

# U.S. Coast Guard - Maintenance & Logistics Command Pacific

## LORAN-A Historic Context

*Alaska (District 17)*

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ENCLOSURE(2)

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2. TECHNICAL BACKGROUND

The LORAN (Long Range Aid to Navigation) System, including the now defunct LORAN-A, is a radio-navigation system using land-based radio transmitters and receivers to allow military and civilian mariners, aviators, and (more recently) those interested in terrestrial navigation to determine their position. Today, LORAN-C is the federally provided radio-navigation system for the U.S. Coastal Confluence Zone<sup>1</sup>. LORAN-C can be characterized as a highly accurate (better than 0.25 nautical mile (NM) absolute accuracy in the defined coverage area), available (99.7% availability), 24-hour-a-day, all-weather radio-navigation system. The Coast Guard is responsible for the maintenance and system operation in the United States and some overseas locations.

The basic LORAN system consists of a chain of three or more land-based transmitting stations, each separated by up to several hundred miles. Within the LORAN chain, one station is designated as a master station and the other transmitters as secondary stations. LORAN Monitoring Sites are also situated throughout the chain to receive signals from the transmitter stations and provide regular reports on cycle time difference, signal-to-interference ratio, and signal strength.

This navigation system allows a captain to determine his position by comparing the arrival times of pulses from two pairs of radio transmitters. Each pair gives enough information to draw a line of position on a map (LOP) and the intersection of two lines marks their location. The LOPs are automatically displayed for the captain on a LORAN navigation receiver.

3. HISTORY OF LORAN-A STATIONS

The first LORAN-like hyperbolic radio-navigation system was proposed by R. J. Dippy in 1937 and later implemented as the British “Gee” System in early 1942.<sup>2</sup> This system was intended to assist bomber navigation in World War II and consisted of “master” and “slave” transmitters located approximately 100 miles apart. Mr. John Alvin Pierce was also pursuing this concept at MIT Radiation Laboratory around the same time, and he is generally credited as being the father of LORAN in the United States.

LORAN-A operated at frequencies between 1,850 and 1,950 kHz, and featured groundwave coverage of some 400 to 800 miles from the transmitting stations during the daytime, and skywave coverage at distances of up to 1,400 nautical miles (NM) at night. The accuracy of LORAN-A fixes was approximately 1 NM for groundwave reception and as poor as 6 NM for skywave reception.

Urgent wartime needs spurred the development of LORAN in the United States. By the end of October 1942, the Navy had set up the “LORAN School” to train navigation officers and quartermasters, LORAN receiving equipment maintenance personnel, and LORAN ground station operating personnel. By 1943 the Coast Guard was operating its first chain of transmitters (later called the standard LORAN or the LORAN-A system) in the United States. When complete, the initial LORAN-A system consisted of eight chains spanning the Atlantic and Pacific Oceans.

NAME	ON-AIR 24-HOURS/DAY <sup>3</sup>
1. Western Aleutians	2/17/44
2. Palua Morotai	4/14/45
3. Bering Sea	12/4/44 (when St. George replaced Cape Sarichef)
4. Phoenix	12/16/44
5. Marshalls	12/16/44
6. Marianas	12/26/44
7. Palau Morotai	4/14/45
8. Japan	9/1/45
9. China Sea	WORK CEASED LATE 11/45

By the close of World War II, at least 75,000 receivers had been distributed, as well as 2.5 million LORAN charts. Some 70 transmitters were in operation offering nighttime coverage of over 30 percent of the earth’s surface.

LORAN-A continued to operate after World War II, serving both military and civilian users. The Department of Defense (DOD) and other federal agencies directed postwar research to develop a more accurate and longer range

version of LORAN-A. Various improvements, with names such as LORAN-B, Cyclan, Cytac, ultimately culminated in the creation of the LORAN-C system, which was operational in 1957 and placed under Coast Guard control in 1958. LORAN-C offered greater accuracy and longer range than LORAN-A. Nonetheless, both LORAN systems operated in parallel for many years to ease the financial burdens on mariners equipped with LORAN-A receivers.

By 1974, however, the decision was made to phase out the LORAN-A system, and to designate LORAN-C as the primary navigation system for Alaska and the Coastal Confluence Zone of the United States. LORAN-A was finally phased out completely in 1980 in favor of LORAN-C, though some LORAN-A systems continued to operate in Canada until 1983 and in Japan as late as 1992.

4. LORAN-A IN ALASKA

Establishment of the first LORAN-A chain in Alaska began in 1941, concurrently with the development of chains in the Atlantic and Pacific oceans<sup>4</sup>. In September 1942 representatives from the U.S. Air Force and Radiation Laboratory surveyed sites in the Bering Sea and recommended the installation of LORAN-A sites at St. Matthew Island, St. Paul Island, and Umnak Island. As the United States successfully began to drive the Japanese out of the western Aleutians, implementation of the system became more feasible.<sup>5</sup>

On 28 January 1943 LCDR John F. Martin was designated Commanding Officer of the Bering Sea Chain and the Coast Guard was directed to build four stations.<sup>6</sup> The Bering Sea Chain consisted of a double master station at St. Paul Island, secondary (“slave”) stations at St. Matthew Island and Umnak Island, and a monitor site on St. George Island.<sup>7</sup> A monitor station was initially established in the lighthouse at Cape Sarichef in late 1943, but was decommissioned shortly thereafter in December 1944 because of poor electronics results. The monitor station was, therefore, relocated to St. George Island in the Pribilof Islands<sup>8</sup>.

On 12 April 1943, Construction Detachment “A” (ConDet “A”) and the first load of equipment set sail from Seattle for Dutch Harbor, which would serve as the base station for personnel and equipment destined for the LORAN stations under construction. On 21 May 1943 a ship left Dutch Harbor for St. Paul and construction was officially begun on the Bering Sea Chain.<sup>9</sup>

Despite severe weather and treacherous terrain, construction progressed swiftly and the Bering Sea Chain stations were completed in February 1944. The first radio signals were tested in October 1943, though 24-hour service was not available until 10 July 1944.<sup>10</sup> In addition to being the first LORAN chain in Alaska, this chain was also the first full-scale program in the country where the Coast Guard undertook both construction and operation of the chain.<sup>11</sup>

When all was said and done, this chain had required more than 1,400 tons of building material, electronics equipment, and tools.<sup>12</sup> Construction conditions had been brutal, with extreme weather conditions, treacherous terrain, and limited supplies. Construction at all four Bering Sea sites used heavy Army “cats” and tractors to remove the top layer of muskeg, “as the muskeg was so spongy that no permanent erection could be anchored to it.” Each tower required special guy wires to stabilize it against powerful winds. Access to the sites and water supplies were other obstacles faced by construction crews.<sup>13</sup>

On 11 August 1943, the Chief of Naval Operations directed LCDR John F. Martin to construct a second LORAN-A chain, the Western Aleutian Chain. The Aleutians lay very close to the most direct route between the United States and Japan, and it was decided that a LORAN-A chain in this section would provide critical navigational aid to sensitive naval and airborne missions.<sup>14</sup> This particular chain of all-weather radio-navigation aids proved especially useful to units raiding the Kurile Islands.<sup>15</sup>

The Western Aleutian Chain consisted of a master station at Attu (site #64), a “slave” station at Amchitka Island (site #63), and a monitor site at Adak (site #62).<sup>16</sup> Men and materials began to arrive at the construction sites in early November 1943, and by February 1944 the sites were on the air. They were, however, not functioning on a 24-hour-a-day basis until 8 June 1944.<sup>17</sup>

The Coast Guard continued developing LORAN-A sites in southeast Alaska through the 1950s as sort of a stop-gap navigational measure while the LORAN-C system was being developed and tested:

Cape Sarichef	1950
Ocean Cape	1951



Spruce Cape	1953
Biorka (AHRS XPA-295)	1956
Sitkinak	1960-78

These third generation LORAN-A stations were usually characterized by the use of prefabricated quonset huts that were often interconnected to provide a combined administration/electronics/quarters building. Additional, isolated quonset huts would be erected for storage. Spruce Cape and Cape Sarichef, used a different formula, however, with flat roofed, one- and two-storey, concrete, multi-use buildings.

The development of LORAN-C in 1957 marked the beginning of the end for LORAN-A stations in Alaska, however.

In 1979, over twenty years later, the Coast Guard finally decided to close all of the LORAN-A stations in Alaska to eliminate redundancy. The LORAN-A stations closed were: Attu, Adak, Cape Sarichef, Spruce Cape, Ocean Cape, Sitkinak, and Biorka. Except for Attu, which was converted into a LORAN-C station, Commanding Officers at each of these stations were directed to disconnect and disassemble electronics equipment, drop the tower and cut it into short lengths for disposal, prepare heavy equipment and/or vehicles for shipment, repair and spot paint buildings to prevent deterioration, drain all water systems, board up all windows and other windows as appropriate, prepare and crate other items identified for backhaul.<sup>18</sup>

Today, none of the structures or buildings of the 1944 Bering Sea or Western Aleutian Chains remain. From the 1950s chain, only portions of Cape Sarichef, Spruce Cape, and Sitkinak remain. Cape Sarichef and Sitkinak are abandoned and open to the elements. Spruce Cape is currently leased to the Navy for use as part of their Cold Weather Training facility.

**5. LORAN-A DURING THE COLD WAR IN ALASKA (1945-1989)**

Following World War II the United States and Soviet Union entered into a forty-five year period of highly strained foreign relations. This new type of world conflict centered on competitive ideologies, atomic arms development, military build-up, and the management of different spheres of influence. The United States developed its containment policy, or Truman Doctrine, while fears of nuclear attack became widespread. Now remembered as the Cold War, this fear materialized as a sophisticated national security plan and defense system. Part of this national security system included the defense of Alaska and her surrounding waters and islands.

The beginning of the Cold War has been defined as 1945, which marked the start of overt suspicion and latent hostility between the United States and Soviet Union. The two had emerged from World War II as competing world powers. As early as January 1945, secret plans were being made to build three large airfields on the Seward Peninsula to oppose Soviet airfield in Siberia; these airfields, however, were never built. Instead, as the Korean War reaffirmed the strategic importance of the North Pacific, existing bases were expanded to accommodate larger bombers.

During this period, Alaska was called the “Guardian of the North,” “Gibraltar of the North,” and “Top Cover for America.” The United States military invested massive amounts of time and money into Alaska’s military bases and operational readiness through nuclear testing and applied research in innovative technology. By the 1960s the facilities in Alaska were an integral part of North America’s air defense. The United States had invested in several programs in Alaska, such as Nike, the Distant Early Warning (DEW) Line, the North American Air Defense Command (NORAD), and the Alaska Communication System (ACS).<sup>19</sup>

**6. NATIONAL REGISTER ELIGIBILITY EVALUATION**

Today, all stations of both the 1944 Bering Sea and Western Aleutian LORAN-A chains have been dismantled. The remnants of the 1950s chain include Cape Sarichef, Sitkinak, and Spruce Cape. Ocean Cape/Yakutat has been disassembled.



### 6.1 SIGNIFICANCE OF LORAN-A WITHIN THE CONTEXT OF THE DEVELOPMENT OF AIDS TO NAVIGATION

The development of the Bering Sea LORAN-A Chain in Alaska in 1944 marked the first full-scale program for the establishment of a LORAN chain in which the CG undertook both construction and operation. It also marked the acceptance of LORAN-A as an effective aid to navigation, rather than an experimental technology.<sup>20</sup> As such the Bering Sea and Western Aleutian LORAN-A chains could be considered eligible for the NRHP under Criterion A (association with significant events). To date, however, the Coast Guard has been unable to locate any surviving structures associated with either of these chains. The later (1950s) LORAN-A Chain in southeast Alaska, however, does not qualify for listing in the NRHP under this context.

### 6.2 SIGNIFICANCE OF LORAN-A WITHIN THE CONTEXT OF WORLD WAR II IN ALASKA

The Bering Sea Chain and Western Aleutian Chain, both developed in 1944, played a significant role in the north Pacific campaigns at the end of World War II. For the first time, American vessels and aircraft could accurately navigate through inclement weather and darkness and, thereby, gain an advantage over their enemies. The Coast Guard, therefore, believes that, as a resource or property type, these first two Alaska LORAN-A chains (Bering Sea and Western Aleutian) could qualify for listing in the NRHP under Criterion A (association with significant events). To date, however, the Coast Guard has been unable to locate any surviving structures associated with either of these chains. The later (1950s) LORAN-A Chain in southeast Alaska, however, does not qualify for listing in the NRHP under this context.

### 6.3 SIGNIFICANCE OF LORAN-A WITHIN THE HISTORIC CONTEXT OF THE COLD WAR (1945-1989)

The development of LORAN-A in 1943 was spurred by urgent wartime need. Its operation as a virtually all-weather navigational system enabled unprecedented numbers of ships and aircraft to be navigated with an equally unprecedented accuracy during the latter part of World War II.<sup>21</sup> Its usefulness, however, extended well into the Cold War era (1945-89). Though this system had military origins, it was quickly adopted for civilian navigational purposes. Following World War II, the Coast Guard's mission shifted from military support as an arm of the U. S. Navy to providing navigational assistance to the general public, among several other civilian-oriented goals.

Between the end of World War II and the closure of the LORAN-A system (1974), LORAN-A was primarily maintained for civilian use to compliment the Coast Guard's peacetime mission of providing navigational assistance to all mariners, civilian or military. The development of additional LORAN-A stations in southeast Alaska was necessary to maximize coverage, but essentially served as a stop-gap measure while the LORAN-C system was being developed and tested. While LORAN-A may have provided navigational assistance to military vessels and aircraft engaged in Cold War activities, this involvement was incidental and secondary to LORAN-A's role as a civilian navigational aid.

At the same time, LORAN-A stations have not been identified as a significant property type in the Alaska Office of Historic and Archeology's draft, statewide Cold War context ("The Coldest Front: Cold War Military Properties in Alaska"). This context establishes the history the Cold War in Alaska and develops three of five themes related to this period: "Detect and Monitor," "Communicate," and "Intercept and Respond." The remaining two undeveloped themes are "Guard and Defend" and "Research." Significant property types within this context include Nike, the DEW Line, Ballistic Missile Early Warning System, the Cobra Dane Radar, and White Alice communication stations. Criteria for registration for these property types have yet to be established. As a civilian and military navigational aid system the LORAN-A sites would not fit into any of the five themes.

## 7. LORAN-A SITES

### 7.1 BERING SEA CHAIN

#### 7.1.1 ST. MATTHEW ISLAND – UNIT #5, CODE NAME “MIKE” (XSM-005)

St. Matthew Island is located 400 miles north of Dutch Harbor, deep in the Bering Sea, and consists of rolling hills and tundra. This LORAN-A “slave station” was situated atop a 50’ bluff overlooking the Bering Sea. In May 1943 the LORAN-A construction crew and materials arrived from Dutch Harbor, and despite severe weather and thick tundra, the station was on air and testing on 11 September 1943.<sup>22</sup>

When completed the site contained 6 quonsets, housed 23 men, and typified “slave stations” throughout Alaska:

“The complement of a typical slave station consisted of 23 men. The commanding officer was an ensign or junior grade lieutenant. There were 8 radarmen and 5 electronics technician’s mates standing regular watch. Two motor machinist’s mates were in charge of maintenance of power equipment. There were 2 radiomen for communications watches. Four seamen stood scope watches, served as mess cooks, and performed general station maintenance. There were also 2 ship’s cooks.”<sup>23</sup>

This station was disestablished sometime before 1979. The Coast Guard has been unable to locate additional information on the status of the structures, though it assumes that the structures were dismantled as per the terms of the Coast Guard’s permit to occupy the property.

The Island is now within the Bering Sea Unit of the Alaska Maritime National Wildlife Refuge, administered by the U.S. Fish and Wildlife Service. This Unit was established by Public Law 91-504, enacted on 23 October 1970.

#### 7.1.2 ST. PAUL ISLAND – UNIT #60, CODE NAME “PETER” (XPI-023)

This LORAN-A Station was located approximately 2.5 miles from the City of St. Paul on St. Paul Island, which is part of the Pribilof Islands in the Bering Sea NNW of Dutch Harbor, 750 miles southwest of Anchorage. This site was first developed after February 1945 as part of the war program when a radio direction finder station and accessory facilities (LORAN-A station) were established on this island for national defense purposes. The Coast Guard obtained a permit from the Department of the Interior for the development of LORAN-A on 150 acres of land on 15 February 1945.

At that time, the island’s “. . . very small pre-war population [was] concentrated at Village Cove, a natural harbor at the south end of the island. The site selected for the Loran station was on the most westerly point of the island. From Village Cove to this site a route 16 miles in length, had been selected by the original siting party. However, a more direct route was surveyed, cutting the distance to seven miles. A road existed for two miles of this latter route, but the balance of the distance was over rugged terrain, consisting of tundra heavily covered with volcanic boulders.” When completed, this LORAN-A station covered an area of approximately 1200’ by 1800’.<sup>24</sup>

That LORAN-A Station was disestablished and disassembled, the Coast Guard’s permit terminated, and the property transferred to the U.S. Fish & Wildlife Service (FWS) in 1950. By 1957 the Coast Guard neither owned nor operated any buildings on the site and the LORAN-A Station had “deteriorated beyond possible repair.” The Coast Guard did, however, continue to operate a radio beacon from FWS-owned space.

#### 7.1.3 UMNAK ISLAND – UNIT #40, CODE NAME “UNCLE” (SAM-038)

Umnak Island is located in the Bering Sea 150 miles from Dutch Harbor. The Army began construction an air station on the island in 1942 as part of the nation’s wartime efforts. The LORAN-A site was located at Cape Starr, 5 miles from the village of Nikolski.<sup>25</sup> Upon completion it was described as follows:

“The Loran Station was located upon a cape, the two sides facing the Bering Sea being at right angles to each other. From the sea, the land rose abruptly to a knoll having an elevation of about 300 feet, on which the antenna system was erected. About 200 feet away and also about 200 feet lower, were the



officers and crew's quarters, and galley. The power hut, storage hut, well, and water supply tank were separated from the other buildings, the entire group of buildings being sufficiently dispersed to reduce the possibility of damage from bombing. Machine gun emplacements overlooked the two sea faces of the site."<sup>26</sup>

The Coast Guard disestablished this site before 1979. The Coast Guard has been unable to locate additional information on the status of the structures, though it assumes that the structures were dismantled as per the terms of the Coast Guard's permit to occupy the property.

#### 7.1.4 CAPE SARICHEF (1943-1944, 1950-1977) (UNI-096)

The Coast Guard manages approximately 1,886 acres in the northwest section of Unimak Island, including Cape Sarichef. This island lies towards the eastern end of the Aleutian Chain and is within the Izembeck National Wildlife Refuge. The LORAN Station occupied a site approximately 400 feet southeast of a steep bluff above the Bering Sea. The first structure on the site was a lighthouse (1932), which was demolished by a Tsunami and replaced with a new light structure in the same location in 1946 (AHRS UNI-029). That structure was later abandoned and replaced with a modern automated light, immediately adjacent to the 1946 structure.

On 22 July 1943 the commanding officer of the LORAN station detachment left Dutch Harbor for Cape Sarichef, 80 miles to the northeast. "There was a light station at [the proposed site] with sufficient quarters to house the Loran manning personnel, and this materially lessened the construction problem." Construction commenced immediately and the site was completed "without incident."<sup>27</sup> The LORAN-A monitor site (Unit #25, code name "Yoke") was established at the site, but reception to and from that site proved to be so poor that the monitor site was promptly relocated to St. George Island in the Pribilof Islands on 4 December 1944.<sup>28</sup> This original monitor site left no impact on the site since the equipment and personnel were housed within pre-existing structures.

In 1950 the Coast Guard re-established a LORAN-A facility on the island at 54°36'N, 164°565'W, east of the lighthouse and former monitor site. This facility was a Single-A primary site, paired with Adak.<sup>29</sup> Structures at this second generation LORAN-A site were typical of those found at all LORAN-A sites:

- 125' transmitting antenna (guyed) = gone by 1986<sup>30</sup>
- Quonset Hut (32' x 28') = steel, blew down between 1986-89
- Station/operations building (90 x 190 + 68 x 104) = 2-story, 8" cinder block construction; 2nd floor = wood frame, engineering space, living and admin. areas, galley, LORAN equipment<sup>31</sup>
- Wood garage/workshop (54 x 37) = wood frame construction, 15 x 54 overhang on south side, DC shop, vehicle storage, houses Mercedes Benz Unimog truck<sup>32</sup>
- Lighthouse (20 x 34 x 12 (tall)) = "electronics building" with radio beacons, fog horn, main light, by 1986 housed "3 rusty generators," 6" concrete construction → new, automated light (6' x 6' x 10') in front of it, identical to one at Scotch Cap<sup>33</sup>
- Shed (8 x 12) = wood frame, concrete floor
- Pump House (11 x 11 x 10) = concrete
- Generator Hut (21 x 12 x 10) = concrete
- Building (10 x 14 x 10)

This second LORAN-A station was decommissioned in 1977, when the new LORAN-C system replaced the LORAN-A system. The U.S. Fish & Wildlife Service used the station as a biology laboratory between 1978 and 1980.<sup>34</sup> The property has been excess to Coast Guard needs since the mid-1980s.

Structures at the site today are the station building, the garage/workshop, the small shed, a water tower, and the two light structures. The grave and headstone of a Mr. Rosenberg are also located at the LORAN-A station at Cape Sarichef. This site is within a low split rail fence and has a date of 1918 on the headstone.

#### 7.1.5 ST. GEORGE ISLAND - UNIT #25, monitor site (XPI-022)

On 9 July 1944, with radio signals from Cape Sarichef becoming more and more unreliable, the Coast Guard quickly set up an alternate monitor site on a knoll southeast of St. George Village on St. George Island. A



construction crew left Ketchikan en route to St. George Island on 21 August 1944, and the station was fully operational and commissioned on 4 December 1944. "Not only were the electronics results satisfactory at this location, but the surroundings were such as to make the establishment of a permanent station quite feasible." This island had a practical road network, power, and a landing dock with a small derrick.<sup>35</sup>

The Coast Guard disestablished this site before 1979. The Coast Guard has been unable to locate additional information on the status of the structures, though it assumes that the structures were dismantled as per the terms of the Coast Guard's permit to occupy the property.

## 7.2 WESTERN ALEUTIAN CHAIN

### 7.2.1 AMCHITKA ISLAND (1944) – UNIT #63 (BAT-103)

Amchitka Island is located in the Aleutian Chain 180 miles west of Adak, within 60 miles of Kiska, and 250 miles east of Attu. The Army arrived on the island in January 1943 and began constructing an air station from which planes could run sorties and surveillance missions. Its proximity to Kiska, which had been occupied by the Japanese, made this island especially attractive from a strategic standpoint.<sup>36</sup> The Army completed its airstrip in February 1943, and the materials for the LORAN station arrived on 10 December 1943.<sup>37</sup>

The site selected for the LORAN-A station was located at St. Makarius Point on the edge of a bluff, far from the Army's airstation to avoid radio interference.<sup>38</sup> "The Loran received and transmitter poles occupied a large open area, with the edge of a bluff encircling it through nearly 260°. The living quarters and other buildings of the station were close by on the north."<sup>39</sup>

The site was located on land managed by the Army but permitted to the Coast Guard. The Coast Guard disestablished this LORAN-A station and cancelled its agreement with the Army before 1979. The Coast Guard has been unable to locate additional information on the status of the structures, though it assumes that the structures were dismantled as per the terms of the Coast Guard's permit to occupy the property.

### 7.2.2 ATTU – Unit #62 (1944) (ATU-214)

The LORAN Station at Attu occupies approximately 1,800 acres of land owned by the U. S. Fish & Wildlife Service (FWS). The property is partially within the Attu Battlefield National Historic Landmark (NHL) (AHRS-ATU-006), and it is also within the Aleutian Islands National Wildlife Refuge. The island is part of the Near Island Group and is the westernmost island of the Aleutian Island Chain.

Attu was inhabited by the Aleuts until it was seized by the Japanese on June 7, 1942. The Aleuts were either killed or were interned in Japanese camps. They were never returned to the island to live. American troops began efforts to retake Attu about a year later, making amphibious landings on May 11 and declaring the island secure on May 30, 1943. The fighting was some of the most fierce in the Pacific campaign, with 2,351 Japanese killed and 28 captured. American dead numbered 550, with 1,150 wounded and another 600 or so put out of action by illness, weather-related problems or accidents.

The Attu naval station was abandoned at the end of the war in 1945, though the Navy continued to use the facility until 1958 as a patrol base with radar picket planes landing on the air strip. The Air Force continued to operate their Camp Earle Air Force Auxiliary Field (82,400) on Attu until 1953 when they declared the property excess to their needs and transferred the property to FWS in 1954. All Air Force improvements were abandoned in place at that time.

Coast Guard presence on the island began shortly after the 1943 recapture of the island. Attu was the obvious choice for a LORAN-A navigational site because of its location only 100 miles from the USSR border. To put this further in perspective, Attu was as close to the northernmost Japanese Islands as the Philippines were to the southernmost Japanese Islands.<sup>40</sup> To expedite construction, Navy crews furnished quonset huts and materials and established a base camp and housing at Theodore Point landing prior to the arrival of the Coast Guard's LORAN construction crew.<sup>41</sup> As soon as the construction crew arrived, they erected three more quonset huts at Massacre Bay for storage and set about building a 2 ½ mile road from Massacre Bay to the LORAN-A site. "The first five hundred feet of the road took us through an Aleutian cemetery located under a dummy gun emplacement that the



Japs had abandoned a few months before. Desecrating an Aleut grave is a serious offense, but we were unaware of it until we started turning up human skulls and bones of prehistoric animals which had been, in turn, buried deep below ivory trinkets and tons of bird and fish bones. . . . The road was formally christened Hooligan Highway, and, when completed, was quite one of the engineering wonders of Attu.<sup>42</sup>

Despite extremely cold weather, blizzards, and deeply frozen ground, the LORAN-A master station was completed on Attu in February 1944 at Theodore Point, midway along the south side of the island.<sup>43</sup> Five years later (1948) that LORAN-A station was relocated to Casco Bay at Murder Point. In the 1960s the LORAN-A station was again relocated, this time to Massacre Bay where it occupied former Navy Buildings (52°50'N; 173°12'E). In 1975 the existing LORAN-C system replaced the original LORAN-A system. Today the LORAN-C station is the only permanently inhabited portion of the island, though groups of naturalists and conservationists periodically visit the island for several weeks at a time to study the diverse wildlife<sup>44</sup>.

The original, 1944 LORAN-A facility consisted of four concrete buildings, a variety of electronics equipment, and a transmitting antenna.<sup>45</sup> Today, the station building (1949) is all that remains of this facility.

The Station Building was constructed after the NHL's period of significance (June 1942 - May 1943) and does not contribute to the significance of the NHL. A phone conversation between Ms. Alice Coneybeer of the Coast Guard and Ms. Jo Antonson of the Alaska Office of Historic Preservation on 8 October 1997 confirmed that the LORAN-C station is not a contributing element to the NHL. The Station building is not associated with any significant individual(s) and does not have the potential to yield information (criteria B and D). It is, however, associated with post-occupation Naval development on Attu. This building was constructed between the airstrip and the piers and probably served as an administrative building/barracks for the occasional personnel that visited the island. The Navy's use of the island after 1943, however, is neither an "important moment in American history or prehistory" nor a "pattern of events or a historic trend that have made a significant contribution to the development of a community, State, or the nation." The Station Building, therefore, is not significant under Criterion A. The Alaska State Historic Preservation Office (SHPO) concurred with these findings in a letter dated 19 November 1997.

One archeological site (ATU-037) has been identified near the end of the airstrip, but its eligibility for listing in the NRHP has not yet been determined since no field testing has been performed.

### 7.2.3 ADAK - UNIT #64 (1944)

(ADK - 204)

The Adak LORAN-A station, located 400 miles east of Attu and 180 miles east of Amchitka, was the most easterly of the Western Aleutian Chain. It was situated on Cape Adagdak at 51°59'N, 176°36'W at an elevation of 1,200 feet, on a saddle of the hills, 340 feet above the nearest road.<sup>46</sup> The site consisted of 75 acres of Navy-managed land adjacent to Andrews Bay, 14 miles north of Naval Station Adak. The Navy permitted this site to the Coast Guard (permit #NOy(R) 45676, 3/13/51).<sup>47</sup>

On 28 August 1943 a command group called the Alaska Scouts arrived at Adak to find that the Japanese had already evacuated the island. They radioed back their information, and American troops immediately set sail for the island to establish a military base there. While the Navy was busily building an airfield and a base that would eventually support 90,000 troops, the Coast Guard set up a temporary construction base camp at Baxter Cove.<sup>48</sup> Materials were then taken by road as close to the site as possible, then carried via bulldozer over the steep terrain.<sup>49</sup> The site consisted of a 109', guyed transmitting antenna and three buildings: barracks/administration building, signal building, storage building.<sup>50</sup> The building sites were dug into the hillside and were well banked to reduce the total amount of surface exposed to the very high prevailing winds.<sup>51</sup>

The Navy decommissioned its station on the island in 1950 and 1951. The Coast Guard continued to operate its LORAN-A station quite a bit longer, though. In 1979, however, the Coast Guard disestablished the site, cancelled its permit with the Navy, and disassembled the LORAN-A site. Today, no structures from the LORAN-A site remain.

Loran A  
moved  
twice  
Replaced  
by  
Loran C  
-1975 /  
ATU -  
201



### 7.3 THIRD WAVE OF LORAN-A SITES IN ALASKA: CENTRAL/SOUTHEAST ALASKA CHAIN

#### 7.3.1 SPRUCE CAPE (1953) (KOD-751) DRES-S 11/19/97

The Coast Guard obtained 129 acres of land from the Army Corps of Engineers in 1953 for the establishment of a LORAN-A site on Spruce Cape on Kodiak Island, four miles north of the City of Kodiak (57°45'N; 152°15'W). The War Department had originally withdrawn this land from the public domain in the 1940s. That withdrawal had been relinquished by the early 1950s, however. The site is bounded on the east by the Kodiak Channel and on the north by Mill Bay.

This single-A primary station was paired with the Ocean Cape site near Yakutat. Its facilities included a 125' guyed transmitting tower; two interconnected quonset huts to provide living quarters, a galley, machinery, and LORAN equipment; and a separate quonset hut for storage.<sup>52</sup> The station was disestablished around 1972, at which time the transmitting tower was dismantled. Today, the two interconnected quonset huts (KOD-701) are permitted to the Navy, though they are abandoned, in poor condition, and slated for demolition. The third quonset hut has been removed.

#### 7.3.2 OCEAN CAPE/YAKUTAT (1951-1979) (YAK-089)

The Ocean Cape LORAN-A Station, also known as the Yakutat LORAN Station, was located at 59°29'N, 139°44'W on the Cape Phipps Peninsula, southeast of Yakutat, approximately 200 miles northwest of Juneau and 300 miles southeast of Anchorage. The site consisted of 520 acres which the Coast Guard used via permit from the U.S. Forest Service (USFS). The LORAN station was a double-A primary site, paired with the LORAN stations at both Biorka and Spruce Cape. The facilities initially consisted of a 109' guyed transmitting tower; two receiving antennas; two interconnected quonset huts that provided space for the offices, living quarters, galley, LORAN equipment, and machinery; a third quonset hut for storage; and a 16' by 50' mobile home for married quarters. Two additional dwellings were later built for more married quarters.

The Coast Guard disestablished this site and cancelled its permit with the USFS in 1979. As per the terms of the permit, the Coast Guard removed all structures and restored the site. All that was left was the concrete slab of the storage quonset hut and the buried utility lines.<sup>53</sup>

#### 7.3.3 BIORKA (1956) (XPA-295) DRES-S 2/21/96

The Biorka Island LORAN-A Station was established in 1956 and was located at 56°51'N, 135°32'W, on the westernmost tip of the island. The site contained approximately 784 acres and was southwest of Sitka. It was a double-A slave station, paired with the LORAN stations at Ocean Cape and Gray Point (Canada). Its facilities included a 125' guyed transmitting tower; two interconnected quonset huts to provide quarters, garage space, a galley, a machinery room, and space for LORAN equipment; two additional quonset huts that provided a carpenter shop, paint locker, and general storage; a pier; and two 23,500-gallon fuel storage tanks.<sup>54</sup>

This site was disestablished around 1979 and abandoned in place. In 1996, the buildings were removed as part of site restoration efforts at Biorka Island. The site was, however, photodocumented and recorded using Historic American Buildings Standards (HABS) as a guideline. That documentation is on file at the Alaska Office of History and Archeology.

#### 7.3.4 SITKINAK (1960-1978) (XTI-078)

The Coast Guard acquired 1750 acres of withdrawn land on Sitkinak Island, near Kodiak Island, by Public Order #2887, which was signed on 18 January 1963. (The State of Alaska owns the surrounding land on the island.) A LORAN-A station was promptly built on the site, but was disestablished in 1978. Today, the property is leased out for cattle grazing and only the station building remains standing, though it is in poor condition.

The Coast Guard's property includes a National Register-eligible archeology site on the shoreline.

## 8. REFERENCES

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## 9. ENDOTES

<sup>1</sup> The CCZ is defined as the area seaward of a harbor entrance to 50 nautical miles offshore or the edge of the Continental Shelf—100 fathom curve—whichever is greater. The CCZ, however, does not include the harbor.

<sup>2</sup> U.S. Coast Guard (USCG), "LORAN-C User Handbook (COMDTPUB P16562.6)," 1992.

<sup>3</sup> USCG, "The Coast Guard at War: Loran IV," Vol. II (1946), 202.

<sup>4</sup> Malcolm F. Willoughby, The U.S. Coast Guard in World War II (Annapolis, MD: Naval Institute Press, ND), 156.

<sup>5</sup> USCG, "Loran IV," Vol. II, 41.

<sup>6</sup> Ibid., 21.

<sup>7</sup> The monitor site was originally located at Cape Sarichef, but was relocated to St. George because of radio interference at Cape Sarichef. (Willoughby, 158).

<sup>8</sup> Willoughby, 158.

"The Bering Sea Loran group was to consist of three transmitting stations and one monitor station, on widely separated islands. The locations selected for the stations of this chain extended from Unmak, about midway of the Aleutian chain, in a generally northerly line into the Bering



Sea, passing through the Pribilof Islands, to a point about halfway to Bering Strait. This was a distance of about 550 miles, and all of the islands being about 300 miles from the mainland of Alaska.” (LORAN-A, VOL II, 23)

<sup>9</sup> Willoughby, 157; USCG, “The Coast Guard at War: Loran IV,” Vol. I (1946), 128, 133.

<sup>10</sup> USCG, “Loran IV,” Vol. II, 33.

<sup>11</sup> Willoughby, 156.

<sup>12</sup> USCG, “Loran IV,” Vol. II, 21

<sup>13</sup> USCG, “Loran IV,” Vol. I, 128-129.

<sup>14</sup> USCG, “Loran IV,” Vol. II, 19, 43.

<sup>15</sup> Willoughby, 159-60; USCG, “Loran IV,” Vol. II, 55.

<sup>16</sup> Willoughby, 159.

<sup>17</sup> USCG, “Loran IV,” Vol. I, 133, 139; USCG, “Loran IV,” Vol. II.

<sup>18</sup> USCG, 17<sup>th</sup> District, “Environmental Assessment (EA) for Closure of Alaska LORAN-A Stations” (May 1978), 1-2.

<sup>19</sup> Architectural Resources Group, *ISC Kodiak Cultural Resources Inventory*, Volume I, August 5, 1997.

<sup>20</sup> USCG, “Loran IV,” Vol. II, 19.

<sup>21</sup> Robert Erwin Johnson, *Guardians of the Sea* (Annapolis, MD: Naval Institute Press, 1987), 221.

<sup>22</sup> USCG, “Loran IV,” Vol. II, 29, 31, 33

<sup>23</sup> *Ibid.*, 53.

<sup>24</sup> *Ibid.*, 27.

<sup>25</sup> *Ibid.*, 31, 33.

<sup>26</sup> *Ibid.*, 33.

<sup>27</sup> USCG, “Loran IV,” Vol. II, 37.

<sup>28</sup> Willoughby, 158; USCG, “Loran IV,” Vol. II., 37, 39, 199.

<sup>29</sup> USCG, EA, 3.

<sup>30</sup> *Ibid.*; Ocean Technology Ltd., “Cape Sarichef, Defense Environmental Restoration Account” (January 1986), 4-16.

<sup>31</sup> Colt Denfeld, Ph.D., *The Cold War in Alaska: A Management Plan for Cultural Resources* (U.S. Army Corps of Engineers, August 1994), 252; Ocean Technology, 4-16; USCG, EA, 3.

<sup>32</sup> Denfeld, 252; Ocean Technology, 4-5, 4-16; USCG, EA, 3.

<sup>33</sup> Ocean Technology, 4-5, 4-16.

<sup>34</sup> Denfeld, 252.

<sup>35</sup> *Ibid.*, 37.

<sup>36</sup> *Ibid.*, 41; Willoughby, 160.

<sup>37</sup> “The Army had landed on Amchitka on 12 January, 1943, and the Army Engineers had then begun the construction of what soon became a major base there. A fighter strip had been completed on 16 February, and shortly thereafter Army planes began bombing of Kiska. The Aleutian weather constituted a difficulty, but construction otherwise proceeded normally. The cargo for the Loran station was landed there about 10 December [1943].” (USCG, “Loran IV,” Vol. II, 53)

<sup>38</sup> Willoughby, 160; USCG, “Loran IV,” Vol. II, 53, 199.

<sup>39</sup> USCG, “Loran IV,” Vol. II., 53.

<sup>40</sup> *Ibid.*, 41.

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<sup>41</sup> Ibid., 45.

<sup>42</sup> USCG, "Loran IV," Vol. I, 135.

<sup>43</sup> USCG, "Loran IV," Vol. II, 5, 51; USCG, "Loran IV," Vol. I, 133.

<sup>44</sup> Willoughby, 159; USCG, EA, 3.

<sup>45</sup> USCG, EA, 3.

<sup>46</sup> Willoughby, 159; USCG, "Loran IV," Vol. I, 138; USCG, EA 3.

<sup>47</sup> USCG, EA, 2.

<sup>48</sup> USCG, 17<sup>th</sup> District, "General Information Relating to the Loran Transmitting Station, Adak," (1 July 1976).

<sup>49</sup> USCG, "Loran IV," Vol. I, 133.

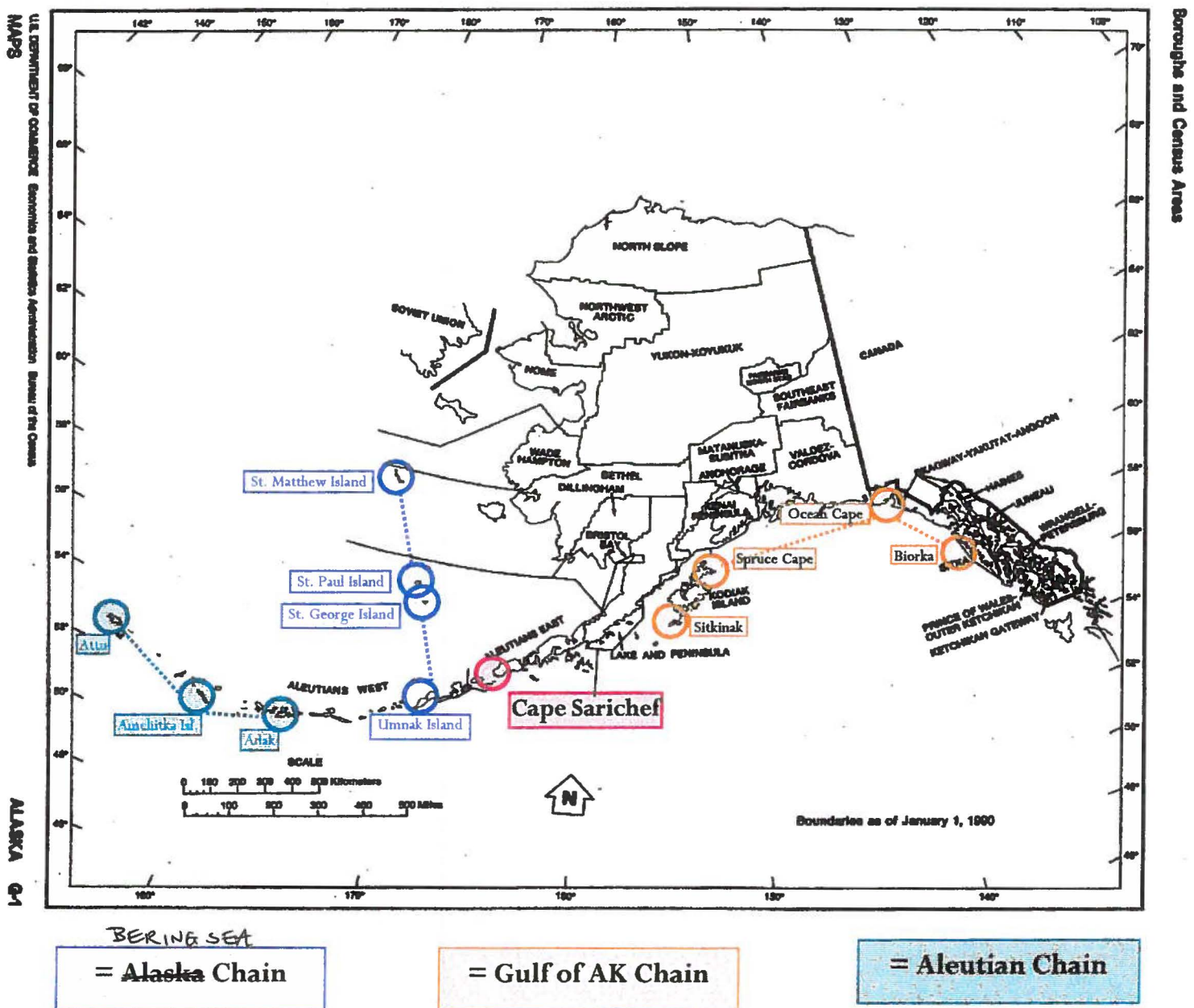
<sup>50</sup> USCG, EA, 3.

<sup>51</sup> Willoughby, 159.

<sup>52</sup> USCG, EA, 3-4.

<sup>53</sup> USCG, EA, 2, 4, 7; Denfeld, 252.

<sup>54</sup> USCG, EA, 4.



mapped

BERING SEA

173°E

20'

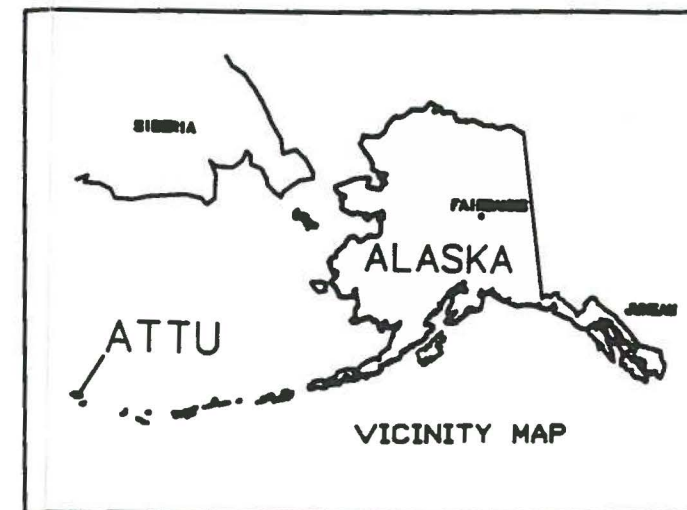
20'

40'

53°N

53°N

ATTU ISLAND



ATTU-214  
- C486

LORAN-A  
Attu

AGATTU STRAIT

LEGAL DESCRIPTION-PLO 1949

ATTU ISLAND: THAT LAND LYING SOUTH OF  
LATITUDE 52°52'00" N. BETWEEN LONGITUDE  
173°04'00" E., AND LONGITUDE 173°14'00" E.  
THE AREA DESCRIBED CONTAINS APPROXIMATELY  
11,670 ACRES.

PROPERTY LINE

REVISION	DATE	APPD.	
U.S. COAST GUARD SHORE MAINTENANCE DETACHMENT JUNEAU, ALASKA			
CIVIL ENGINEERING			
DESIGNED -	U.S. COAST GUARD LORAN STATION, ATTU ATTU ISLAND ATTU, ALASKA		
DRAWN -			
TRACED -			
CHECKED -			
REVIEWED:	APPROVED: _____ DATE _____		
SUBMITTED	C.G. DRAWING No. S-3071		
DRAFTING & DIGITIZING BY: TECHNOLOGY PLUS JUNEAU - ALASKA		SCALE: 1:125,000 SHEET 1 OF 2	

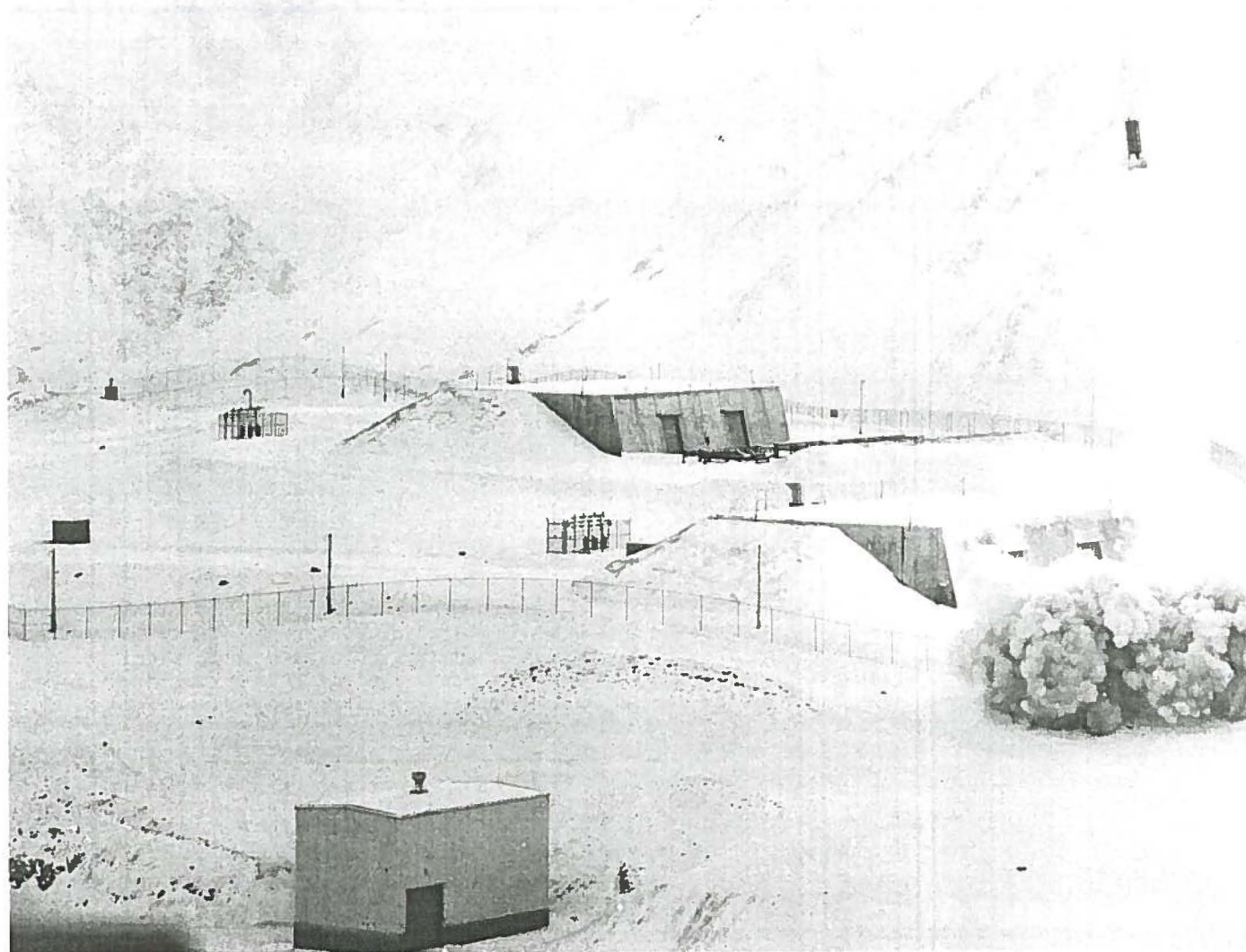


See AHRs grey literature  
for complete document



US Army Corps  
of Engineers  
Alaska District

## THE COLD WAR IN ALASKA: A MANAGEMENT PLAN FOR CULTURAL RESOURCES



# STATE OF ALASKA

## DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS AND OUTDOOR RECREATION  
OFFICE OF HISTORY AND ARCHAEOLOGY

TONY KNOWLES, GOVERNOR

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FAX: (907) 269-8908

April 8, 1999

FILE: 3130-1R US Coast Guard  
3330-6  
3330-6N Various

Alice Coneybeer  
U.S. Coast Guard, MLCP (se)  
Coast Guard Island, Bldg. 54D  
Alameda, CA 94501-5100

Dear Ms. Coneybeer:

The State Historic Preservation Officer concurs with your finding the early LORAN-A stations as a potentially eligible property type under Criteria A: for their association with the development of early radio-navigation in the World War II effort. The period of significance for this property type is 1943-1945, when the first stations were constructed and put into service. LORAN-A stations that fall in this period of significance are:

- ✓ St. Matthew Island - Unit #5 (~~XSM-XXX~~) XSM-00005
- St. Paul Island - Unit #60 (~~XPI-021~~) XPI-00023
- ✓ Umnak Island - Unit #40 (~~UMK-XXX~~) SAM-00038
- Cape Sarichef (~~UNI-XXX~~) UNI-00096
- ✓ St. George Island - Unit #25 (~~XPI-XXX~~) XPI-00022
- ✓ Amchitka Island - Unit #63 (~~RAT-XXX~~) RAT-00103
- Attu - Unit #62 (~~ATU-201~~) ATU-00214
- ✓ Adak - Unit #64 (~~ADK-XXX~~) ADK-00204

A number of these stations have been determined not eligible for listing in the National Register of Historic Places under earlier evaluations. These are:

St. Paul Island - Unit #60 (XPI-021) SHPO concurrence of not eligible 11/19/97;  
Cape Sarichef (~~UNI-XXX~~) UNI-00096 SHPO concurrence of not eligible 10/09/98; and  
Attu - Unit #64 (ATU-201) SHPO concurrence of not eligible 11/19/97.

Based on the information provided in your 1998 submittal, I am not able to evaluate LORAN-A stations at: St. Mathew Island - Unit #5, Umnak Island - Unit #40 (UMK-XXX), St. George Island - Unit #25 (XPI-XXX), Amichitka Island - Unit #63 (RAT-XXX), and Adak - Unit #64 (ADK-XXX). Evaluation is hampered by a lack of understanding of what remains may be present. The determination that these are not eligible for listing in the National Register of Historic Places is based on "it assumes that the structures were dismantled as per the terms of the Coast Guard's permit to occupy the property." Without knowledge of the condition of these sites, it is not possible to evaluate them for eligibility.

FILE: 3130-1R US Coast Guard  
April 8, 1999  
Page 2 of 2

00089  
The LORAN-A stations at Spruce Cape (KOD-751), Ocean Cape/Yakutat (YAK-~~XXX~~), Biorka (XPA-295) and Sitkinak (KOD-~~XXX~~) were constructed after the period of significance. Spruce Cape (KOD-751) was determined not eligible for listing in the NRHP November 19, 1997. Biorka (XPA-295) was determined eligible for listing in the NRHP by the U.S. Army Engineers - Alaska Engineering District with SHPO concurrence 2/21/96. Since that time, Biorka LORAN station was architecturally recorded and demolished. Biorka's determination of eligibility was based on information available at that time. I concur that Ocean Cape/Yakutat and Sitkinak stations are not eligible for listing in the NRHP.

If you have questions, contact Russ Sackett at 907-269-8726.

Sincerely,



Judith E. Bittner  
State Historic Preservation Officer