where she picked up rubber hose for pipe line repairs at Tinian Island. Here the 107th Naval Construction Battalion was laying three fuel pipe lines, - two 6 inch and one 8 inch - 800 feet along the bottom from the beach. The three lines were secured together and were being laid in one operation. The WOODBINE's duty was to moor off shore and stretch a running line to the beach which was used in pulling the pipe line out to the position, as a caterpillar on the beach pushed it. After the line was in position, flexible hard rubber hose was to be attached to the end of it and buoyed. The WOODBINE was also to lay three tanker moorings to be used by tankers discharging into the pipe lines. By the 14th moorings had been established to hold the cutter in position for the job and on the 15th, No. 3 boat stretched the running line to the beach, using empty gas drums to buoy it and keep it from fouling on coral reefs. As the cutter hauled out the pipe line, drums were used to float this also. Then rubber hose was connected to the lines' end, the drums removed, the pipe line sunk, and the three rubber hoses buoyed. The tanker moorings were to be established when they became available. Meanwhile the cutter returned to Tanapag Harbor for four days availability. Returning to Tinian on the 24th she established the three tanker moorings by the 26th and returned to Tanapag Harbor on the 27th.

RETURN TO CHARAN KANOA PIPE LINE - ANOTHER AIR RAID

On November 28, 1944, the WOODBINE established mooring buoys preparatory to participating in the laying of a new pipe line at Charan Kanoa to replace the one damaged in the October storm. On December 1, 1944, the pipe was hauled out and a hose attached to the end, with additional sections attached next day, a diver setting one clump to hole the line in place, further diving operations being halted until a faulty air compressor for the diver was repaired on the 5th. On the 7th there was an air flash "Red" at 0403, general quarters was sounded and continued until 0546. A crew member, struck by flack during the raid was taken ashore by small boat for hospitalization. On the same day the diver laid set the remaining 10 clumps completing the work.

BUOY WORK - TO GUAM

From December 8th to the 24th the WOODBINE continued buoy work in Tanapag Harbor, Saipan. On the 25th she moved to Tinian Harbor and departed there on the 26th in a convoy for Apra, Guam, where she arrived on the 27th to set a mooring of high priority, after an availability until January 2, 1945, for repairs.

AIDS TO NAVIGATION - GUAM

The high priority mooring was for the USS SPERRY. Its setting was made more difficult by the absence of the WOODBINE's anchor windlass motor, whose armature was being rewound aboard the USS LUZON. Cross deck lines could not, therefore, be used and the boom had to be used for the entire operation. However, by December 7, 1944, the mooring had been established and availability was granted the WOODBINE until January 14, 1945, when it was further extended until the 21st when the work on the windlass motor was finally completed. Next day the cutter departed for Saipan where buoy work in Tanapag Harbor was to be resumed.

PICKS UP SURVIVORS OF CRASHED B-29

On January 23, 1945, one of a group of B-29's was seen to crash in the water between Saipan and Tinian Islands and the WOODBINE changed course and proceeded to the crash scene. Several survivors in a small rubber life raft were observed while underway and when she arrived at the scene her lifeboat was lowered to pick up five survivors from the life raft. These were given first aid treatment by the pharmacist's mate and were put aboard the PC-1126 with him for transportation ashore while the cutter and her No. 3 boat continued searching the area for survivors and gear. The ship's confidential papers were picked up and turned over to the Naval Air Station crash boat. Further search was abandoned at 0920 as the WOODBINE proceeded to Tanapag Harbor, Saipan.

ASSISTS GROUNDED VESSEL

Buoy work was continued intermittently until February 12, 1945, the cutter being under availability most of the time for maintenance and repairs. On the 13th, she moved to the Outer Harbor to assist the LST-224, escorting her back to the Inner Harbor and removing a damaged LCVP from the LST's boom, after cutting and removing the davits. On the 14th she brought a dog boom and gear from Tinian Harbor, and buoy work at Charan Kanoa, and in Tanapag Harbor, continued until the 24th. On that day the cutter got underway to assist the USS SAMARITAN aground on a reef in Tanapag Harbor, placing a 10

AIDS TO NAVIGATION - GUAM AND SAIPAN

For the first eight months of 1945, the TUPELO remained in the Guam area working on aids to navigation. While establishing a BB riser type of buoy on February 10, 1945, her port side above the water line was dished in between frames 74 and 116 and the welded seam at the main deck broken. She was laid up for repairs for the rest of that month. Work on aids to navigation continued thereafter and the establishment of various mooring buoys was punctuated by efforts to clear the anchors of vessels fouled in the legs of mooring buoys, recovering lost anchor chains and searching for navigational buoys adrift in the inner Apra Harbor. On May 1, 1945, she departed for temporary duty at Saipan where she shifted, reestablished, moved and relieved navigational buoys in Tanapag Harbor and at the Saipan anti-submarine net entrance. She returned to Guam on May 27, 1945, and continued buoy work in Apra Harbor. On June 25, 1945, she proceeded to Agat Bay, Guam, for salvage operations on the bow of the USS PITTSBURG, which had been broken off and towed to that position. Returning to Apra Harbor on July 7, 1945, she established a temporary stern mooring for the USS CITY OF DALHART. During August she established DD mooring buoys in Apra Harbor and picked up mooring buoys adrift 3 miles west of Orote Point, Guam. On August 14, 1945, radio broadcasts indicated that Japan was suing for peace and all hands were jubilant. Aids to navigation work continued, however, without let up through August, 1945.

CGC WOODBINE (WAGL-289)

COMMISSIONING

The CGC WOODBINE (WAGL-289) was commissioned on November 17, 1942, at Duluth, Minnesota. Her commanding officers have been Lt. (jg) E. L. Tillett, USCG, and Lt. John A. Anderson, USCG. She served in the 5th Naval District until September 20, 1943, when she arrived at San Juan, Puerto Pico. On March 7, 1944, she arrived at San Francisco.

AT ENIWETOK

On July 1, 1944, the WOODBINE was attached to Service Squadron 12 and anchored at Eniwetok Atoll, Marshall Islands awaiting orders. On the 9th she inspected charted buoys in the Atoll and replaced several buoys until the 13th when she was ordered to proceed to the assistance of a landing craft afire in the southern anchorage, arriving at the scene a small Higgins PA2-17 was found afire. Water from the WOODBINE's forward monitors soon got the fire under control.

AT SAIPAN

On Juoy 17, 1944, the WOODBINE joined a convoy for Saipan, where initial landings had been made on June 15, 1944. Anchoring there at 1445 on July 24, 1944, she was underway again three hours later to southern anchorage to assist a motor launch stranded on a reef. During the rest of July she was engaged in establishing various types of buoys, picking up the Japanese submarine cable between Saipan and Tinian Islands and sealing the end of the cable on the Saipan side. On the 30th she investigated a fire aboard a Japanese wrecked vessel. During August she restored the Tanapag Harbor entrance lighted buoy to its proper characteristics; dragged for and recovered Japanese submarine telephone cable on the Saipan Island side, sealing and buoying it at the end and doing the same for the Tinian end of the cable; aided in salvaging a PBM seaplane which had run afoul on a coral head, pumping it out after closing the hole in the hull and floating it next high tide; repaired a pipe line in Magicienne Bay; stood by burning wrecks in case the flames became dangerous to vessels or installations; relocated tanker moorings in Magicienne Bay and engaged in various other duties.

PIPE LINE FOR B 29's

Using a wrecked Japanese freighter aground in Tanapag Harbor as a storage for aids to navigation gear, the WOODBINE assembled moorings, removed, picked up, and replaced obstruction buoys and checked buoy positions on the west side of the island. She established many buoys in Tanapag Harbor. On September 22, 1944, she began work on a pipe line being started in the vicinity of Charan Kanao and consisting of two 8 inch steel lines, each 4000 feet long, laid on the bottom of the beach seaward. At the end of each steel line was being attached 150 feet of flexible rubber hose. The WOODBINE's job was to maintain a strain on the pipe lines while they were being pushed out from the beach by a caterpillar tractor, using a 5 inch running line extending from the end of the pipe line to the vessel's capstan. The pipes were pushed out as they were welded together 300 feet at a time, the WOODBINE being held in position by a bow and two quarter moorings. She had to establish similar moorings for the use of tankers while they discharged into these lines. One of the pipe lines was to supply gasoline to mobile units ashore and the other was to supply aviation gasoline, mainly for the new super fortresses (B-29's). By September 25th, concrete clumps were being set on the end of one pipe line and next day the second was completed, a rubber hose was attached to its end and the line filled with water to sink it to the bottom. The final setting of clumps for the pipe line was completed on the 27th and the tanker moorings established by October 1, 1944. Work on the pipe line was then interrupted by bad weather and not resumed until October 11, 1944, when the pipe line was connected to the pontoon which was then launched and secured with two concrete clumps. Connecting the rubber hose to the pontoon completed the WOODBINE's work on the pipe line.

RESCUES CREW FROM STRANDED BARGE

On October 6, 1944, the WOODBINE went to the assistance of the USS CLAMP who was standing by a stranded concrete provision barge, the USS ASPHALT, solid aground on the coral reef. Anchoring in the vicinity of the barge she maintained visual communication with the wreck as the CLAMP departed for Tanapag Harbor. The stranded vessel was almost broadside on the reef and taking mountainous seas over-running her full length. The crew, estimated number 65, was seen on the forecastle and 20 MM gun mount. It was impossible to rescue them from seaward, due to the great westerly swells breaking from that direction, so the WOODBINE proceeded in Tanapag Harbor to remove the crew from the inshore side of the coral reef with her motor surf boat. Anchoring in a nearby berth at 1330 the cutter dispatched her surf boat 20 minutes later through a small, crooked channel about 2000 yards, with coral reefs and breakers as added hazards the entire distance. The current was ebbing strongly and it was near low water, with the current setting in the reverse direction of the breakers and making conditions extremely bad. The surf boat reached close aboard the wreck but heavy breakers made a rescue attempt inadvisable at that time and she returned to the cutter. Next day the surf boat again departed, this time to attempt removal of the barges crew by use of a shoulder line-throwing gun and by sending a 3 inch line to the wreck to be secured to the 20 MM gun mount. The tide was now making high water and conditions were

inch hawser aboard and succeeding in releasing her from the reef.

TO GUAM

The WOODBINE proceeded to Guam in convoy on February 25, 1944, and remained there until March 15, 1944, discontinuing buoys and picking up cruiser moorings and other equipment in Apra Harbor.

RETURN TO SAIPAN - TOWS JAP HULK TOWARD IWO JIMA BUT HAS TO RETURN

With Saipan as her destination, the WOODBINE departed Apra Harbor on March 16, 1945. On the 20th she made her first attempt to move the grounded TOYOTO MARU, a Japanese hulk in Tanapag Harbor, preparatory to towing it to Iwo Jima. Even with the help of two YTM's she was not successful in moving the hulk, but on a second attempt, with a tug and YLT assisting, she freed the Japanese hulk and began towing it in convoy to Iwo Jima. The WOODBINE's speed, with the heavy tow, was gradually decreased to 1 knot and she was unable to keep station with the convoy which, because of limited fuel and supplies, had to maintain a speed of at least 3 knots. Late on the 22nd she was instructed by radio to return to Saipan and arrived there on the 25th. The WOODBINE was not built to pull a heavy tow into even a moderate sea and make any speed. In 56 hours she had drifted 100 miles west of her course while making only 57 miles along the course line.

IN IWO JIMA - SALVAGE OPERATIONS

The WOODBINE set out again for Iwo Jima in convoy, this time towing Mobile Salvage Barge #1. She arrived at her destination on April 2, 1944. Work was next day begun on salvage operations of the USS FLINT, a concrete ship aground in the vicinity in 3½ fathoms of water, and with a considerable swell in the ocean. The transfer of a salvage pump, pipe and fittings to the grounded vessel, accomplished only with some difficulty because of these conditions, the 7½ ton anchor of the FLINT was retrieved and a salvage and anchor cable from the MSB #1 was passed to the FLINT who was to be pulled off the reef at high tide two hours later. Early on the 4th, however, hope of floating the FLINT was abandoned. On that date search was begun for a lost anti-torpedo net section reported afloat south of Iwo Jima. The search procedure utilized lookouts, radar and sound gear. By noon of the 5th about 140 square miles had been searched without success, so the search was secured. She stood by the Concrete Ship No. 12 until the 8th in the event that she dragged anchor. On the 9th she moored alongside the Russian hulk which had been towed to Iwo Jima from Saipan and recovered and buoyed its towing bridle, which secured to the hulks anchor chain, with the addition of another anchor, served as the hulk's mooring.

CONSTRUCTS BREAKWATER OF DISCARDED VESSELS

The hulk was the first breakwater ship to be placed on March 10, 1945, in shoal water in the construction of a breakwater composed of discarded and useless vessels and hulks at Iwo Jima. An air flash red on the 12th brought all hands to general quarters but the enemy planes were turned back and all clear sounded at 1447.

SALVAGE OPERATIONS RESUMED

On the 13th, salvage operations of an LSVP and a truck were carried out but other boats could not be raised because of insufficient strength of the cables available. On the 15th the concrete barge No. 12 was taken under tow but went aground on what appeared to be a sand bar as she approached the designated position. The combined efforts of the WOODBINE and two YTF tugs could not pull her off. Next day an attempt was made to kegde her off but this only resulted in tearing out bits on her port quarter. The WOODBINE secured from the operation. Two navigational buoys were set near Kama Rock on the 17th. On the 19th, the partly submerged whaleboat of the DE-697 was pumped out and salvaged. Between the 24th and 28th, moorings were replaced and reset. On the 28th the concrete barge No. 29 dragged her anchor and went on the beach. After working all day, the barge was floated again at high tide about 1915, the WOODBINE receiving a "Well Done" from Commander, Service Squadron 12.

TO GUAM

The WOODBINE left Iwo Jima on April 30, 1945, for Guam, in convoy, having been relieved at Iwo Jima by the PAPAW. She arrived on the 4th and was granted 12 days "at anchor" availability for overhaul of engines and miscellaneous repairs. On May 12, 1945, the WOODBINE was temporarily assigned to Commander, Mine Craft Pacific Fleet, for operations in the Okinawa area. Gear and equipment for establishment of 4 each second class mun and can buoys, and 1 each first class mun and can buoys, were loaded and on the 27th she departed for Saipan to meet the convoy for Okinawa.

TYPHOON EN ROUTE OKINAWA

The WOODBINE departed Saipan in convoy on May 29, 1945, for Okinawa. On June 2, 1945, the first notices of an approaching typhoon were received and on the 3rd reports indicated that it might cut directly across the path of the convoy. By that evening the storm was 400 miles to the southwest and next morning took a northerly direction, appearing to be likely to strike Okinawa close to the time of the convoy's arrival there. On the 4th, the barometer dropped nearly twenty points. The convoy reversed course and proceeded southeast in order to avoid the center of the typhoon and be away from Okinawa where many ships would be ordered to sea in the event the typhoon struck there. The barometer fell rapidly on the 5th and by 0700 the wind had risen to 35 miles per hour with rising sea and poor visibility. By 1100 the wind had reached hurricane force and the barometer, falling to 28.62, indicated the storm center to be about 60 miles away. A close watch was kept to avoid collision with other vessels of the convoy, invisible now for over an hour. The course of the convoy was shifted south and southeast as the wind shifted north and northwest. By 1300 the barometer had risen .60 points and closest ships in the convoy were visible for short periods. The sea and wind began to subside very rapidly now and by 1700 were entirely normal. Visibility had increased so that reformation of the convoy was now possible. The 40 ships in the convoy were, however, scattered over an area of 100 square miles. Visibility was poor on June 8th, 1945, most of it being caused by the tremendous anti-aircraft smoke screen created in Okinawa harbors during early morning enemy air raids. The WOODBINE detached from the convoy on entering Nakagusuku Bay. An air raid alert received immediately on anchoring continued intermittently throughout the day.

MINECRAFT BASE DEVELOPMENT

The WOODBINE began towing a pontoon barge on the 10th for delivery at Hagushi prior to reporting to Commander Minecraft Pacific Fleet at Kerama Rhetto. The course was altered to pass clear of the USS IDAHO and several heavy cruisers bombarding Japanese positions at Naha and the barge was delivered at 1815, the cutter anchoring close

inshore for the night. Kerama Rhetto was reached next day and on reporting to Cominpac on board the CGC BIBB, loading of cargo for Unten Ko was ordered but a typhoon warning and a swell made it necessary to proceed to a more sheltered anchorage. A PGM was designated as escort and the WOODBINE followed close behind toward Unten Ko during the night. Arriving at 0615 on the 12th and the danger of typhoon having passed, the WOODBINE entered the straits and anchored off the village of Unten still occupied by natives. A preliminary survey of Unten Ko and Katena Wan (Bay) followed, the latter being an excellent shelter for small vessels. Navigational difficulties by the narrow, widing channel could be safely overcome by the use of ordinary buoys, beacons and channel ranges. Dan buoys and mine case buoys now marked the channel and shoals in the bay. Next day moorings for the WOODBINE were established in a cove along the channel, the location affording maximum protection from air attack because of the height and proximity of the surrounding hills. The ship was vulnerable however, to rifle, grenade and mortar fire, which attacks were not likely but possible. One to two armed guards were on watch continuously at night and a 30 cal. machine gun was mounted on the flying bridge ready for instant use. On the 14th the first four channel buoys were located and established in Unten Ko Channel. On the 15th an armed party went ashore on Yaguchi Island to search for Jap lumber and gasoline, which might be salvaged, and considerable quantities of both were found. The island was thickly populated and the natives did not seem disturbed by the presence of the Coast Guardsmen. There were no indications of hostility though some suspicious men were seen. On the 16th seven more second class channel buoys were located and established. On the 20th, channel buoy No. 1 was found, riddled with bullets, sinking, probably fired on by our troops on Kouri Island looking for some additional excitement. The buoy was welded and replaced. On the 25th, a salvage party went ashore for lumber for beacons and the BALSAM came alongside to deliver navigational buoys and chain. On the 27th channel buoys 11 and 13 were established.

CGR-233
(ex-PRIMROSE II)

AIDS TO NAVIGATION — This 32 foot tender was assigned to tending the dolphins and lights in Wrangell Narrows during 1942 and was released as soon as this duty was completed.

CGR-235
(ex-LOIS W.)

AIDS TO NAVIGATION — This reserve boat was in reserve status for port duties in Petersburg and for aids to navigation duties at Wrangell Narrows.

CGR-657
(ex-SALVOR)

AIDS TO NAVIGATION — This 90' tender to minor aids to navigation in southeast Alaska also did patrol work, being based on Ketchikan.

USS NORTHERN LIGHT
YP

PATROL AND AIDS TO NAVIGATION — The USS NORTHERN LIGHT (YP) was Coast Guard manned in August 1942. 51.5 feet long she was commandeered for aids to navigation work in Prince William Sound and at Cape St. Elias and Hinchinbrook Light Stations. She was also used as a patrol vessel. During June and July 1943 she patrolled the area from Wedge Island to Davison Point, identifying vessels and planes.

ASSISTANCE — During April 1945, the NORTHERN LIGHT was on Clarence Strait patrol for 14 days. Again on Clarence Strait patrol for 21 days in May she departed Ketchikan on the 27th to search for the disabled fishing boat MACKERAL, locating her on the north shore of Bold Island and towing her to Ketchikan. On June 13, 1945, while again patrolling Clarence Strait she sighted the Canadian fishing boat V 196 B submerged, deck awash, drifting 2 miles off Point Percy with no one aboard. She lashed the boat alongside and towed it to Ketchikan. The boat had been located earlier by the fish boat WELCOME who removed two men yet alive and two bodies of the rest of the crew who had perished from cold and exposure in a storm. At Ketchikan Base the boat was pumped out, minor repairs made and turned back to the owners on their release from the hospital. On July 3, 1945, she took the CG-90001, with a water barge in tow, the former having become disabled and towed them to Juneau where the barge was left at the Coast Guard Base and the CG-90001 towed on to Ketchikan. Patrol was then resumed. On August 4, 1945, the NORTHERN LIGHT began a search from McClane's Arm to Cape Muzon for a boat reported overdue but discontinued the search on orders two days later.

YP-197
(ex-USS BROWN BEAR)

MANNING - PATROL AND ESCORT — The YP-197 (ex-USS BROWN BEAR) was manned with Coast Guard personnel on January 5, 1942, having been commandeered by the Navy. She was assigned to the Northwest Sea Frontier on the Juneau Patrol between Cross Sound and Icy Strait. During 1943, she was assigned to Commander, Alaska Sector. Both assignments were for patrol and escort duty.

ASSISTS RUSSIAN VESSELS — On December 28, 1942, the YP-197 left Chernofski Harbor, stopping at Atka Island en route to Dutch Harbor where she awaited repairs to a Navy power barge before towing it to Malga Bay, Unalga Island on the 14th, landing all freight on the beach and anchoring in Constantine Bay before returning to Dutch Harbor on the 16th. Departing Dutch Harbor on the 17th for Akutan with personnel and supplies she anchored in Akutan Harbor in company with three Russian ships. On the 19th a northeast gale was making up and the USSR ASHKABAD began dragging her anchor. The YP-197 got underway to assist her, dropping both anchors to windward of the Russian vessel and paying out 100 fathoms as she prepared to run a 6" hawser. The Russian vessel slacked away both anchors, however, and beached herself broadside on a sandy beach apparently safe from further action of the gale. Later a second Russian vessel the USSR IGORA grounded broadside 100 yards west of the first. When the weather had moderated on the 20th, the YP-197 requested assistance of the Navy tug ORIOLE to

HOMECOMING IN THE ALEUTIANS
A TRANSPORT RETURNING THE ALEUTS TO THEIR HOME ISLANDS
NEARS ITS DESTINATION AND THE ISLANDERS LINE THE SHIP'S RAIL
FOR THEIR FIRST GLIMPSE OF HOME IN MORE THAN THREE YEARS

float the grounded ships. Meanwhile on mooring alongside the ORIOLE the YP received 30 Russian survivors from the USSR TURKSIL, a third Russian vessel who were transferred to the USSR TURKMAN, a fourth Russian vessel in the Harbor. On the 21st the YP-197 assisted the ORIOLE in floating the Russian ships both of which were cleared of the beach by 1318 with no damage reported. The YP-197 then proceeded to Dutch Harbor.

TRANSPORT DUTY — On January 25, 1943, the YP-197 was en route Malga Bay to pick up passengers for transport to Bogolslof Island and Dutch Harbor. While returning she had to anchor in English Bay, Unalaska, for shelter from a northwest gale but she reached Bogolslof Island on the 26th and Dutch Harbor on the 28th. On the 30th she left for Atka with freight and passengers where she unloaded on the 31st and returned to Dutch Harbor on February 4th. Another trip to Atka with three officers and 17 enlisted men was made on the 7th, returning from which she had to seek shelter in Makushin Bay. She remained in Dutch Harbor until the 20th when she again proceeded to Atka with cargo, and then to Otter Point, Umnak Island to load a torpedo circus including one ensign and nine men with gear for transportation to Dutch Harbor, where she arrived on February 25, 1943. (War Diaries for the rest of 1943 and 1944 are not available).

AIDS TO NAVIGATION - ASSISTANCE — During January 1945, when weather permitted, the YP-197 delivered fuel, supplies and mail from Cordova to Cape St. Elias and Cape Hinchinbrook Light Stations. Moored at Cordova until February 9, 1945, she waited for ten more days, for favorable weather conditions, before proceeding to Naval Operating Base, Kodiak, Alaska, for drydocking and repairs. She was transferred to Task Group 91.5 during March, 1945. On April 1, 1945, the YP-197 was searching for a drifting mine reported in the vicinity of Cape St. Elias and after being ordered to discontinue the search, unloaded the remainder of the cargo she had for St. Elias Light Station, picking up a man at Cape Hinchinbrook Light Station for transportation to Cordova for medical treatment. After a two day availability at Kodiak for generator repairs, she departed on the 16th to assist the fishing vessel GENERAL PERSHING which had struck a rock at Entrance Point but, finding no assistance necessary, returned to Kodiak on the 20th to continue servicing aids to navigation until the end of April.

ASSISTS ARMY VESSEL - AIDS TO NAVIGATION — On May 2, 1945, the YP-197 proceeded to the assistance of an Army BSP who was in distress off Barren Island, contacting an Army tug also searching for the vessel. At 2235 the YP-197 sighted the BSP 12 miles bearing 180° T from Gore Point. The Army vessel proceeded on one engine toward Port Dick where the Army tug was ordered to up position at the entrance and act as lightship in the thick weather. The YP-197 stood by and escorted the BSP into Port Dick where the Army vessel anchored May 3, 1945, no other assistance being necessary. The BSP had fouled her mooring line in both screws but one screw was able to turn over. The YP-197 serviced lights in Cook Inlet area until May 13, 1945, when she departed Kodiak for Dutch Harbor, loading cargo for the Pribiloff Islands until the 22nd. Arriving next day at St. Paul she was unable to unload until the 25th because of the heavy roll. She anchored for the next three days in Village Cove off St. George awaiting favorable weather conditions, unloading finally and returning to Dutch Harbor on the 31st. June was spent in transporting supplies from Dutch Harbor to Akutan, Scotch Cap, Cape Sarichef, and also to the Pribiloffs. During July she transported mail, supplies, and personnel between Dutch Harbor, the Pribiloffs and Akutan. During August 1945 she carried supplies and construction material to high frequency direction finder stations in the Dutch Harbor area and to the Pribiloffs, loading cargo at Dutch Harbor for Kodiak and Ketchikan on the 30th, including 30 Navy enlisted men for further transportation to Seattle and discharge.

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APPENDIX A

HEADQUARTERS
314TH BOMBARDMENT WING
APO 334, c/o Postmaster
San Francisco, California

2 October 1945

335.15

SUBJECT: Testimonial

TO: CO, CG Unit 335
Navy No. 926, San Francisco, California

1. The high degree of accomplishment of this Wing's navigators was made possible to a great extent by the Loran services available to them.

2. During long periods of over water flight under difficult weather conditions, the navigator has often had but one aid - Loran - with which to make an accurately timed and positioned landfall. The Guam-Saipan-Ulithi rates provided excellent means of position fixing from the Marianas to Iwo Jima; while the Iwo-Okinawa rate was of particular value in covering the difficult phase of operational missions between Ito Jima and the Japanese Empire.

3. The confidence placed in the accuracy of Loran is evidenced by the fact that an average of 21 Loran fixes per mission were taken by each navigator. In addition to straight Loran fixes, many navigators used Loran lines in conjunction with sun and radio lines to provide an auxiliary means of position fixing.

4. The ever present and seemingly never failing operation of Loran facilities will always be remembered by navigators who flew unprecedented distances in combat operations against the enemy. To those of you who manned the ground facilities of Loran goes our deepest admiration and gratitude.

/s/ Carl R. Storrie
CARL R. STORRIE
Colonel, Air Corps,
Commanding

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HEADQUARTERS EIGHTH AIR FORCE
OFFICE OF THE COMMANDING GENERAL

APO 902
25 October 1945

SUBJECT : Commendation

TO: Commanding Officer, Coast Guard Unit 335
Navy No. 926, Fleet Post Office
San Francisco, California

1. The fine work performed by Coast Guard units in maintaining Loran stations throughout the forward area in the Pacific has greatly assisted the Eighth Air Force in the conduct of its operations.

2. To an organization just beginning operations in a new and forward area, adequate navigational aids are of first importance. The present habitual dependence of Eighth Air Force air crews on the Loran service in the western Pacific and the confidence they have come to place in its accuracy and dependability attest both to its value and to the quality of the service rendered by those who maintain it.

3. The officers and men of the Eighth Air Force would like to extend to the Coast Guard personnel whose faithful efforts in isolated and personnally inconvenient surroundings have been of such constant benefit to them their sincere appreciation for a job well done.

/s/ E. E. Partridge
E. E. PARTRIDGE
Major General, U.S.A.
Commanding

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HEADQUARTERS
UNITED STATES ARMY STRATEGIC AIR FORCES
APO 234

TO THE OFFICERS AND MEN OF THE UNITED STATES COAST GUARD:

One of the major problems facing this command when it began long range bombing missions against the Japanese homeland was the accurate crossing of a vast expanse of ocean to and from the target. Precise navigation was a necessity as airplane fuel reserves were critical. With a minimum of island check points, Loran facilities were immediately recognized as a dependable major aid to maintain accurate courses. The simplicity and speed with which an accurate fix could be obtained made Loran a favorite of all B-29 navigators. It developed into one of the most important single navigational aids in the Pacific.

The excellence of the Loran facilities and the confidence expressed by the navigators in the use thereof is a direct result of the superior job performed by the Loran ground station personnel. Their record of equipment in continuous operation is outstanding.

I wish to commend all officers and men of the United States Coast Guard connected with Loran operations for their untiring efforts, their zeal and dependability. The result of their work constituted a direct contribution to the success of the long range bombing operations of this command and to the successful conclusion of the war against Japan.

/s/ N. F. Twining
N. F. TWINING
Lieutenant General, USA
Commanding

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HEADQUARTERS
73RD BOMBARDMENT WING
APO 237, c/o Postmaster
San Francisco, California

452 ARDCO 22 September 1945

SUBJECT: Loran Service

TO: Commanding Officer, United States Coast Guard Unit 335, Navy No. 926, FPO, San Francisco, California
(Thru: Commanding General, Twentieth Air Force, APO 234)

1. One of the most valuable services rendered this Wing and one that is perhaps the least known and recognized is the Loran Service furnished by the

United States Coast Guard. At the beginning of operations against the Japanese Empire this Wing, the first in the Marianas, was dependent solely on Celestial and Dead Reckoning Navigation. Due to the presence of Japanese forces in the islands of the North, it was necessary to plan the flights far to the West of these islands. This meant fifteen hundred miles of open water flight with no radio or radar check points until within one hundred miles of the Japanese coast. A sun line was the only position check. Since attacks were being conducted at extremely high altitudes, where winds up to two hundred knots were encountered, accurate navigation was essential. A landfall made too far downwind meant a mission failure since the fuel supply at those high altitudes would not permit long upwind runs. The advent of the Loran Stations in this area added a definite position check to the difficult navigation problem. The Loran became the navigation aid on which the navigator leaned most heavily and simplified his problem unmeasurably.

2. I desire to express to the officers and men of the Coast Guard, who were responsible for the establishment and manning of the Loran stations, the deep appreciation of the combat crew members of this Wing for the fine service rendered to it. Not once did the Loran fail us and in many instances it was instrumental in saving our planes and cress when weather and flak damage combined to render our normal navigation methods inaccurate. The personnel of the Coast Guard may be justly proud of their contribution to the success of our combat missions against the Japanese Empire, which assisted in bringing the war to a speedy conclusion.

/s/ Morris J. Lee
MORRIS J. LEE
Colonel, Air Corps
Commanding

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AIR TRANSPORT COMMAND
CENTRAL PACIFIC WING

22 September, 1945

SUBJECT:: Commendation for Loran Service

TO: CO, CG Unit 335
Navy No. 926, FPO
San Francisco, California

1. It is a source of geniune pleasure to commend the personnel of the United States Coast Guard who have been responsible for Loran Service. Operating from lonely stations in the Marianas Islands, Okinawa, and Iwo Jima, these men have materially contributed to the successful prosecution of the war by maintaining Loran signals suitable for navigation 99.60% of the twenty four hour day during the last four critical months. Their work, albeit unglamorous, tedious, monotonours, and requiring painstaking exactitude in maintaining transmission of Loran signals within a tolerance of two millionths of a second, is of equal, and in many cases, of greater importance than the work of personnel in other arms and branches of the service.

2. Insofar as the Air Transport Command is concerned, Loran service has been used regularly by navigators throughout the entire Pacific Ocean Area. It has proven particularly effective as a flying aid between Guam and Manila, and Guam and Okinawa, due to the prevailing adverse weather conditions.

3. The high safety record of the Air Transport Command constitutes a testimony to the reliability ty of Loran Service and members of this command are grateful to personnel of the Coast Guard for this invaluable navigational aid.

4. It is requested that a copy of this commendation be included in the 201 files of all personnel connected with this service.

/s/ John R. Kilgore
JOHN R. KILGORE
Colonel, Air Corps
Commanding

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BASIC: Ltr fm Hq 20th AF,
Office of the Commanding General
APO 234, AIGAP 200.6, dtd 6 Oct 45,
Subject "Letter of Commendation".

- -

AG200.6 1st Ind. Pers-1/14-CHS/dm/738
HEADQUARTERS, Oct 25 1945
USASTAF, APO 234

THRU: Commander-in-Chief, Pacific Fleet
Pacific Ocean Area

TO: United States Coast Guard Unit 335
Navy No. 926, FPO
San Francisco, California

It is with pleasure that I note and forward the letter of commendation attesting to the splendid service rendered by the United States Coast Guard Unit 335 during recent operations against the enemy.

I desire at this time to add my sincere appreciation.

/s/ Barney M. Giles
BARNEY M. GILES
Lieutenant General, U. S. A.
Commanding

2nd Endorsement on
ComGen20thAirForce
Ltr., ser AIGAP 200.6
dated 6 October 1945

From: Commander in Chief, U. S. Pacific Fleet
To: Commanding Officer,
United States Coast Guard Unit 335

Subject: Letter of Commendation

1. The Commander-in-Chief, U. S. Pacific Fleet takes pleasure in forwarding this further appreciation of the fine services which have been consistently rendered by Coast Guard Unit 335 and associated units, and which contributed materially to the defeat of Japan.

/s/ C. W. Nimitz
C. W. NIMITZ

copy to:
Comdt USCG

UNITED STATES PACIFIC FLEET
AND PACIFIC OCEAN AREAS
HEADQUARTERS OF THE COMMANDER IN CHIEF

Cincpac file
P15
Ser.40063

26 October 1945

From: Commander in Chief, U. S. Pacific Fleet and Pacific Ocean Areas
To: Commandant, United States Coast Guard

Via: Chief of Naval Operations

Subject: Loran Service

1. The installation, maintenance, and operation of Loran Service in the Pacific Ocean Areas by the officers and men of the United States Coast Guard contributed in great measure to the successful prosecution of the war against the Japanese. The navigational service afforded to our sea and air forces through the use of Loran Service was of vital importance not only in the transportation demands in moving troops and material, but in actual combat op operations as well.

2. The Coast Guard personnel who constructed the Loran stations conquered many hazardous and difficult problems of weather and terrain, and those officers and men who have manned the isolated stations have done a magnificent and exacting job in transmitting Loran signals.

3. It is requested that the appreciation of the Commander in Chief, U. S. Pacific Fleet and Pacific Ocean Areas, be expressed to all officers and men of the United States Coast Guard who participated in the extensive Loran program for their outstanding performance in support of the operations which resulted in the final victory.

/s/ C. W. Nimitz
C. W. NIMITZ

copy to:
CO, CG Unit 335
Navy No. 926
c/o Fleet Post Office
San Francisco, Calif.

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HEADQUARTERS TWENTIETH AIR FORCE
OFFICE OF THE COMMANDING GENERAL
APO 234, CARE OF POSTMASTER
SAN FRANCISCO, CALIF.

AIGAP 200.6

SUBJECT: Letter of Commandation

THRU: Commanding General
U. S. Army Strategic Air Forces
APO 234

TO: United States Coast Guard Unit 335
Navy No. 926, FPO
San Francisco, California

1. It is my desire to express for all units of the Twentieth Air Force our appreciation to the United States Coast Guard Unit 335 for the splendid Loran service which has been rendered during recent operations against the enemy.

2. The long range over-water missions scheduled to and from the islands of Japan presented a most difficult navigation problem. Loran, so expeditiously provided, rapidly became the most dependable, all weather aid to navigation in this theater. Its reliability was never questioned. Navigators in this Air Force were highly pleased with results achieved, and were sincere in their praise of this service. In the later phases of operations, Loran was used approximately five times as much for lines of position as was celestial. The saving in time and energy in obtaining positions by Loran made possible highly accurate navigation to the target and the return of crippled aircraft safely where fuel supplies were dangerously low.

3. This Loran service is an achievement worthy of the highest praise. I desire to commend the United States Coast Guard Unit 335 for their untiring efforts which contributed so materially to the successful conclusion of the air war against Japan.

/s/ N. F. Twining
N. F. Twining
Lieutenant General, U S A
Commanding

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