

# Chapter 3

## Archaeological Survey of WWII Landing Beaches on the West Coast of Saipan

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### Introduction

From April 10 to May 6, 2008, maritime archaeologists with SEARCH of Pensacola, Florida, conducted a submerged cultural resource remote sensing survey and diver identification of high-probability targets along the west coast of Saipan, CNMI. All work was conducted under contract to the CNMI Department of Community and Cultural Affairs, HPO. HPO is mandated under Public Law No. 3–39 to ensure the identification and protection of significant archaeological, historic, and cultural resources in the CNMI. The survey was supported with Historic Preservation Funds provided by the NPS, Department of the Interior.

The purpose of the investigation was to locate and identify high-probability submerged archaeological resources inshore and offshore of Tanapag and Garapan Lagoons, along the west coast of Saipan. It was anticipated that the majority of resources documented during the investigation would be associated with the WWII Battle of Saipan in 1944.

The project was conducted in accordance with the National Historic Preservation Act of 1996, as amended (PL 89–665); the Archaeological and Historic Preservation Act, as amended (PL 93–291); the Abandoned Shipwreck Act of 1987; and the Advisory Council on Historic Preservation revised 36 CFR Part 800 Regulations. The work was also conducted in compliance with Public Law No. 3–39, Commonwealth Historic Preservation Act of 1982, and Public Law No. 3–33, Removal of Human Remains, and is consistent with the goals and strategies outlined in *Pacific Preservation: The Commonwealth of the Northern Mariana Islands State Historic Preservation Plan, 2004–2008*.

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While the remote sensing survey was broad in nature, the focus was on the WWII resources. Although designated a National Historic Landmark (NHL) in 1985, the landing beaches had never been systematically surveyed for submerged cultural resources. This survey intended to be a baseline inventory for future investigations to build upon and to supplement findings from previous submerged cultural resource investigations conducted from the late 1970s through 2001 (see Section “Previous Submerged Cultural Resource Studies” below).

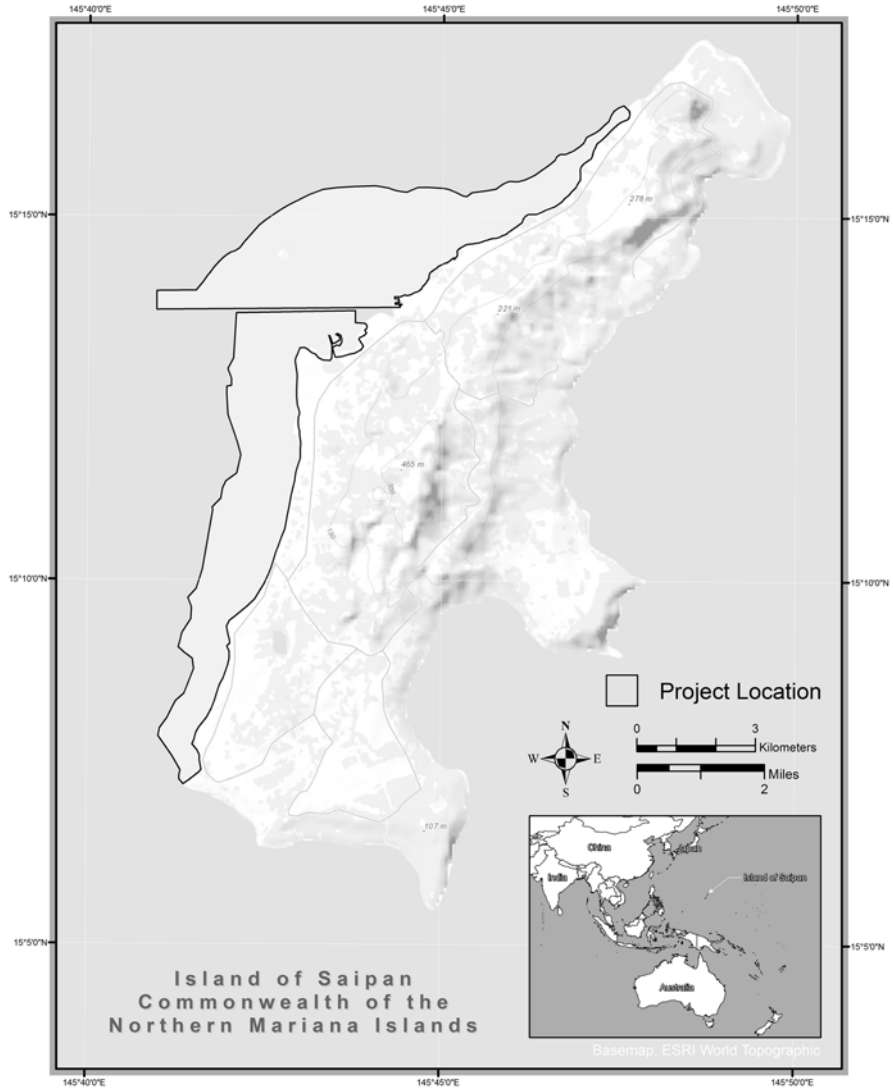
### ***Project Location and Environmental Setting***

The remote sensing survey covered the west coast of Saipan from Puntan Makpe (near Wing Beach) south to Agingan Point including all navigable portions of Tanapag and Garapan Lagoons, as well as 200 m outside the existing reef line (Fig. 3.1). The lagoons on Saipan are typical high-island barrier reef lagoons that form the largest lagoon complex in the island chain (Amesbury et al. 1979). Both lagoons range from 375 m (1,230 ft) to over 3.5 km (2.17 miles) in width. Water depths reach a maximum of 14 m (46 ft) in Tanapag Lagoon, but average less than 3 m (9.8 ft) throughout Garapan Lagoon (Amesbury et al. 1979). Much of the survey area inside Tanapag Lagoon was too shallow to navigate or was interspersed with coral heads and reef flats, making navigation difficult.

### **Previous Submerged Cultural Resource Studies**

There have been several previous submerged cultural resource surveys/assessments conducted in Saipan. Michael Thomas and Sam Price, of the Pacific Studies Institute on Guam, conducted the first survey in 1979/1980 for a proposed small boat harbor under contract to the US Army Corps of Engineers Pacific Ocean Division (Thomas and Price 1980). The literature search and visual/diver inspection of the “reef flat north of Micro Beach and the Fishing Base Dock and channel area west of Garapan” resulted in the documentation of objects “from the Japanese, WWII, and American periods” (Thomas and Price 1980:vi). Objects ranging from Japanese tugboats and harbor dredges to the remains of WWII steel pontoons and Japanese anti-aircraft guns were documented in the Micro Beach area. Off Garapan, steel pontoons, metal debris, and a Japanese channel marker/lighthouse were documented in or on the water (Thomas and Price 1980:13).

From October 28–30, 1983, the NPS conducted a preliminary assessment of its submerged lands associated with American Memorial Park (100 m [328 ft] from the high tide line) (Miculka and Manibusan 1983). Forty submerged cultural resources were located in the waters that encompass modern day Micro Beach, Smiling Cove Marina/Small Boat Harbor, Outer Cove Marina, and inner Tanapag Lagoon. The majority of resources identified include the remains of US pontoons and barges. The “most significant” find was the remains of 14 railroad cars and associated rails from the prewar Japanese sugarcane railroad (Miculka and Manibusan 1983:2).



**Fig. 3.1** Project location on the west coast of Saipan

Follow-on investigations by the NPS were carried out from December 15–17, 1983, in the same areas of American Memorial Park as above (Miculka and Manibusan 1983). The investigation resulted in the identification of additional pontoons and barges (Miculka and Manibusan 1983:1).

In 1984, the NPS in conjunction with the University of Guam’s Micronesian Area Research Center was contracted by the Defense Environmental Restoration Program to assess the submerged WWII remains in Saipan for their possible removal (Miculka et al. 1984). The survey documented the remains of a WWII Japanese freighter, Japanese submarine chaser or patrol boat, three US landing crafts, one

Japanese “Emily” flying boat, one Japanese “Jake” floatplane, and two US Sherman tanks. Recommendations included further identification on the majority of the sites and complete removal of 45 steel pontoons/barges recorded by the NPS in 1983 (Miculka et al. 1984:2).

In 1985, Pacific Basin Environmental Consultants (PBEC) conducted an underwater survey of Tanapag Lagoon for historic properties (PBEC 1985). The survey was conducted in conjunction with the Mañagaha Island Marine Park Management Plan and was supported by the HPO. The survey recorded 18 WWII sites in Tanapag Lagoon including airplanes, barges, boats, and debris as well as WWII resources on Mañagaha Island (PBEC 1985).

Beginning in 1986/1987, marine salvage firm Pacific Sea Resources salvaged the 1638 wreck of the *Nuestra Señora de la Concepcion* in the shallow waters off the south coast of Saipan near Agingan Point/Beach (Mathers et al. 1990).

The NPS team returned to Saipan in 1990 to measure, photograph, videotape, and document the WWII sites in the lagoons on Saipan (Miculka et al. 1990). In 1991, the NPS published the most comprehensive submerged cultural resource summary for Saipan and all of Micronesia. Toni Carrell’s report entitled *Micronesia: Submerged Cultural Resources Assessment* includes chapters and research on Saipan and summarizes the NPS’s previous research (Carrell 1991). The report details more than 50 shipwrecks/abandoned vessels on Saipan.

Beginning in 2001, the National Oceanic and Atmospheric Administration’s Office of Response and Restoration initiated the Abandoned Vessel Inventory for CNMI (Lord and Plank 2003). While the study was not historic in nature, the majority of abandoned vessels recorded (28 out of 33) are considered historic resources. Most are WWII steel pontoons/barges and freighters (Lord and Plank 2003:12–15).

### ***Landing Beaches, Aslito/Isley Field, and Marpi Point National Historic Landmark***

The WWII landing beaches on the west coast of Saipan were listed on the National Register of Historic Places and designated a NHL on February 4, 1985. The NHL encompasses 1,366 acres of land and water and is described as “The waters between the coral reefs and the land, including Lagunan Chalan Kanoa and Lagunan Garapan” (Thompson 1984). The NHL was designated based on the history of the area and the integrity of the landing beaches; no archaeological fieldwork was conducted.

### **Survey Expectations**

Shipwrecks, sunken aircraft, WWII debris, ammunition, and other associated material cultures were expected to be located within the project area given the extensive history of the Battle of Saipan. Due to the navigational hazard of the reef which

forms the western edge of both Tanapag and Garapan Lagoons, submerged cultural resources were also anticipated along the offshore portion of the outlying reef face. Modern infrastructure (such as pipelines and sewer outfalls), debris, and other contemporary finds were also expected within the survey area.

## **Remote Sensing Survey Equipment**

Previous submerged cultural resource investigations relied mostly on historic research and visual surveys and did not incorporate the use of marine remote sensing equipment to thoroughly document all potential sites associated with the Battle of Saipan. In an attempt to broaden the understanding of potential resources within the project area, SEARCH proposed the use of a marine magnetometer, side-scan sonar, and Differential Global Positioning System (DGPS) to accurately document all potential resources along the west coast of Saipan.

SEARCH utilized a Marine Magnetics Explorer magnetometer and Trimble DSM 232 DGPS, integrated with HYPACK navigation software for the remote sensing survey of Tanapag and Garapan Lagoons. The Trimble DSM 232 DGPS provided submeter accuracy for all targets located during the survey. SEARCH also operated an Imagenex side-scan sonar to assist in identifying and delineating high-probability magnetic targets documented during the survey. The magnetometer records the absence or presence of objects that contain ferrous metal, and the side-scan sonar supplements the magnetometer data by assisting in identifying objects (i.e., shipwrecks, aircraft, debris) exposed on the seafloor.

The HYPACK navigation software allowed the survey team to design and delineate survey areas, collect single-beam data (i.e., magnetometer, DGPS), process and edit magnetometer data, and generate final products such as magnetic contour maps useful in relocating potentially significant submerged cultural resources.

SEARCH conducted the remote sensing survey and diver investigations from a variety of vessels depending upon the location of the survey. A deep draft survey vessel was used for work offshore the existing reef system, whereas shallower draft vessels were used within Tanapag and Garapan Lagoons, including a motorized catamaran.

## **Remote Sensing Survey**

The remote sensing survey covered those areas within Tanapag and Garapan Lagoons (as well as offshore of the outlying reef) where navigation was possible with a motor vessel. Prior to conducting the survey, a series of parallel track lines were created for all of the survey areas in HYPACK. Survey track lines varied in length and were spaced at 100-foot intervals.

## *Analysis*

Upon completion of the remote sensing survey, the magnetometer data were edited and subsequently analyzed for potentially significant anomalies. Processing the magnetometer data involved reviewing each track line and ensuring there were no magnetic spikes that may affect the contouring of the edited data. This allowed the analyst the opportunity to identify individual magnetic anomalies including location, gamma deviation, duration (in feet), type (monopole, dipole, multicomponent), and source.

Once the magnetic data had been edited, all individual targets were tabulated and the data subsequently contoured. The contouring of the data allowed archaeologists the opportunity to identify associations between magnetic anomalies as well as determine the spatial extent of each anomaly. A series of criteria were then applied to each magnetic anomaly to determine their potential to represent submerged cultural resources. The magnetic signature of historic shipwrecks tends to have more sizable gamma deviations (versus small, isolated targets) and longer durations. Those targets that are associated with other magnetic targets on adjacent track lines also tend to be more indicative of shipwreck sites than those that are strictly isolated to one track line. However, archaeologists also paid careful attention to smaller, isolated magnetic anomalies indicative of submerged aircraft and/or munitions.

Many factors determine the detection and strength of a magnetic anomaly including mass of the source of ferrous metal, sensor to source distance, and orientation of the sensor to the source to name a few. While interpretation of magnetic anomalies is not an exact science, the amplitude or strength, signature, and duration aid in determining whether an anomaly is a result of a single-source or a cluster of magnetic objects. These considerations among others are taken into account to determine whether a magnetic anomaly signifies an archaeologically or historically significant cultural object that warrants further investigation.

Lastly, the side-scan sonar assisted in identifying and delineating high-probability magnetometer targets. The sonar data was helpful in delineating exposed shipwrecks, aircraft, as well as debris fields exposed on the seafloor. In addition, the sonar provided additional DGPS locational information for each target.

## **Diver Identification of High-Probability Targets**

SEARCH conducted diver identification on a variety of high-probability targets documented during the remote sensing survey. To relocate these targets, SEARCH utilized the contoured magnetometer data as well as the DGPS integrated with HYPACK navigation software. Once a target was marked with a surface float, divers utilized SCUBA to visually search the seafloor for the source of the anomaly. If the anomaly was not identified immediately, a steel hand probe was used to penetrate

the seafloor to a depth of four feet. Divers worked in cardinal directions from the surface float in an attempt to locate any buried targets. Once a target was located, a visual identification was made by the divers and photographs taken. Detailed dive logs were also kept for each target investigated.

## **Results**

SEARCH successfully completed the submerged cultural resource remote sensing survey and diver identification of high-probability targets.

### ***Remote Sensing Survey***

A total of 512 line miles (823 km) were surveyed during the investigation. This included all navigable waters within Tanapag and Garapan Lagoons as well as 200 m offshore (west) of the outlying reef. Results of the remote sensing survey located a total of 1,543 magnetic anomalies throughout the project area. The magnetic anomalies included small, single point targets indicative of small, isolated ferrous metal objects (i.e., munitions, anchors, modern debris) to large objects (i.e., shipwrecks, amphibious tractors, tanks, as well as modern debris) recorded on multiple track lines.

Once each anomaly was analyzed (including location, gamma deviation, duration, and type), the magnetometer data was contoured to further define each target. All magnetic anomalies were then prioritized based on total gamma deviation, duration, and type (monopole, dipole, or multicomponent) as well as comparison to findings from previous submerged cultural resource surveys. Due to a limited time frame for diver investigations, most anomalies selected for identification consisted of larger magnetic targets considered easier to identify quickly. However, some smaller isolated targets were also investigated to determine their source.

### ***Diver Investigations***

After prioritizing the magnetic anomalies, SEARCH conducted diver investigations on those targets thought to represent potentially significant submerged cultural resources associated with the Battle of Saipan. A total of 142 magnetic anomalies either were physically identified using SCUBA, were delineated with the side-scan sonar, or were previously identified during prior submerged cultural resource investigations.

## Tanapag Lagoon

Within Tanapag Lagoon, SEARCH archaeologists identified a diversity of cultural resources clearly associated with the Battle of Saipan. This included three Japanese Daihatsu landing crafts, a potential subchaser, a Japanese H8K3 “Emily” flying boat, a US TBM Avenger, an amphibious tractor (AMTRAC), airplane debris, possible seaplane tie-down anchors, anchor chain, and miscellaneous steam engine debris (Table 3.1).

## Garapan Lagoon

Diver investigations within Garapan Lagoon identified a wide variety of historic resources also likely associated with the Battle of Saipan. This included numerous shipwrecks (steamships, landing craft, pontoon boats, barges, and motor launches), M4A2 Sherman tanks, an AMTRAC, various anchors, shoreline structures (bulkhead/wharf), and miscellaneous iron debris (Table 3.2).

**Table 3.1** Magnetic anomalies identified within Tanapag Lagoon

Target identification	Number
Japanese Daihatsu landing craft	3
Japanese subchaser	1
Japanese freighter ( <i>Shoan Maru</i> )	1
Japanese H8K3 “Emily” flying boat	1
US TBM Avenger	1
AMTRAC	1
Miscellaneous airplane debris	2
Metal-reinforced concrete pads (seaplane tie-downs)	2
Anchor chain	2
Miscellaneous steam engine debris	1
Miscellaneous metal debris	4

**Table 3.2** Magnetic anomalies identified within Garapan Lagoon

Target identification	Number
Iron-hulled steamship	2
Barge	1
Landing craft	13
Pontoon boats	2
Motor launch	2
M4A2 Sherman tanks	3
AMTRAC	1
Anchors	4
Iron bulkhead	1
Concrete/metal wharf	1
Miscellaneous iron debris	13



### ***Informant-Reported Site***

A local informant reported the site of a suspected Japanese “Zero” aircraft south of Mañagaha Island on the reef face north of the Saipan Harbor Entrance Channel to SEARCH during the remote sensing survey. Investigation of the site revealed that the aircraft was actually a US TBM Avenger. The aircraft lies upside down with its landing gear extended into the water column. Remote sensing was not conducted over the site due to the extreme shallow water. This site was previously recorded in 1985 and 1991 (PBEC 1985:16 and Carrell 1991:508).

### **Public Outreach**

SEARCH, in conjunction with the online Museum of Underwater Archaeology (MUA), provided an online project journal of daily activities during the investigation. The mission of the MUA is to assist and promote the use of the Internet by ethical professional, student, and avocational underwater archaeologists by presenting research to the general public. The project journal highlighted aspects of the remote sensing survey, challenges encountered in the field, as well as results of diver investigations. To access the project journal, please visit [http://www.uri.edu/artsci/his/mua/project\\_journals/saipan/saipan\\_intro.shtml](http://www.uri.edu/artsci/his/mua/project_journals/saipan/saipan_intro.shtml).

To date, the project journal has had 11,782 page views by 9,039 unique visitors spanning over 50 countries. Of the last 500 visits to the journal, nearly 40 % (39.2 %) of visitors are from outside the United States indicating a diverse and global audience.

The authors also presented a lecture on the results of the project to the general public at the Visitors Center Theater at American Memorial Park in Saipan at the conclusion of the project. The well-attended lecture consisted of a PowerPoint presentation of the various cultural resources that were located during the investigation. The presentation was followed by a question and answer session and was sponsored by the NMHC and the HPO.

### **Conclusions and Recommendations**

While the submerged cultural resource remote sensing survey was broad in nature, the focus was on the WWII resources associated with the Battle of Saipan. The investigation intended to be a baseline inventory for future endeavors to build upon. Results of the remote sensing survey documented a total of 1,543 magnetic anomalies. Of these, a total of 142 anomalies were identified through diver investigation, refined with the side-scan sonar, or had been previously identified.

SEARCH made a series of recommendations to the CNMI HPO based on the results of the investigation. This included additional remote sensing surveys and

diver investigations to continue the identification and recordation of potentially significant anomalies documented during the current survey. A total of 1,396 magnetic anomalies remain unidentified along the west coast of Saipan, many likely associated with the Battle of Saipan. SEARCH also recommended that follow-on investigations include educational institutions and local dive clubs to assist in the development of a maritime heritage trail. It is a stated goal of the CNMI to provide visitors and residents alike the opportunity to learn about the history and culture of the islands and to provide for public participation in the preservation of those resources (Division of Historic Preservation 2003). Maritime heritage trails provide the opportunity to interpret resources to the diving and non-diving public. Topside displays and museum exhibits combined with the underwater resources enjoyed by divers will provide a tourism boost to the economy of Saipan.

SEARCH also proposed an expansion of the landing beaches, Aslito/Isley Field, and Marpi Point NHL boundary (officially listed on February 4, 1985). During the survey, SEARCH recorded 478 magnetic anomalies outside the existing NHL boundary. Several were identified during the investigation including nine US landing crafts, one AMTRAC, two US pontoons/barges, one 13-foot motor launch, and other WWII debris, all associated within the invasion of Saipan. The new nomination should update the status of previously identified resources, note non-contributing intrusions into the proposed boundaries, provide additional historical information not available in the 1980s, and include an expanded discussion of the submerged anomalies identified during the course of this survey, particularly those that are confirmed to be WWII artifacts.

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