

U.S. NAVAL BASE, PEARL HARBOR, FORD ISLAND 5-INCH
ANTI-AIRCRAFT BATTERY, SOUTH GUN EMPLACEMENT
(U.S. Naval Base, Pearl Harbor, Naval Station Ford Island)
(Battery No. 7, Oahu 5-Inch Naval Antiaircraft Shore Batteries)
Pearl Harbor
Honolulu County
Hawaii

HAER No. HI-85-C

BLACK & WHITE PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
U.S. Department of the Interior
National Park Service
Oakland, California

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Location: Ford Island
Pearl Harbor National Historic Landmark
City and County of Honolulu, Hawaii

USGS 7.5 minute series topographic map, Pearl Harbor, HI, 1999.
Universal Transverse Mercator (UTM) coordinates:
04.608380.2363070.

Date of Construction: 1942-1943

Designer: Honolulu District Engineer, U.S. Army Corps of Engineers.

Builder: Navy provided initial construction work force – personnel from vessels damaged in the Pearl Harbor attack. Battery was completed by Honolulu District Engineer, U.S. Army Corps of Engineers.

Owner: United States Navy

Present Use: Abandoned, re-covered with earth.

Significance: This antiaircraft battery gun emplacement and its battery command center are associated with the hasty construction of nine 5-inch antiaircraft defensive positions in the months after the 7 December 1941 Japanese attack on Pearl Harbor, when an invasion of Oahu was thought to be imminent. Some of the 5-inch guns and gun directors used in the batteries were salvaged from ships damaged and/or sunk during the attack, possibly including the 5-inch guns of this battery.

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Date of Report: November 2008

DESCRIPTION

During excavations for utility lines associated with new housing on Ford Island, which lies within the Pearl Harbor National Historic Landmark, the remains of three structures (one command center and two gun emplacements for 5-inch¹ antiaircraft guns) were unearthed. These three structures comprise a portion of an antiaircraft battery, one of nine that were constructed during the months after the Pearl Harbor attack. Some of these antiaircraft shore batteries used 5-inch guns that were salvaged from Navy ships damaged or sunk during the attack. The three structures were discovered at the north end of Ford Island. The roads in this portion of the island have been altered numerous times in recent years. These structures were unearthed at a location approximately 500' east of the current traffic circle at the intersection of Ford Island, Chaffee, and O'Kane Boulevards. They had been covered by about three to four feet of overburden. The surface above the three structures had recently been paved or planted with landscaping, due to the construction of a different traffic circle, around the time of the opening of the Admiral Clarey Bridge in April 1998.

For descriptions of the other structures unearthed, see their associated HAER reports:

HAER HI-85-A, U.S. Naval Base, Pearl Harbor, Ford Island 5-Inch Antiaircraft Battery, Command Center.

HAER HI-85-B, U.S. Naval Base, Pearl Harbor, Ford Island 5-Inch Antiaircraft Battery, East Gun Emplacement.

For historical context information on this antiaircraft battery see the overview report:

HAER HI-85, U.S. Naval Base, Pearl Harbor, Ford Island 5-Inch Antiaircraft Battery

The south gun emplacement is located about 68' south of the battery command center and about 112' southwest of the east gun emplacement. The south gun emplacement has an irregularly shaped footprint with overall dimensions of about 29' x 24'. The structure is centered on a thick concrete block (gun block), 14'-8" square and a minimum of 4'-0" thick. Around most of the gun block is a 4"-thick concrete slab with the remains of retaining walls at its irregularly shaped perimeter.

The gun block, imbedded in the earth to secure the gun during firing, was the largest feature of the 5-inch/25 anti-aircraft gun emplacement. Such gun blocks were noted as approximately "15 feet square and four and one-half feet deep, weighing some 76 tons."² The gun block at the south gun emplacement was partially excavated at its southeast corner to a depth of 4'-0" below its top surface, but the bottom of the gun block was not discernable.

Protruding from the top surface of the gun block, at its center, are a number of 1³/₄" bolts which secured a steel plate to the gun block. This plate replaced the deck piece which originally

¹ Navy guns are designated by their bore diameters. Because this term is used a type description, it is written as 5-inch, rather than using the quotation marks (5") employed for measurements in inches.

² John D. Bennett, "Oahu's World War Two 5-Inch Naval Antiaircraft Shore Batteries," *The Coast Defense Journal* (February 2007), 37.

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(Battery No. 7, Oahu 5-Inch Naval Antiaircraft Shore Batteries)
HAER No. HI-85-C (Page 3)

attached the gun mount to the ship. These bolts imbedded in the gun block are 7" high and are spaced 6" on center. Some of these bolts are covered by a T-shaped, table-like feature of cast concrete which was added after the gun and steel plate were removed. Although the concrete was cast on top of the place where the steel plate was mounted, enough of the bolts are exposed to show that the pattern is thirty-six bolts in a 5'-0" square, with nine bolts on a side. The steel plate that was secured to these bolts would have received the pedestal mount of the 5-inch gun. This mount bolted to the plate with a pattern of large bolts in a circle about 4'-7" in diameter.

At the center of the gun block, concealing some of the mounting bolts, is the added table-like feature of cast concrete with a T-shaped plan. It has a top surface 2'-2" above the gun block. The arms and stem of the "T" are each 2'-1" wide and the stem is 5'-9" long which gives an overall length of 7'-10". The length of the west-oriented arm of the "T" is 2'-0" and the length of the east-oriented arm is 1'-2". This gives the "T" an overall width of 5'-3". The top edges of the arms of the "T" are chipped away, but imbedded in the concrete at the stem end of the "T" are three $\frac{3}{4}$ " steel rods, two of which are bent but originally protruded above the top surface. One of these rods is threaded at its top end and retains a steel hex nut. This concrete feature was cast on the gun block to serve as the base for some other piece of equipment, possibly an antenna. This was after the gun, its pedestal mount, and steel plate base were removed.

At the south gun emplacement, the 4"-thick concrete slab and retaining walls do not encircle the gun block completely; they were either removed or were not constructed at the southeast corner. The edge of the gun block forms the perimeter of the structure's footprint for a distance of about 10' from the southeast corner extending both north and west. A reinforced concrete retaining wall is extant at the perimeter of all sections of the 4"-thick concrete slab. This wall has an uneven and broken top edge, which is typically 2'-4" higher than the slab. The retaining wall is typically about 1'-0" thick and has the faded and abraded remains of green paint on its smooth-surfaced interior side. The rough surface of the exterior side of the retaining wall and the smooth surface of the interior side indicate that it was cast with forms on the interior only; the edge of the excavated earth formed its exterior side. Vertical steel reinforcing rods, about $\frac{1}{2}$ "-diameter, are imbedded in the broken concrete top of the wall. These extend upwards, in some places approximately 2' higher than the wall remnants, indicating that the wall could have been about 4' high originally. At the northwest side of the structure is a 4'-0" wide opening in the retaining wall which provided access to the slab around the gun block. In the concrete slab near this opening is a 1'-0" square drain sump about 1'-6" deep that is covered by a steel plate.

On the 4"-thick concrete slab are three raised concrete pads which abut the interior side(s) of the retaining wall. One pad is located between the north side of the gun block and the retaining wall and has a flat top surface that is about 1'-0" higher than the slab. This extends 4'-0" from the retaining wall, almost to the edge of the gun block, and is 5'-7" wide.

The other two pads have sloped top surfaces; the direction of the slope of the pads is tangent to the rough circumference of the retaining walls. These pads have areas of chipped concrete about 5" wide on their edges nearest the gun block and edges adjoining the retaining wall. These chipped areas indicate where side walls extended up from the pads to support a concrete roof over the sloped pad. This formed a small enclosure holding a metal ready box filled with ammunition for the gun. The pads, which slope toward the opening of the enclosure and ready box, have heights of about 1' at their highest, sloping to about 5" heights at the original opening.

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(Battery No. 7, Oahu 5-Inch Naval Antiaircraft Shore Batteries)
HAER No. HI-85-C (Page 4)

Overall dimensions of the pads are typically 4'-0" wide and 3'-6" deep. Accounting for the 5" thick side walls, the pads could accommodate a ready ammunition box about 3' wide.

Three steel ready ammunition boxes and five (unattached) steel doors for ready boxes were unearthed at the site of the gun emplacements and command post. These are described in the command center report, HAER No. HI-85-A.

HISTORICAL CONTEXT

For historical context of this structure see the overview report for this antiaircraft battery, HAER No. HI-85, U.S. Naval Base, Pearl Harbor, Ford Island 5-Inch Antiaircraft Battery.

SOURCES

A. Architectural Drawings:

No drawings of the antiaircraft battery were located for this report.

B. Early Views:

Aerial photos of Ford Island taken during the war are available at the Hawaii State Archives, Admiral Furlong Collection.

C. Likely Sources Not Yet Investigated:

Additional records of the Hawaiian Department Engineer are located in Record Group 494, at the National Archives II, College Park, Maryland.

D. Bibliography:

Bennett, John D. "Oahu's World War Two 5-Inch Naval Antiaircraft Shore Batteries," *The Coast Defense Journal*, pp. 31-67, February 2007.

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_____. Memorandum to Ann Yoklavich, Mason Architects. "Ford Island A.A. Site," 23 July 2007.

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Lewis, E.R. and D.P. Kirchner. "The Oahu Turrets," *Warship International*. Vol. xxix, No. 3, 1992.

U.S. NAVAL BASE, PEARL HARBOR,
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(U.S. Naval Base, Pearl Harbor, Naval Station Ford Island)
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HAER No. HI-85-C (Page 5)

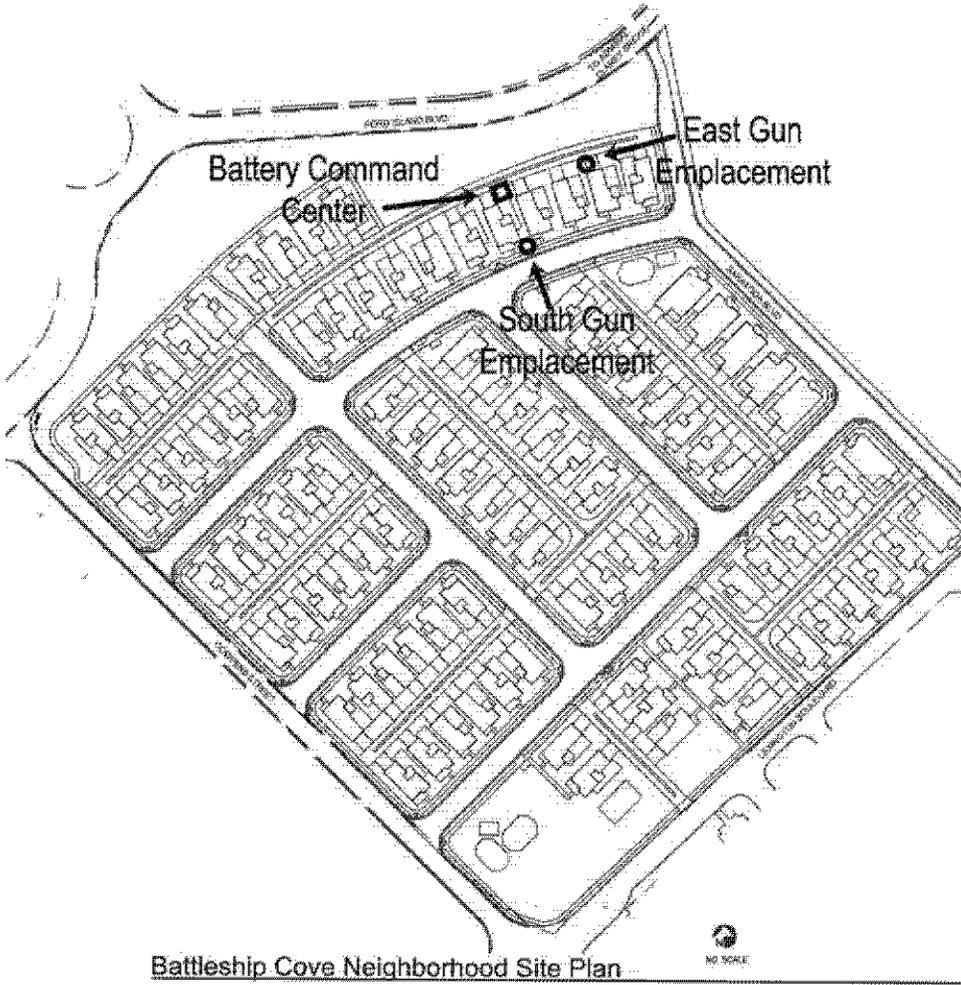
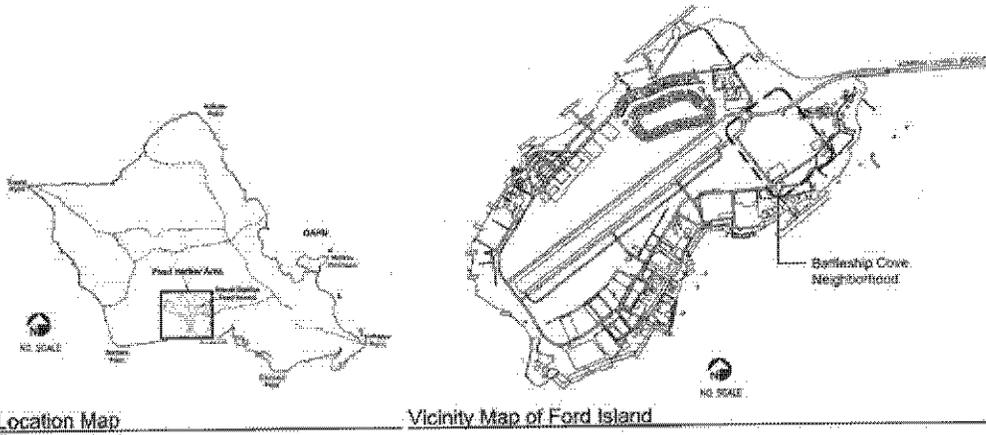
Madsen, Daniel. *Resurrection: Salvaging the Battle Fleet at Pearl Harbor*. Annapolis: Naval Institute Press. 2003.

PROJECT INFORMATION

This report was prepared to document the structures discovered and unearthed in March and April 2007 at Ford Island, Pearl Harbor National Historic Landmark, during the excavation phase of work to construct new military housing there. After recordation of the discoveries, the underground infrastructure that prompted their discovery was re-routed to avoid the structures and they were re-interred. All artifacts unearthed were placed back into the structures before they were covered. Large-format photography for this report was done in June 2007 by David Franzen of Franzen Photography, Inc. Field work and research were done by Dee Ruzicka and Ann Yoklavich, architectural historians with Mason Architects, Inc., in July and August 2007. John D. Bennett of Oahu, a frequent contributor to *The Coast Defense Journal* and a scholar of coast artillery in Hawaii, was consulted and provided information on the structures and on naval anti-aircraft shore batteries. Also, Tony DeGiulian, a naval weapons scholar and author of the website NavWeaps.com provided information regarding 5-inch/25 naval guns, mounts, and ammunition.

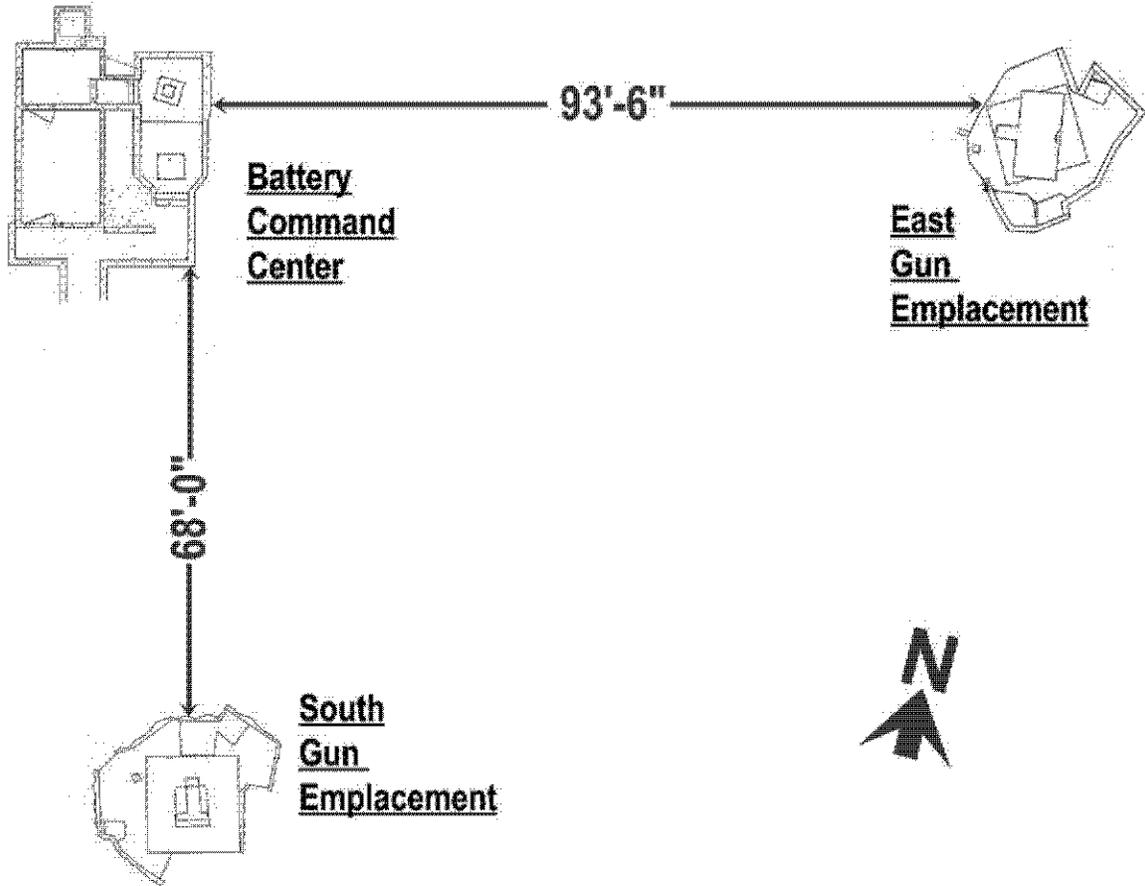
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(U.S. Naval Base, Pearl Harbor, Naval Station Ford Island)
(Battery No. 7, Oahu 5-Inch Naval Antiaircraft Shore Batteries)
HAER No. HI-85-C (Page 6)

Location map and site plan.



U.S. NAVAL BASE, PEARL HARBOR,
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HAER No. HI-85-C (Page 7)

Site plan showing the orientation of the three 5-inch anti-aircraft battery structures discovered in March and April 2007, with the distances between them. No scale.



U.S. NAVAL BASE, PEARL HARBOR,
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 (Battery No. 7, Oahu 5-Inch Naval Antiaircraft Shore Batteries)
 HAER No. HI-85-C (Page 8)

Sketch plan of 5 inch antiaircraft battery south gun emplacement. No scale.

