Draft Environmental Impact Statement

Infrastructure Improvements at the Yap International Airport and the Yap Seaport

Yap State, Federated States of Micronesia

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Appendix J
Cultural Resources Survey Reports
(2025 DAF and 2023 Navy)
and National Historic Preservation Act
Section 106 Documentation (forthcoming)

J-2
Seaport Cultural Resources Survey Report



Final Field Report for Baseline Cultural Resources Surveys for the Sea Port in Yap, Federated States of Micronesia

Submitted to:

NAVFAC
Naval Facilities Engineering Systems Command

Naval Facilities Engineering Systems Command, Pacific

Prepared by:
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A JOINT VENTURE

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EXECUTIVE SUMMARY

This field report summarizes the results of baseline terrestrial and marine cultural surveys conducted in and near Tamil Harbor in the Federated States of Micronesia in 2023. Baseline cultural surveys were conducted between April 28 and May 9, 2023, to document the occurrence of features currently listed and with the potential to be eligible for listing in the National Register of Historic Places (NRHP). The terrestrial survey documented four cultural resources consisting of: 1) a Spanish colonial fortified structure that was later modified during the Japanese administration (1914–1945); 2) two traditionally built Yapese retaining walls (Temporary Sites 01 and 02); and 3) a mid-20th-century earthen mound upon which the Yap State Legislature was constructed in the 1980s. The Spanish colonial site and mid-20th-century earthen mound are within the potential Yap Port development area, and the two retaining walls abut the road around Chamorro Bay. The Spanish colonial site was listed in the NRHP in 1976. While the Cardno GS – AECOM Pacific Joint Venture's fieldwork and archival research support its listing, this report presents several avenues of additional research that would bolster the nomination. The two Yapese retaining walls were recorded at a basic level, which was sufficient for a recommendation of NRHP eligibility under Criterion D for the information each site may provide about Yapese settlement patterns. The mid-20th-century earthen mound is recommended as ineligible for listing in the NRHP due to its loss of several integrity characteristics. Using the data generated during this project, this report provides an archaeological sensitivity map of the Yap Port area and recommendations for possible future historic preservation actions that may be warranted.

Archaeologists conducted the marine cultural survey and investigated 30 targets. Of these 30 targets, 19 targets were shipwrecks, five were other submerged cultural resources such as potential piers or a crane, four were natural (non-anthropogenic) objects, and two were previously identified fish weirs (*aech* or *atch*) recorded by Jeffery and Pitmag (2010). Preliminary target boundaries were defined based on orthoimagery, diver surveys, and acoustic imagery, as available.

Based on observed characteristics and available data, Target 11 is recommended as eligible for listing in the NRHP under Criterion D for the significant information it may provide about World War II activities on Yap. Additionally, four targets (Targets 16, 23, 24, and 26) are recommended for treating as eligible for listing in the NRHP as individual resources pending additional information; additional field and archival research may result in amendments to these recommendations. Further, based on observed characteristics and available data, it is recommended to treat the one eligible and four potentially eligible individual resources in conjunction with 12 other targets (Targets 06–09, 12–13, 15, 20–22, 25, and 27) representing shipwrecks, isolated machinery, or other submerged cultural resources, such as possible piers, as eligible for the NRHP as part of a multiple-property submission or as contributing resources within a historical and archaeological district, pending additional information.

Based on observed characteristics and available data, it is recommended to establish avoidance of Targets 06–09, 11–13, 15, 16, 21, 22, and 25 by a minimum distance of 164 feet (50 meters) from each target boundary, and avoidance of Targets 23, 24, and 26 by a minimum distance of 328 feet (100 meters) from each target boundary. Target 20 and 27 may be associated with other targets and are fully encompassed by recommended avoidance buffers for other targets; therefore, additional avoidance buffers are not currently recommended. If avoidance proves to be infeasible, development of a tailored plan to minimize or mitigate potential adverse effects to historic properties is recommended. Minimization and mitigation measures may consist of additional archaeological investigation to better characterize the resource, which may result in a revision to the NRHP eligibility and/or recommended avoidance buffer.

Targets 10, 18, 19, and 30 are natural, non-anthropogenic features and are not historic properties. Target 14 is a portion of a modern track crane and is not a historic property. Targets 01–05 and 17 lack site

integrity and, therefore, are recommended as not eligible for listing in the NRHP. The two previously identified *aech* or *atch* (W48 [Target 28] and W49 [Target 29]) (Jeffery and Pitmag 2010) were not relocated and, according to local consultants, were removed in the recent past. As Targets 28 and 29 are no longer extant and, therefore, lack integrity, they are recommended as not eligible for listing in the NRHP. No further archaeological work is recommended for Targets 01–05, 10, 14, 17–19, and 28–30.

ACRONYMS AND ABBREVIATIONS

CAP JV	Cardno GS – AECOM Pacific Joint Venture
ENC	Electronic Navigational Charts
FSM	Federated States of Micronesia
GIS	Geographic Information System
GPS	Global Positioning System
HRG	high-resolution geophysical
in	inch
LCM	landing craft mechanized
MBES	multibeam echosounder
NAVFAC	Naval Facilities Engineering Systems Command
Navy	Department of the Navy, United States
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service (United States Department of the Interior)
NRHP	National Register of Historic Places
SDSFIE	Spatial Data Standards for Facilities, Infrastructure, and Environment
SEI	Sea Engineering, Inc.
U.S.	United States
YSL	Yap State Legislature
YSHPO	Yap State Historic Preservation Office

GLOSSARY OF YAPESE LANGUAGE TERMS

Aech/atch	Traditional fish weir
Chamog	Traditional structures made of stone and coral blocks
Daf/dayif	House platform
Dapal	Menstrual house
Factoria	Trade center
Faluw	Men's meeting house
Garita	Sentry box
Laach	Burmese rosewood tree
Liib	Place for making sennit cord
Pebaey	Community meeting house
Pilote	Brick column
Pilung	High caste
Pimilngaeyi	Low caste
Rai	Stone money disks
Remathau	Outer, neighboring islands
Sawei	System of formalized exchange of gifts and tribute that included high-valued items like pottery, stone, and lumber
Silleria	Hand-cut stone masonry or rough ashlar
Tanayboch	Erosion control retaining wall
Tibnaw	Family house
Udoud (Palauan)	Glass beads or traditional money beads, a form of currency
Ulung	Piled-rock trap (i.e., fish weir)
Wunubew	Raised sitting area

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1 Introduction

1.1 Background

The Federated States of Micronesia (FSM) is one of the three sub-regions of Pacific Ocean islands, which also include Melanesia and Polynesia (Figure 1-1). The FSM is composed of four states—Yap, Chuuk, Kosrae, and Pohnpei—that collectively include over 607 islands (CIA 2023). Yap consists of four main islands, Yap Island (Maraba'-Numagil), Gagil-Tamil, Maap, and Rumung (Figure 1-2). The outer 134 small, low coralline Yap islands span more than 100,000 square miles (259 square kilometers) and are collectively referred to as the outer or neighboring islands, or "Remathau" (FSM 2018).

Yap State's total land area is 46 square miles (119 square kilometers). The maximum elevation of Yap Island (Maraba'-Numagil) is 571 feet (174 meters), while the outer islands' maximum height is 16.4 feet (5 meters) (FSM 2018). Tamil Harbor is surrounded by coral reef and mangrove habitat. Yap Port is located on the north side of the largely developed peninsula and provides services for international and domestic cargo, fuel tankers, interisland passenger ships, and occasional longline-fishing vessels (Figure 1-3). Ships travel through a 1.5-mile-long (2.5-kilometer-long) reef passageway, Tamil Channel, to the 230-foot-long (70-meter-long) wharf in Yap Port.

People have lived on Yap for more than 2,000 years (Napolitano 2021) and was subject to colonial rule since the 19th century. European traders and missionaries sporadically visited Yap and its outer islands from the 16th to 18th centuries (Hezel 1979). In 1885, Spain purchased Blelaach, a small island off Colonia from a CHamoru woman living on Yap, whose husband received ownership from Nimar village. During the late 19th century, German merchants began transporting goods throughout the region, ushering in a new era of commerce and tension between Spanish and German economic and political interests. Later in 1885, Pope León XIII declared the Caroline Islands to be owned by Spain. In 1899, Germany purchased the Caroline Islands and the Northern Mariana Islands (present day Commonwealth of the Northern Marianas) (Lévesque 2005b, 354–355). Japan began military occupation of Yap in 1914 and officially assumed control of Yap as a protectorate in 1919 (CIA 2023; Yap Visitors Bureau, n.d.). Military installations including concrete foundations, buildings, harbor piers, and other types of infrastructure were built around Yap during a fortification effort from the Japanese administration until the United States' occupation of Yap in 1945 (DON 2022). Following the United States' campaign across the Pacific during World War II, Yap came under United States administration in the Trust Territory of Pacific Islands in 1947 (CIA 2023).

The Cardno GS – AECOM Pacific Joint Venture (CAP JV) prepared a cultural desktop analysis report in 2022 and used this for planning purposes to inform what historic properties and other cultural resources may exist in the terrestrial and marine cultural survey areas (DON 2022b). The CAP JV prepared a work plan and dive operations plan in 2023 that outlined proposed methodology, data management, reporting, planning contingencies, schedule, and personnel roles during the prescribed fieldwork (DON 2023a; CAP JV 2023a). This field report summarizes the cultural surveys that occurred between April and May 2023.

1.2 Purpose and Objectives of the Cultural Surveys

The purpose of the terrestrial cultural survey and marine cultural survey (remote sensing and targeted directed investigations) was to document and evaluate known and newly identified cultural resources within the cultural survey area, inclusive of marine areas, to determine their eligibility for listing on the National Register of Historic Places (NRHP). Potential effects on NRHP-eligible cultural resources (termed "historic properties" under the National Historic Preservation Act) must be considered during consultation for United States (U.S.) federal undertakings under Section 106 of the National Historic Preservation Act (54 U.S. Code § 306108) and its implementing regulations under Title 36 of the Code of Federal Regulations Part 800. The primary objective of the cultural surveys was to identify what resources exist within the port and associated survey areas in Yap in support of any environmental evaluations and consultations potentially required by laws, regulations, or policies.

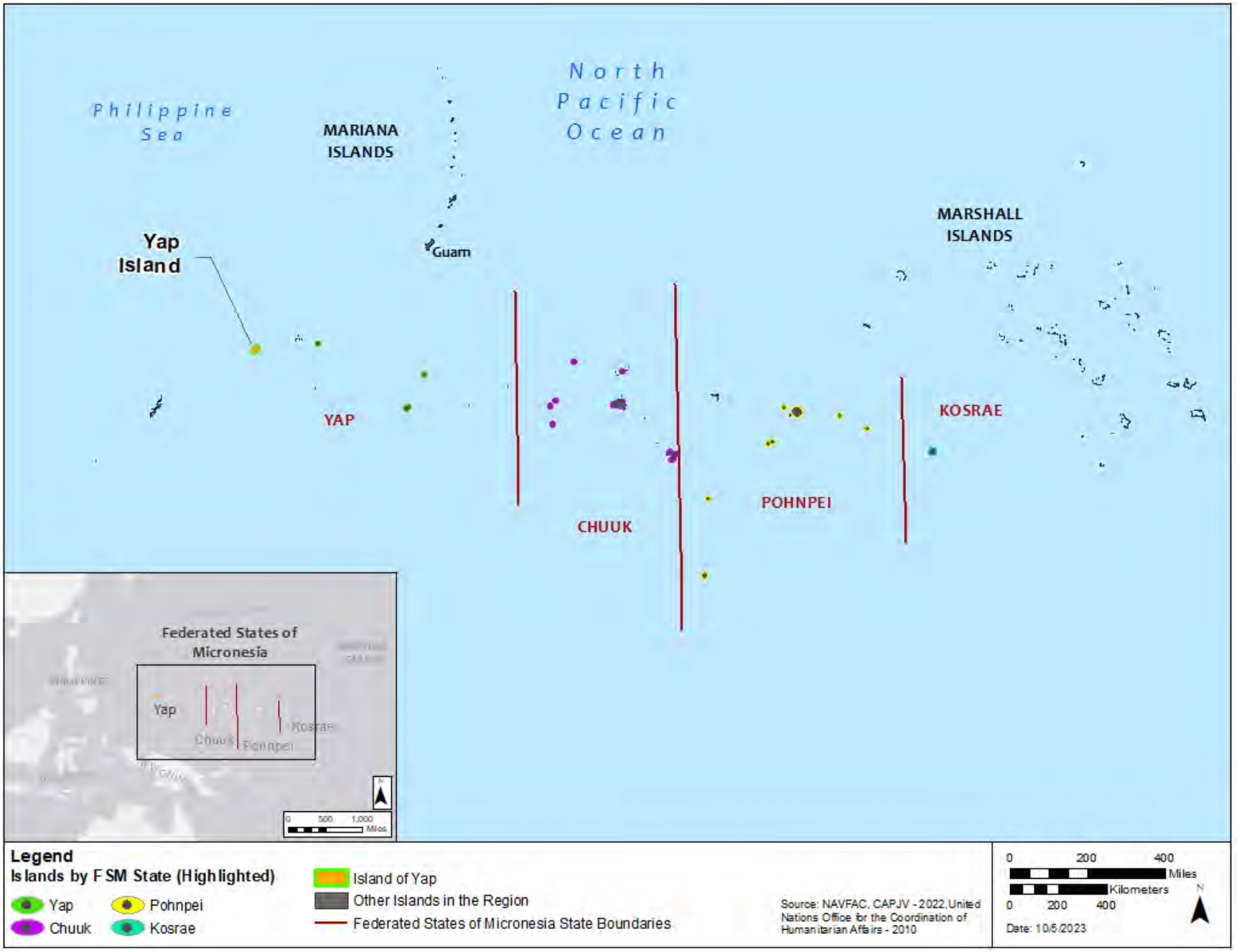


Figure 1-1 Federated States of Micronesia Location Map

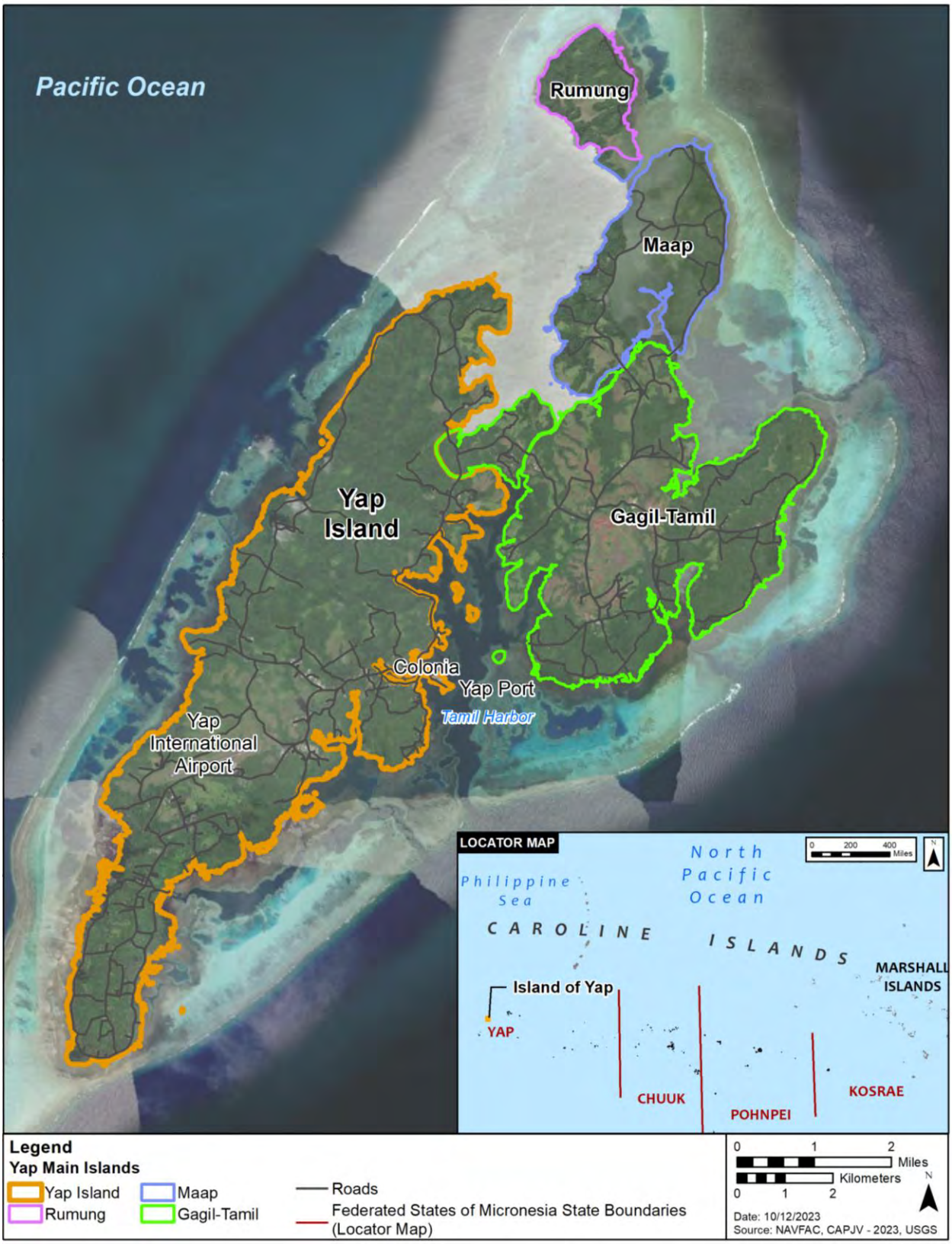


Figure 1-2 Yap Location Map

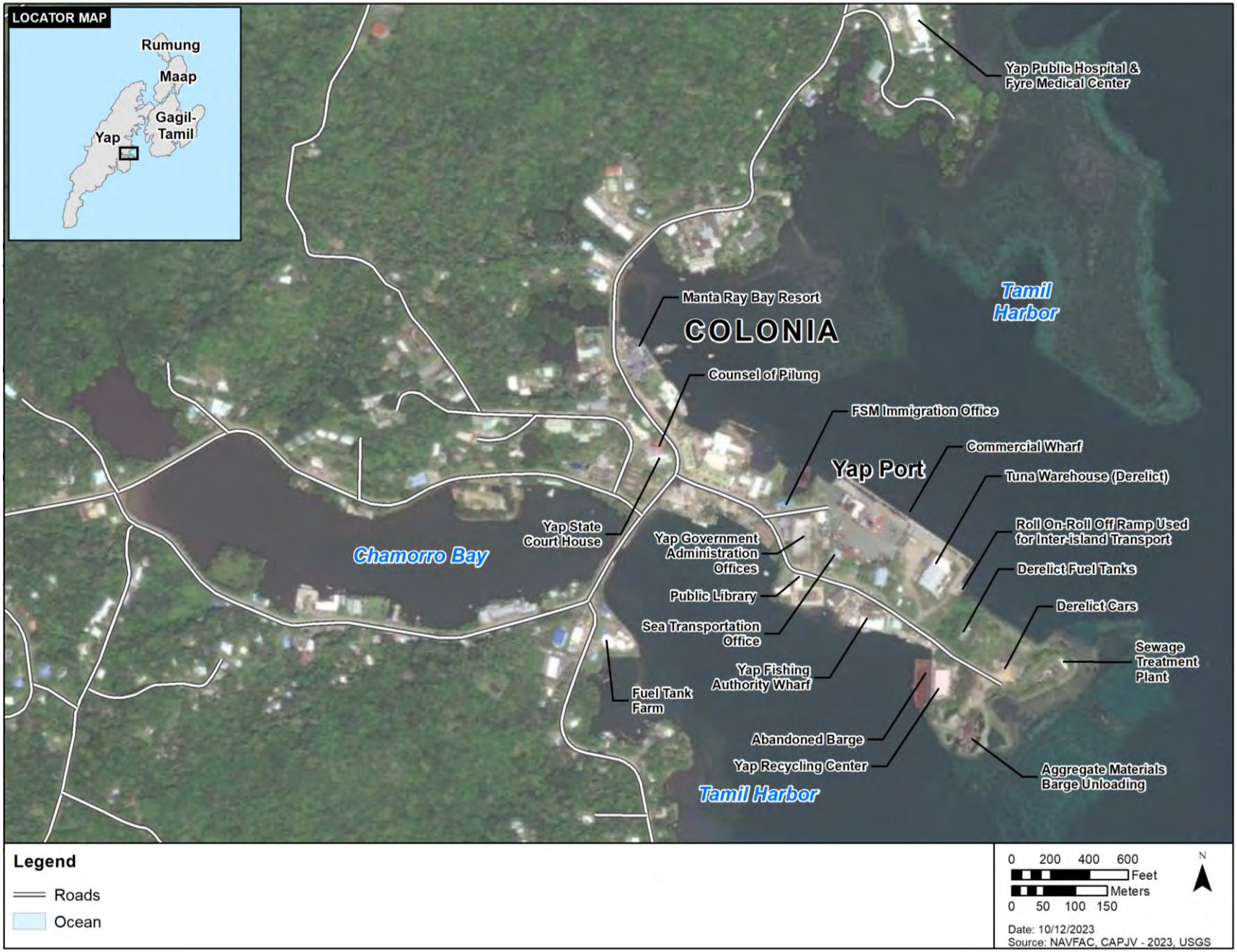


Figure 1-3 Yap Port Location Map

The survey report will provide the U.S. Indo-Pacific Command with the necessary information regarding harbor development on cultural resources and the appropriate mitigation measures to comply with U.S. federal, FSM, or Yap State environmental laws, regulations, and policies potentially applicable to federal actions.

1.3 Survey Area

The terrestrial cultural survey area was located on the southeast coast of Yap Island along the north side of a largely developed peninsula (Figure 1-3). For the purpose of this project, the terrestrial cultural survey area was divided into two distinct areas. The Yap Port Survey Area included approximately 20 acres (485,619-square-meters) on the developed peninsula where the Yap Port and numerous buildings are located. The Chamorro Bay Linear Survey Area was a loop along the approximately 7,034-linear-foot (2,144-linear-meter) public road around Chamorro Bay, including a smaller section of road that connects the Yap Port to the Chamorro Bay Linear Survey Area.

The marine cultural survey was located in the southeast waters of Colonia and totaled approximately 608.6 acres (246.3 hectares). For the purpose of this project, the marine cultural survey area was divided into seven distinct areas: Offshore Mooring (Survey Area 1); Tamil Channel (East and West) (Survey Area 2); Tamil Channel Entrance (East and West) (Survey Area 3); Yap Port (Survey Area 4); Yap Port-Southwest (Survey Area 5); Yap Port–Southeast (Survey Area 6); and Yap Port–North (Survey Area 7). In the field and in the respective results, Tamil Channel (East and West) (Survey Area 2) and Tamil Channel Entrance (East and West) (Survey Area 3) are presented as separate areas for their east and west sections (Figure 1-4).

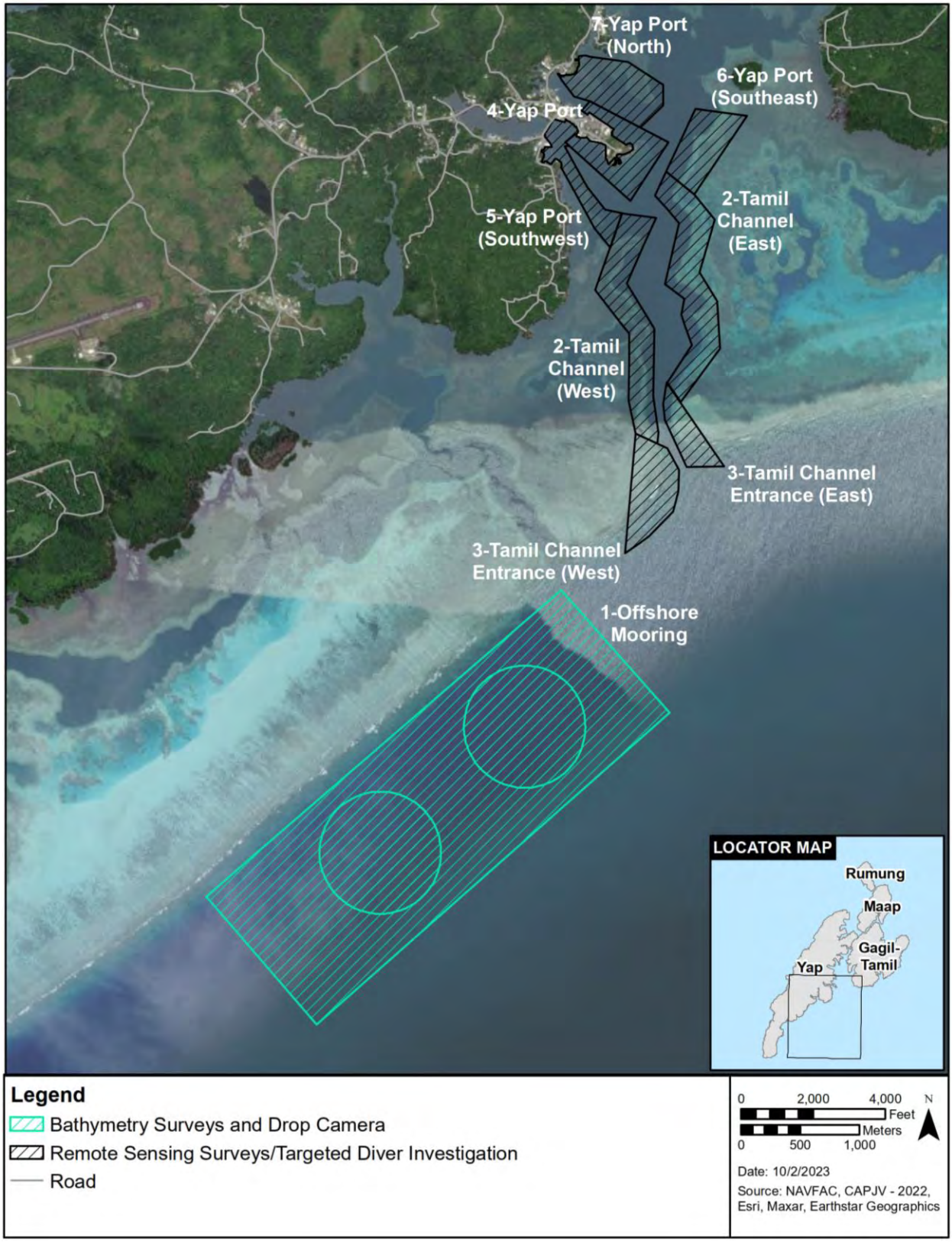


Figure 1-4 Marine Cultural Survey Area Location Map

1.4 Survey Schedule and Personnel

Terrestrial cultural surveys included survey mobilization and meeting with the Yap State Historic Preservation Office (YSHPO), which occurred on April 26, 2023, while directed investigations occurred from April 27 to May 2, 2023. Remote sensing surveys were conducted from April 26 to May 12, 2023. Marine cultural survey mobilization, on-island remote sensing data processing, and meeting with the YSHPO occurred from May 3 to May 5, 2023, while directed marine investigations occurred from May 6 to May 12, 2023.

Survey start/end times and weather descriptions for each survey day are included in Table 1-1 and Table 1-2.

Table 1-1 Terrestrial Cultural Survey Dates, Times, and Weather Conditions

Survey Date [a]	Start Time	End Time	Total Time (Hours)	Weather Conditions
April 27, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny with intermittent rain, high 80s (°F)
April 28, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny with clouds, high upper 80s (°F)
April 30, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny with clouds and heavy rains, high upper 80s (°F)
May 1, 2023	8:00 a.m.	4:30 p.m.	8	Cooler, breezy, overcast, mid-80s (°F)
May 2, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny, rainy, high 80s (°F)

Legend: °F = degree Fahrenheit.

[a] Survey date noted in Yap time zone (YAPT).

Table 1-2 Marine Cultural Survey (inclusive of Remote Sensing) Dates, Times, and Weather Conditions

Survey Date [a]	Start Time	End Time	Total Time (Hours)	Weather Conditions
April 26, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny with intermittent rain, high 80s (°F)
April 27, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny with intermittent rain, high 80s (°F)
April 28, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny with clouds, high upper 80s (°F)
April 29, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny with clouds, high upper 80s (°F)
April 30, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny with clouds and heavy rains, high upper 80s (°F)
May 1, 2023	8:00 a.m.	4:30 p.m.	8	Cooler, breezy, overcast, mid-80s (°F)
May 2, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny, rainy, high 80s (°F)
May 3, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny with clouds, scattered rain, high 80s (°F)
May 4, 2023	8:00 a.m.	4:30 p.m.	8	Hot, sunny with clouds, scattered rain, mid-80s (°F)
May 5, 2023	8:00 a.m.	4:30 p.m.	8	Hot, with multiple bands of heavy rain, mid-80s (°F)
May 6, 2023	8:00 a.m.	4:30 p.m.	8	Hot, with multiple bands of heavy rain, mid-80s (°F)
May 7, 2023	7:00 a.m.	5:30 p.m.	10	Hot, high 80s (°F)
May 8, 2023	7:00 a.m.	5:30 p.m.	10	Hot, high 80s (°F)
May 9, 2023	7:00 a.m.	5:30 p.m.	10	Hot, high 80s (°F)
May 10, 2023	7:00 a.m.	5:30 p.m.	10	Hot, high 80s (°F)
May 11, 2023	7:00 a.m.	5:30 p.m.	10	Hot, high 80s (°F)
May 12, 2023	7:00 a.m.	5:30 p.m.	10	Hot, high 80s (°F)

Legend: °F = degree Fahrenheit.

[a] Survey date noted in Yap time zone (YAPT).

The team members involved in performing the project tasks are listed in Table 1-3 along with their project-specific roles. The Task Order Contracting Officer's Representative, Lorraine Shaughnessy, oversaw the first week of logistics, planning, and execution of project tasks in the field. The cultural lead subject matter expert, Tim Rieth, was responsible for overall technical management, ensured that appropriate research standards were maintained, and provided research direction and oversight. The cultural project director, Matthew Napolitano, organized the pre-field planning, directed all fieldwork tasks, interfaced with the YSHPO, oversaw post-fieldwork data analyses, and is the lead author of the report. The field coordinator, Christian Warren, was the point of communication for safety and field operations procurement and logistics. Darby Filimoehala provided cultural resources oversight and was responsible for overseeing field project tasks. The terrestrial cultural field supervisor, Barbara van Benthuysen, and the terrestrial cultural field technician, Juanan Montero Nicolau, assisted the cultural project director in executing the field tasks. The cultural dive director, Joe Grinnan, organized the pre-field planning and directed all marine fieldwork tasks, oversaw post-fieldwork data analyses, and co-authored the report. The dive site safety officer, Chris Marshall, was responsible for the safety and welfare of the diving team and the control of diving operations by ensuring that all operations were executed following the requirements and guidelines listed in the dive operation plan (CAP JV 2023a). The cultural dive technician, Amber Cabading, assisted the cultural dive director with marine archaeological tasks including processing and analysis of remote sensing data, marine archaeological investigations, and review of collected data.

The team members involved in performing the project tasks are listed in Table 1-3 along with their project-specific roles.

Table 1-3 Project Team and Survey Personnel

Role	Name	Organization
Cultural Lead SME	Tim Rieth	International Archaeology, LLC
Cultural Project Director, Cultural Dive Technician	Matthew Napolitano	
Terrestrial Cultural Field Supervisor	Barbara van Benthuysen	
Terrestrial Cultural Field Technician/ Cultural Dive Technician	Juanan Montero Nicolau	
Cultural Resources Oversight	Darby Filimoehala	
Cultural SME	Erika Espaniola	AECOM
Dive Site Safety Officer	Chris Marshall	
Cultural Dive Director	Joe Grinnan	
Cultural Dive Technician	Amber Cabading	
Field Coordinator	Christian Warren	
AECOM Deputy Project Manager	Brittany Obando	
CAP JV Project Manager and QA/QC Manager	Kevin Butterbaugh	
TOCOR	Lorraine Shaughnessy	NAVFAC
Alternate TOCOR	Jill Sears	
Alternate TOCOR	Maria Carnevale	
Contracting Specialist	Casey Sugihara	
NAVFAC Cultural SME	Adam Lauer	
NAVFAC Cultural SME	Carly Antone	

Legend: AECOM = AECOM Technical Services, Inc.; CAP JV = Cardno GS – AECOM Pacific Joint Venture; NAVFAC = Naval Facilities Engineering Systems Command; QA = quality assurance; QC = quality control; SME = subject matter expert; TOCOR = Task Order Contracting Officer's Representative.

1.5 Historical and Archaeological Research

This section presents summaries of relevant historical and archaeological information to contextualize the current investigations.

1.5.1 Historical and Cultural Context

The timing of the initial settlement of Yap remains broadly defined with paleoenvironmental evidence suggesting arrival occurred as early as ca. 3,300 years ago (Dodson and Intoh 1999), while the earliest archaeological radiocarbon determinations date to ca. 2,200 years ago (Intoh and Leach 1985; Napolitano 2021; Napolitano et al. 2019; Takayama 1982). This discrepancy stems largely from the lack of systematic archaeological fieldwork on Yap, particularly investigations aimed at identifying deposits that date to initial colonization, although this has recently begun to change. The earliest known sites are located in coastal areas, adjacent to productive coral reef and mangrove habitats (Intoh and Leach 1985; Napolitano 2021). Over time as population increased, the number of settlements in coastal areas increased with villages connected via paths. Villages were sometimes located inland, but this was rare.

Yap developed complicated and extensive long-distance exchange networks with outer islands and Palau. One network involved voyaging to Palau to quarry limestone to make stone money disks (*rai*). The production and movement of *rai*, requiring voyages of 280 miles (450 kilometers) across challenging seas, are notable as they are the heaviest portable objects transported over open ocean by Pacific Islanders (Hazell and Fitzpatrick 2006). Radiocarbon dates, oral traditions, and ethnohistorical accounts demonstrate that quarrying began at least 400 years ago. In this exchange system, Yapese islanders negotiated access to quarry sites with forced, unpaid, and intermittent labor, and gifts of high-valued items like glass beads (*udoud* in Palauan), which were used as traditional forms of currency on Palau (Napolitano et al. 2022; Napolitano 2021). In the second half of the 19th century, Captain David Dean O'Keefe, an American, used his steamship to transport *rai* from Palau to Yap in exchange for *bêche-de-mer* (sea cucumber) and *copra* (dried coconut meat), which was sold in East Asian markets (Fitzpatrick 2008; Morgan 1996). This new transportation method, more effective than floating *rai* on a raft attached to an outrigger canoe, allowed for the size of *rai* to substantially increase. *Rai* are still found next to traditional structures made of stone and coral blocks (*chamog*) and modern buildings.

The second network was known as the *sawei* and was a system of formalized exchange of gifts and tribute that included high-valued items like pottery, stone, and lumber (Descantes 2005; Fitzpatrick 2008; Hunter-Anderson and Zan 1996). Religious and political tribute were two other important components of the *sawei* system (Descantes 2005). Seedlings and provisions were also provided to outer islands after major storms. At its peak, 15 atolls across 808 miles (1,300 kilometers) participated in this tribute system, which has sometimes been called the "Yapese Empire" (Descantes 2005). Although *sawei* was not directly involved with stone money quarrying in Palau, both exchange networks required knowledge of sophisticated navigational skills that originated on the outer islands and passed to the high-caste villages of Gachpar and Wanyaan in Gagil. This knowledge, shared through part of the *sawei*, helped Gagil maintain power and control over the stone money exchange system (Alkire 1981). The *sawei* decreased after German efforts to suppress traditional interisland voyaging, which also led to the cessation of stone money quarrying on Palau. During the Japanese administration, *sawei* was effectively terminated after the Japanese used outer islanders as forced laborers on Yap and broke long-standing tribute protocols by making outer islanders work in areas previously taboo to them (Alkire 1981).

Between the 16th and 18th centuries, Yap and its outer islands received sporadic visits by Europeans that lasted a few days and were sometimes violent. The earliest documented European stop at Yap's main islands was in 1527 by the Spanish ship *Florida* (Hezel 1979), although Ulithi may have received visitors as early as 1525. When a Spanish ship arrived in 1543, it was reportedly greeted in Spanish by the

Yapese islanders (Hezel 1979). Christian missionary work began in 1731 on Ulithi with the arrival of two priests and 12 soldiers, signaling the first extended European stay. Traders and entrepreneurs, like O'Keefe, began to arrive more regularly in the mid- to late-18th century. Colonial occupation of Yap began in 1885 under the Spanish. Soldiers constructed a large fort in what is now Colonia to fortify themselves against Yapese Islanders. Spain sold Yap to Germany in 1899. In 1914, colonial power shifted to Japan, which controlled Yap until the end of World War II. Post-World War II, the United States gained administration rights to FSM through the United Nations Trust Territory of the Pacific Islands in 1947, which lasted until 1978. The four states of FSM declared independence in 1979 with the formation of an FSM constitution. The FSM and the United States agreed to a Compact of Free Association in 1982, but it was not entered into force until November 13, 1986. Its funding was renewed in 2003 (CIA 2022).

The Yap Government has overlapping political structures. It is one of four states in the FSM. Locally, it has a Western-style Government with three branches modeled after those of the United States, as well as a traditional Government. In the executive branch of the Western-style Government, Yap has a governor and lieutenant governor instead of a president and vice president. The traditional Government, known as the Council of Pilung, is made up of the 10 highest chiefs and the mayor of Rull. This body has the authority to veto legislation determined to be incongruent with Yap's traditional customs (Descantes, Mityay, and Kugfas 1993).

Socially, Yap is organized into a caste system with villages being high caste (*pilung*) or low caste (*pimilngaeyi*). A parent-child metaphor is often used to describe the relationship between high-caste and low-caste villages, where the high castes provide for the low castes (Descantes 2005; Labby 1976). For example, low-caste villages, including those located within a coastal zone, may not have fishing rights. They would not be able to access fish weirs and, instead, fish are provided by high-ranking or parent villages in exchange for labor or goods like pottery (Intoh and Leach 1985). This relationship extends to the outer islands with certain atolls being linked to specific villages on Yap's main islands. Although outer islands would pay tribute to their parent village on Yap, high-caste villages would be obligated to host visiting outer islanders and provide shelter and food for them. Some of these policies have relaxed in the last half century as members from low-caste villages can fish in areas owned by high-caste villages with special permission (Intoh and Leach 1985).

The villages of Yap are primarily located in rural areas, except for Colonia, which is more urbanized and is the central hub for tourism. Small stores, markets, churches, and schools are scattered throughout the rest of Yap. Historical and modern maps indicate that there were 129 villages as recently as the 1990s. Houses and community meeting structures are located on interior hillslopes under trees or in coastal areas, and often contain a mix of recently constructed buildings situated around platforms built from coral and schist, meeting houses, and pathways. *Chamog* include family houses (*tibnaw*), men's meeting houses (*faluw*), community meeting houses (*pebaey*), raised seating areas (*wunubew*), places for making sennit cord (*liib*), wetland taro patches, and house platforms (*daf* or *dayif*). Community taro fields, garden plots, burials, and isolated structures like menstrual houses (*dapal*) are located on upland hills and in savanna areas (Intoh and Leach 1985; Nunn et al. 2017).

Today, the United States grants financial assistance to the FSM and other Compact of Free Association nations. As part of the Compact of Free Association agreement, eligible Micronesians can live, work, and study in any part of the United States and its territories without a visa, which reduces stresses on the island economy and the environment. Micronesians can serve in the U.S. Armed Forces. Military recruiting from the FSM, per capita, is higher than that of many U.S. states (U.S. Department of State 2021).

Yapese culture emphasizes sustainable practices and respect for natural resources (FSM 2018). Most land and marine areas on Yap are held under a complex system of customary ownership. Resources are allocated

through a system that prevents the overuse and degradation of natural resources, though new technologies present new opportunities for their commercial exploitation. Nonetheless, the traditional system sets a clear cultural precedent for the use and management of Yap's resources. For Yapese, it is imperative to build upon this cultural heritage and develop a resource management system that is viable in today's context (FSM 2018).

1.5.2 Historical Land Use

Prior to the permanent arrival of Europeans to Yap, villages were primarily found in coastal areas, and inhabitants used the inner reef and inland areas for subsistence and other activities, although some villages were also located in interior areas (Hunter-Anderson 1983). Little is known about Yap's early settlement, but population increased over time, which led to expansive settlement across Yap's main islands. As population increased, reliance on swamp taro (*Cyrtosperma chamissonis*) as a dietary staple also increased. Reliance on this crop required large-scale landscape modification to build raised beds and complex irrigation and drainage systems. Changes in food production strategies led to changes in settlement patterns and shifts in sociopolitical structures (Hunter-Anderson 1981). At the same time, construction of increasingly large and elaborate public and domestic structures developed. This included *chamog*, *wunubew*, *faluw*, and *pebaey*. Villages were interconnected with elaborate raised stone pathways that connected settlements, garden plots, and taro patches. Many of these raised pathways are still present and maintained today. Coastal and nearshore features include docks, piers, sea walls, and fish weirs (*aech* or *atch*) (Hunter-Anderson 1981). Many of these structures are made of coral and stone blocks.

The development of Yap's social caste system and private land ownership created significant labor demands for males. In addition, ethnographic accounts indicate warfare between rival villages was constant (Hunter-Anderson 1983). According to some (e.g., Hunter-Anderson 1981), the demands for labor and the increased use of coral for construction reduced the time that could be spent fishing and possibly changed nearshore reef habitat. As a response to this, villages built stone *aech*, which could trap fish while labor was spent elsewhere.

These processes continued until the late 19th century and the sustained presence of Europeans on Yap. Permanent arrival of colonialists caused sociopolitical disruptions and massive population decline, primarily through the introduction of novel diseases like influenza and gonorrhea. Mortuary behavior, including grave construction and morphology, treatment of the dead, and the social obligations between high- and low-caste villages, also changed with each colonial administration (Pickering 1990). By 1898, when Germany assumed administrative control of Yap, many of the stone pathways in villages had fallen into disrepair (Furness 1910).

During the Spanish and German administrations, Colonia was developed as the government and trading center. However, when Spain was granted ownership of Yap in 1885, Germany was granted the trading rights. Commercial ships began transporting goods throughout the region, ushering in a new era of commerce. Perhaps the best example of this is Captain David O'Keefe, who would transport *rai* from Palau to Yap in exchange for *copra* and *bêche-de-mer*, which he then sold in Hong Kong.

During the Japanese administration, the landscape around Colonia changed as they built up Colonia and developed Tamil Harbor. Buildings and "Japanese-style farming areas" were built around Colonia. Extensive dredging destroyed many of the traditional fish weirs that were located in the harbor (Hunter-Anderson 1983). Military installations including concrete foundations, buildings, harbor piers, and other types of infrastructure were built around Yap.

1.5.3 Previous Archaeological Research

Two archaeological studies have been conducted within and around the survey areas (Table 1-4). One terrestrial cultural site (Spanish fort) overlaps with any potential development at the Yap Port area (Table 1-5, Figure 1-5). Two underwater cultural heritage sites (*aech*) are near Yap Port and within the marine survey area. In addition, several desktop reviews, cultural reconnaissance studies, and environmental assessments have addressed the potential for submerged cultural resources within Yap, while historical and modern maps plot the locations of some known shipwrecks. Database sources reviewed include the following:

- Archivo Histórico Nacional Español
- Biblioteca Digital Hispanica
- Biblioteca Nacional de España
- Biblioteca Virtual Miguel de Cervantes
- Biblioteca Virtual de Defensa del Gobierno de España
- Das Bundesarchiv
- Foreign Ships in Micronesia Database
- Global Geographic Information System (GIS) Data Services, LLC, Global Maritime Wrecks Database
- Japan Center for Asian Historical Records
- National Oceanic and Atmospheric Administration's (NOAA's) Automated Wrecks and Obstructions Information System (NOAA 2023)
- National Library of Australia online database
- NOAA Electronic Navigational Charts (ENC) (NOAA 2023)
- Te Puna Mātauranga o Aotearoa (National Library of New Zealand) online database
- University of Hawai'i at Mānoa Hamilton Library

Table 1-4 Previous Relevant Historic Preservation Investigations

Type of Investigation	Findings within or near Cultural Survey Area	Reference
Survey of traditional *aech*	Three *aech*: one near and two within the cultural survey area	Jeffery and Pitmag (2010)
National Register of Historic Places nomination	Spanish fort within the Yap Port area	NPS (1976)

Legend: NPS = National Park Service (United States Department of the Interior).

Table 1-5 Known Cultural Resources within Survey Area

Cultural Resource Within Survey Area	Description	NRHP Status	Reference
W48 and W49	*Aech*	Unevaluated	Jeffery and Pitmag (2010)
Spanish fort	Mortared stone foundation of a presumed Spanish fort	Listed (Reference number 76002215)	NPS (1976)

Legend: NPS = National Park Service (United States Department of the Interior).

1.5.3.1 Terrestrial Cultural Resources

Known cultural resources at Yap Port, within the urban area of Colonia, are limited to the stone foundation of what has been interpreted as a Spanish fort, which is listed in the NRHP (Reference number 76002215) (NPS 1976). The structure was modified during the German and Japanese administrations, both of which used the fort as their primary administrative center. It is currently the site of administrative buildings for Yap State.

1.5.3.2 Marine Cultural Resources

Two *aech* (W48 and W49; see Figure 1-5) at Dugor Village are within the survey area boundary (Jeffery and Pitmag 2010). Another *aech* (R04) is at Man'ol in the village of Balabaat and is within the notional explosives safety quantity distance arc but outside of the boundaries of either offshore mooring (Jeffery and Pitmag 2010). *Aech* are an important part of Yapese traditional culture. Although certain *aech* have been rebuilt or rehabilitated in recent decades, and may not be archaeological in age, they are an integral part of Yapese tangible and intangible cultural heritage with deep histories. Like much of the land and inner reef, they are considered private property, and access to the weirs is restricted.

Shipwreck and Submerged Aircraft Records

Archaeologists reviewed historical and modern maps, secondary sources (e.g., The Missing Air Crew 2023), and databases of reported shipwrecks and aircraft losses to identify additional potential submerged cultural resources within or adjacent to the survey area. Figure 1-6 and Table 1-6 present shipwrecks and aircraft losses that have been reported within 0.5 mile (0.8 kilometer) of the survey areas, with Table 1-7 listing shipwreck and aircraft losses more broadly assigned to the region. Several reported shipwrecks and a known aircraft loss occur within or directly adjacent to the survey area.

Historical shipwrecks and aircraft losses generally are plotted based on contemporary records, maps, or oral histories. Many shipwreck databases provide a range for position accuracy or an accuracy reliability scale. Therefore, Figure 1-6 and Table 1-6 do not constitute an exhaustive list of reported shipwrecks, and it cannot be assumed that every shipwreck resides where it is depicted.

Several shipwrecks are reported broadly for Micronesia or Yap by secondary sources and lack precise locations (Table 1-7). These were included in the CAP JV's research because any marine remote sensing target generated from the survey must consider the numerous shipwrecks and aircraft losses reported for Yap and the region.

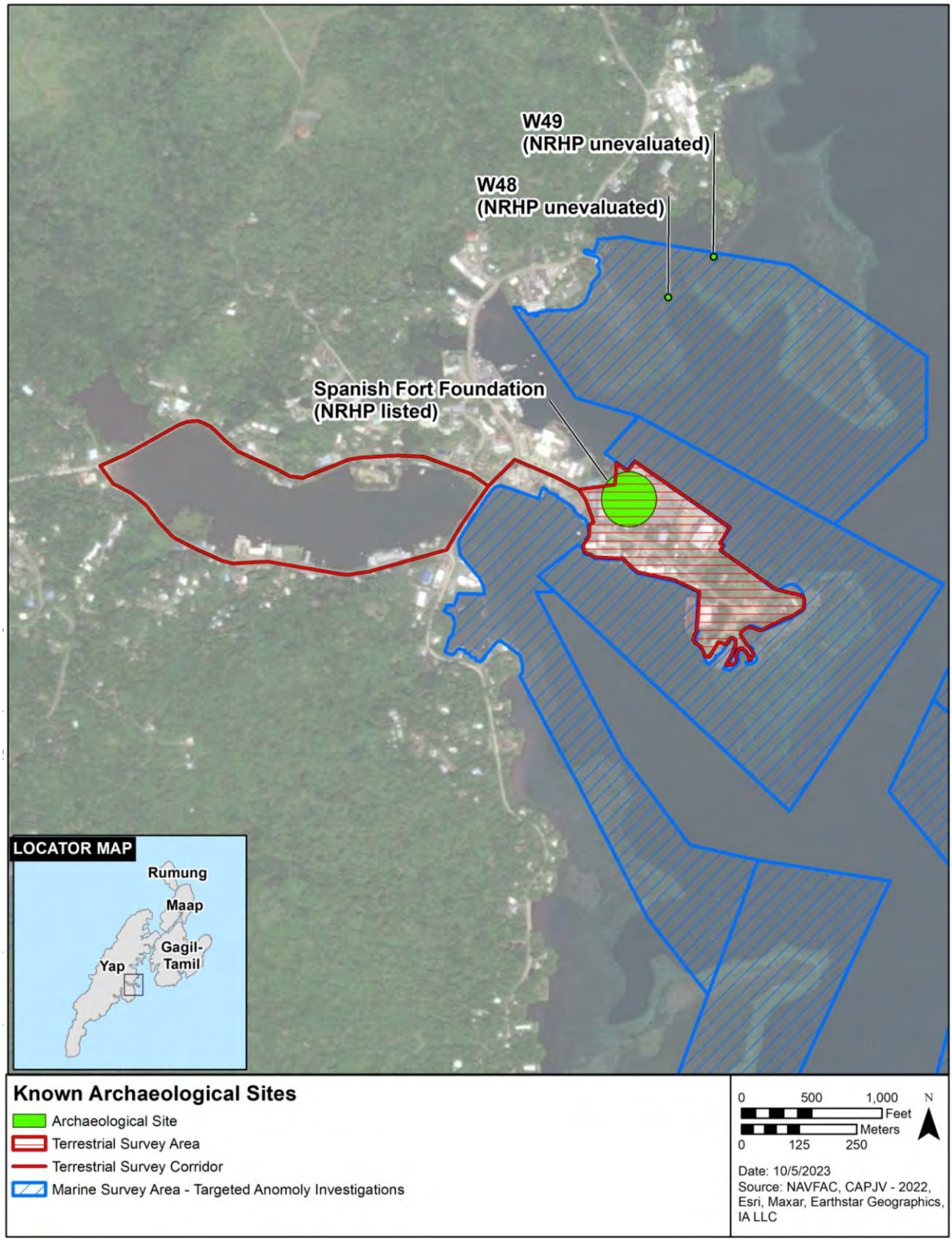


Figure 1-5 Known Archaeological Sites Within the Cultural Survey Areas

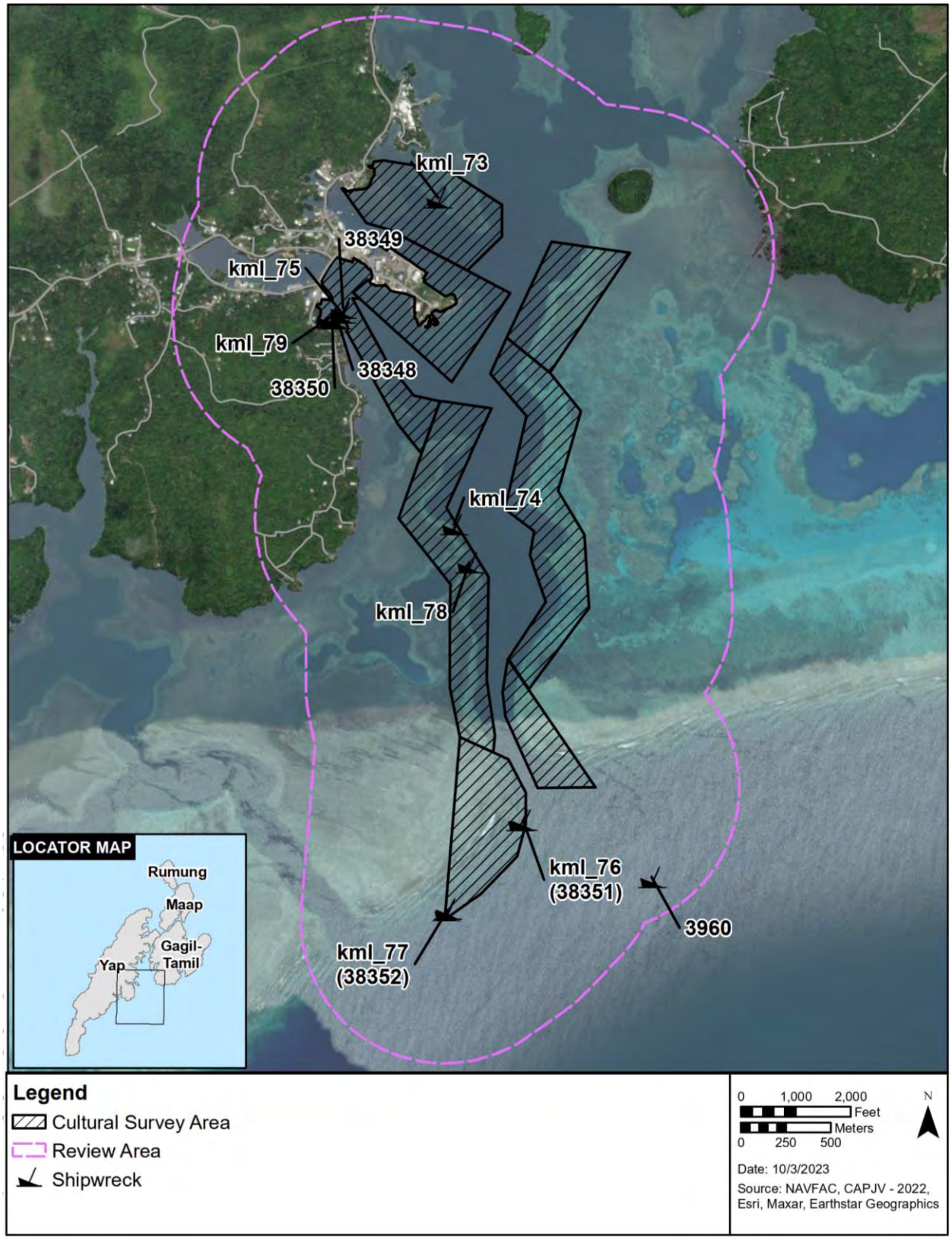


Figure 1-6 Shipwrecks Reported Within 0.5 Miles (0.8 Kilometers) of Cultural Survey Areas

Table 1-6 Shipwrecks and Aircraft Reported Within 0.5 Miles (0.8 Kilometers) of Cultural Survey Areas

Name	Date Sunk/Lost	Survey Area	Source
Laura Marie/ Circus Wreck/ kml_78	1992	Within Tamil Channel (West) (Survey Area 2)	Manta Bay Resort (2023); NOAA (2023)
LCM 3 Landing Craft/kml_74	n.d.	Within Tamil Channel (West) (Survey Area 2)	Manta Bay Resort (2023); NOAA (2023)
SMS Planet	1914	Within Tamil Channel Entrance (East and West) (Survey Area 3)	Saxon (2000)
Kokura Maru	1920	Within Tamil Channel Entrance (East and West) (Survey Area 3)	Hobbs (1922)
kml_73	n.d.	Within Yap Port–North (Survey Area 7)	NOAA (2023); GMWD
kml_75/ GMWD 38350	n.d.	Within Yap Port–Southwest (Survey Area 5)	NOAA (2023); GMWD
kml_76/ GMWD 38351	n.d.	Within Tamil Channel Entrance (West) (Survey Area 3)	NOAA (2023); GMWD
kml_77/ GMWD 38352	n.d.	Within Tamil Channel Entrance (West) (Survey Area 3)	NOAA (2023); GMWD
kml_79/ GMWD 38349	n.d.	Within Yap Port–Southwest (Survey Area 5)	NOAA (2023); GMWD
GMWD 38348	n.d.	Within Yap Port–Southwest (Survey Area 5)	NOAA (2023); GMWD
GMWD 3960	n.d.	Outside Tamil Channel Entrance (East) (Survey Area 3); 0.35 mile south-southeast of Tamil Channel Entrance (East)	NOAA (2023); GMWD

Legend: GMWD = Global Maritime Wrecks Database; LCM = landing craft mechanized; NOAA = National Oceanic and Atmospheric Administration.

Table 1-7 Shipwrecks and Aircraft Reported in the Region

Name	Date Sunk/Lost	Location	Source
A6M Zero	n.d.	Yap	Pacific Wrecks (2019)
Agincourt	1906	Micronesia	Sydney Daily Commercial News and Shipping List (1906); Newcastle Morning Herald and Miners' Advocate (1906); Sydney Morning Herald (1906)
Agustin	1882	Yap	McGinniss (1882)
Amoy	1886	Yap	The Daily Telegraph (1887); The Age (1887); Te Aroha News (1887)
B-24	June 13, 1944	Yap	MissingAirCrew.com (n.d.)
B-24	June 23, 1944	Yap	MissingAirCrew.com (n.d.)
B-24	June 25, 1944	Yap	MissingAirCrew.com (n.d.)
B-24	July 5, 1944	Yap	MissingAirCrew.com (n.d.)
B-24	July 13, 1944	Yap	MissingAirCrew.com (n.d.)
B-24	July 15, 1944	Yap	MissingAirCrew.com (n.d.)
B-24	July 15, 1944	Yap	MissingAirCrew.com (n.d.)
B-24	July 15, 1944	Yap	MissingAirCrew.com (n.d.)
B-24	August 9, 1944	Yap	MissingAirCrew.com (n.d.)
B-24	August 10, 1944	Micronesia	MissingAirCrew.com (n.d.)
B-24J	June 14, 1944	Yap	MissingAirCrew.com (n.d.)
B-24J	July 19, 1944	Yap	MissingAirCrew.com (n.d.)
B-24J Liberator Serial Number 42-73119	1944	Yap	Pacific Wrecks (2019)
B-24J Liberator Serial Number 44-40555	1944	Yap	Pacific Wrecks (2019)
B-24J Liberator Serial Number 44-40598	1944	Yap	Pacific Wrecks (2019)
Belvidere	1871	Yap	Klingman (1950)
Caroline	1882	Yap	LeHunte (1883)
Ebba Brahe	1865	Micronesia	Tetens (1958)
F4U Corsair	October 24, 1944	Yap	MissingAirCrew.com (n.d.)
F4U-1 Corsair	November 22, 1944	Yap	MissingAirCrew.com (n.d.)
F4U-1D Corsair	February 3, 1945	Yap	MissingAirCrew.com (n.d.)
F4U-1D Corsair	February 11, 1945	Micronesia	MissingAirCrew.com (n.d.)
F4U-1D Corsair	March 22, 1945	Yap	MissingAirCrew.com (n.d.)
F6F-3 Hellcat	July 22, 1944	Yap	MissingAirCrew.com (n.d.)
F6F-3 Hellcat	July 27, 1944	Yap	MissingAirCrew.com (n.d.)
F6F-3 Hellcat	July 28, 1944	Yap	MissingAirCrew.com (n.d.)
F6F-5 Hellcat	September 6, 1944	Yap	MissingAirCrew.com (n.d.)
F6F-5 Hellcat	September 6, 1944	Yap	MissingAirCrew.com (n.d.)
F6F-5 Hellcat	September 6, 1944	Yap Harbor	MissingAirCrew.com (n.d.)
F6F-5 Hellcat	September 8, 1944	Yap	MissingAirCrew.com (n.d.)
F6F-5 Hellcat	November 22, 1944	Yap	MissingAirCrew.com (n.d.)
F6F-5 Hellcat	March 21, 1945	Yap	MissingAirCrew.com (n.d.)
F6F-5P Hellcat	March 25, 1945	Micronesia	MissingAirCrew.com (n.d.)
F6F-5P Hellcat	August 3, 1945	Yap	MissingAirCrew.com (n.d.)
FG-1 Corsair	November 12, 1944	Yap	MissingAirCrew.com (n.d.)
FG-1 Corsair	November 18, 1944	Yap	MissingAirCrew.com (n.d.)
FG-1 Corsair	November 21, 1944	Yap	MissingAirCrew.com (n.d.)

Name	Date Sunk/Lost	Location	Source
FG-1A Corsair	October 31, 1944	Yap	MissingAirCrew.com (n.d.)
Lilla	1880	Micronesia	McGinniss (1882); LeHunte (1883)
Micro Spirit	2010s	Yap	Naval Sea Systems Command (2004); ShipSpotting (2010); Vessel Finder (n.d.)
Munchen	1901	Yap	The Australian Star (1901)
Norna	1862	Yap	Seymour (1862); Brown (1862)
PBM-3D Martin Mariner	February 23, 1955	Yap	MissingAirCrew.com (n.d.)
Prinz Waldemar	1911	Yap	The Daily Telegraph (1911); Northern Star (1911); The Sydney Morning Herald (1911)
Santa Cruz	1902	Micronesia	Daily Commercial News and Shipping List (1902)
SB2C Helldiver	September 6, 1944	Yap	MissingAirCrew.com (n.d.)
SB2C-1C Helldiver	July 26, 1944	Yap	MissingAirCrew.com (n.d.)
SB2C-1C Helldiver	July 27, 1944	Yap	MissingAirCrew.com (n.d.)
Shidzuoka Maru	1933	Rumung, Yap	The Herald (1933); The Sun (1933)
TBM-1C Grumman Avenger	July 27, 1944	Yap	MissingAirCrew.com (n.d.)
TBM-3 Grumman Avenger	March 16, 1945	Yap	MissingAirCrew.com (n.d.)
Unknown	1696	Micronesia	Burney (1803)
Unknown	1890	Yap	The Telegraph (1890)
Unknown	1914	Yap	The Australasian (1914); The Sydney Morning Herald (1914)
USS Mississinewa	1944	Yap	Naval Sea Systems Command (2004)

2 Survey Methodology

This section describes terrestrial and marine cultural survey methods, including collection procedures for the terrestrial survey, remote sensing, drop camera, and directed marine surveys to identify cultural resources and evaluate them for NRHP eligibility.

2.1 The National Register of Historic Places

The NRHP is:

> …the official list of the Nation's historic places worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources… (NPS, n.d.)

The list Includes districts, sites, buildings, structures, and objects significant in American history; and architecture, archaeology, engineering, and culture worthy of preservation. Properties can be significant at the local, state, or national level.

Three concepts are assessed when evaluating a property's eligibility for listing in the NRHP: historic significance, historic context, and integrity. To have historic significance, a property must meet at least one of four significance criteria. As defined by the U.S. Department of the Interior National Park Service (NPS) (DOI 1990, 2), the quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association; and:

A. that are associated with events or activities that have made a significant contribution to the broad patterns of our history; or

B. that are associated with the lives of persons significant in our past; or

C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important in prehistory or history.

NPS National Register Bulletin 20, *Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places*, provides additional considerations when assessing the NRHP eligibility of historic shipwrecks (DOI 1992). The U.S. Department of the Interior (1992, 3) states:

> …the significance of a historic vessel can only be determined through a systematic investigation of the vessel's qualities, associations, and characteristics. A typical investigation for a historic vessel nomination should include:
>
> 1. Identification of the specific type of vessel and documentation based on a physical inspection of the vessel and a documentation of her history.
> 2. Identification of the historic context(s) associated with the vessel based on a documentation of her history.
> 3. Determination that the characteristics of the vessel make her either the best, or a good representative of her type.

4. Evaluation of the significance of the vessel based on the National Register criteria.
5. Evaluation of the vessel's integrity and a listing of features that the vessel should retain to continue to possess integrity.
6. Evaluation of a vessel's special characteristics that might qualify her for National Register listing even though she might be less than 50 years old or some aspect of her present condition generally would not qualify her for listing.

The definition of historic context is “information about historic trends and properties grouped by an important theme in the prehistory of a community, state, or the nation during a particular period of time” (DOI 1977, 4). Historic context provides the link between the submerged cultural resource and unique, representative, and/or pivotal historic trends.

Integrity, as it relates to listing in the NRHP, is the ability of the property to convey its historic significance. Although subjective, integrity “must always be grounded in an understanding of the property’s physical features and how they relate to its significance” (DOI 1990, 44). The seven aspects of integrity are location, design, setting, materials, workmanship, feeling, and association. For a property to convey significance, it must retain several aspects of integrity. In the case of an archaeological site, the relevant aspects to consider are location, setting, materials, and association (NPS, n.d.). NPS National Register Bulletin 15, *How to Apply the National Register Criteria for Evaluation* further clarifies the steps necessary to assess integrity (DOI 1990). These include:

- Define the essential physical features that must be present for a property to represent its significance.
- Determine whether the essential physical features are visible enough to convey their significance.
- Determine whether the property needs to be compared with similar properties.
- Determine, based on the significance and essential physical features, which aspects of integrity are particularly vital to the property being nominated and if they are present.

2.1.1 Multiple Property

NRHP multiple property submissions nominate groups of related significant properties. These related properties share themes, trends, and/or patterns of history organized into defined historic contexts and property types (DOI 1991). According to NPS National Register Bulletin 16 Part B, *How to Complete the National Register Multiple Property Documentation form*, the multiple property submission is not a nomination on its own but can facilitate the nomination of a property that shares the already defined historic context (DOI 1991). A multiple property submission can also be used as a management tool, where the thematic approach furnishes relevant information for historic preservation purposes by providing a comparative dataset within a geographic area from which to evaluate significance.

2.2 Terrestrial Cultural Survey

2.2.1 Research Design and Required Materials

The terrestrial cultural survey covered an approximately 20-acre (485,619-square-meter) area encompassing Yap Port and an approximately 7,034-linear-foot (2,144-linear-meter) route along the road surrounding Chamorro Bay (Chamorro Bay Linear Survey Area). The purpose of the terrestrial cultural survey was to 1) re-locate the Spanish fort, an NRHP-listed property, to evaluate its present condition and update its documentation; 2) identify the presence or absence of previously unidentified surface-level cultural resources in the survey area; and 3) characterize any resources that are present to the minimum

degree needed to evaluate their NRHP eligibility. A team of three professional archaeologists (a cultural project director, a terrestrial cultural field supervisor, and a terrestrial cultural field technician) completed the terrestrial cultural survey, keeping vegetation clearance to the minimum required to document any sites. They used the following pedestrian survey methods:

1. Survey transects were spaced 16.4 to 49.2 feet (5 to 15 meters) apart based on vegetation and were oriented parallel to roadways or the shoreline as appropriate.
2. Archaeologists kept a daily log and recorded work completed (e.g., number of transects surveyed), notes on any finds, and summaries of other relevant information (e.g., density of vegetation or evidence of modern disturbance).
3. Archaeologists took overview photographs of the survey area and of all newly identified cultural resources. They included a photo board, scale, and north arrow in all photographs (excluding landscape overviews). They maintained a photograph log noting the file number, date, direction, initials, and a brief description of each photograph.
4. Archaeologists recorded the location of any cultural resources identified during the survey with a professional-grade Global Positioning System (GPS) unit.
5. The archaeologists documented any previously unknown cultural resources identified during the survey using text descriptions and scaled plan or profile drawings, as appropriate. They completed text descriptions using a standardized survey form including fields for the type and construction details of the resource, dimensions, age and function assessments, integrity and condition evaluations, associated surface artifacts, and environmental characteristics (e.g., slope, substrate/soil, or vegetation). Integrity evaluations were based on NRHP criteria while condition was more subjectively documented based on damage or modifications, ranging from poor to good.
6. Artifacts were not collected from surface contexts.

2.2.2 Survey Location Access Requirements

Survey areas were on public land; therefore, chief and landowner permission was not required. However, access was coordinated through the YSHPO, and the survey team had a signed letter from the Council of Pilung granting permission to conduct the survey. Two staff members from the YSHPO assisted the project director with survey and mapping for a short time, which also facilitated access.

2.2.3 Data Management

Archaeological data were managed during and following fieldwork to ensure security and fidelity.

2.2.3.1 In-Field Data Management

Archaeologists collected all field data using tablet computers and/or professional-grade GPS units. They recorded daily field notes and completed field drawings using appropriate applications with a graph paper template and digital stylus in the case of drawings. They used an appropriate database application to maintain the photograph log and completed standardized forms to describe cultural resources. They used an appropriate application on the tablet or another digital camera to take photographs. They recorded location data using a professional-grade GPS unit with data dictionaries designed for archaeological surveys and in compliance with Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE).

The cultural project director uploaded data from the tablets daily to a secure cloud repository and laptop computer (the laptop was not used in the field). The data manager ensured correct organization and integrity of this data throughout the fieldwork, and data were downloaded to a secure office-based server as needed for progress reporting or other communications.

The cultural project director provided a GIS specialist with each week's GPS data files for post-processing and exporting as GIS data files. The data were reviewed for integrity and completeness (e.g., all data fields are completed) and were compiled into a single geodatabase. The geodatabase conforms to SDSFIE.

No physical collections were generated.

2.2.3.2 Post-Survey Data Management

At the conclusion of the survey, the cultural project director downloaded all project data from the secure cloud repository to a project folder on a secure office-based server. In the case of any files maintained separately during field recording, such as databases specific to individual tablets, the cultural project director compiled all project data into a master file of each type (e.g., master photo log or master sites description log).

A GIS specialist used appropriate software to differentially correct all field GPS data for submeter accuracy and exported the corrected data into a combined ESRI file geodatabase. The GIS specialist used the geodatabase for data analysis and figure production during reporting. The GIS specialist produced data in a format meeting SDSFIE.

A draftsperson produced final digital drawings using appropriate illustration software based on the field drawings.

2.3 Marine Cultural Survey: Remote Sensing

2.3.1 Research Design and Required Materials

Sea Engineering, Inc. (SEI) conducted a high-resolution geophysical (HRG) survey from April 26 to May 3, 2023. Poor weather conditions during the survey window limited the collection of data in Tamil Channel Entrance (East and West) (Survey Area 3). In total, approximately 91 acres (36 hectares) were subject to magnetometer survey and approximately 272 acres (110 hectares) were subject to side-scan sonar survey. The survey design incorporated parallel survey lines spaced 98 feet (30 meters) apart. Due to the weak background magnetic field in Yap, magnetometer survey lines could only be oriented east-west and vary up to +/- 25 degrees from the east-west alignment. Outside of this range, the magnetic signal was too weak to observe magnetic anomalies. The approved work plan follows industry standards for survey of submerged cultural resources (DON 2023a). SEI's survey report can be found in Appendix A.

2.3.1.1 Survey Equipment

The HRG survey was conducted using a 28-foot (8.5-meter) vessel (Figure 2-1). Table 2-1 lists the HRG survey instruments. Antenna positions, tow point positions, and tow cable lengths were recorded and updated throughout the survey to ensure accurate data collection. The navigation stream was collected in a constant stream in the Universal Transverse Mercator coordinate system, Zone 54 North, based on the World Geodetic System 84 datum in meters and was interfaced with all HRG survey equipment systems.



Figure 2-1 28-Foot (8.5-Meter) Survey Vessel

Table 2-1 SEI Survey Equipment

HRG System	Survey Equipment
Vessel Guidance	Trimble SPS 461 DGPS
Integrated Navigation	HYPACK
Magnetometer	Geometrics G-882 Cesium Vapor Marine Magnetometer
Side-scan Sonar	EdgeTech 4125 (400/900 kHz)

Legend: DGPS = differential Global Positioning System; kHz = kilohertz.

Guidance and Navigation

A Trimble SPS 461 differential GPS with applied Marinestar differential GPS corrections provided decimeter-level accuracy during the remote sensing surveys. Differential GPS data were integrated into HYPACK navigation software.

Magnetometer

SEI used a Geometrics G-882 cesium-vapor marine magnetometer towed behind the vessel at 9.8 feet (3.0 meters). Magnetic data were collected in a constant stream at a rate of 10 hertz (10 readings per second) and electronically linked to positioning and depth data. Magnetic data were recorded using HYPACK.

Side-Scan Sonar

SEI used an EdgeTech 4125 dual frequency (400/900 kilohertz) side-scan sonar, towed at the bow of the vessel with a range of 328 feet (100 meters). Side-scan sonar data were collected in a constant stream and electronically linked to positioning and depth data. Data were collected in HYPACK.

Multibeam Echosounder

SEI conducted the multibeam echosounder (MBES) survey to support the marine survey (CAP JV 2023b) and reviewed for potential submerged cultural resources where possible. SEI used a RS Sonic 2020 MBES, which generates a user swatch width from 10 degrees to 130 degrees with a frequency of 200 kilohertz. A detailed description of MBES data collection and analysis can be found in Appendix A.

2.3.2 Survey Location Access Requirements

Access to Tamil Harbor and Tamil Channel was coordinated through the YSHPO and other relevant Yap Government agencies. The survey team had a signed letter from the Council of Pilung granting permission to conduct the survey.

2.3.3 Data Management

Marine cultural remote sensing data were managed during and following fieldwork to ensure security and fidelity.

2.3.3.1 In-Field Data Management

All collected data associated with GPS navigation, side-scan sonar, magnetometer, drop camera, and MBES were backed up to an external hard drive and laptop computer at the end of each field day. This external drive and laptop were not used in the field and were kept in a secure location at the hotel. The SEI team lead ensured proper data organization and integrity was maintained throughout the duration of the fieldwork.

2.3.3.2 Post-Survey Data Management

SEI provided the CAP JV with magnetometer and side-scan sonar datasets, including raw, unprocessed data files. The cultural dive director and technicians used the following processing and interpretation methods for the identification of potential historic properties in accordance with the work plan. Unique identifiers for remote sensing targets include the letter “M” to designate a magnetic anomaly and “S” for acoustic contact, which is accompanied by a target number. For example, M001 is the first magnetic anomaly. SEI processed and analyzed the MBES data in accordance with the marine work plan (DON 2023b) and provided the marine cultural team with the survey results.

Magnetometer

Research on the relationship between magnetic theory and archaeological resources, specifically submerged resources, guided the analysis and interpretation of the magnetic datasets (Garrison et al. 1989; Gearhart 2004; 2011; Pearson, Guevin, and Saltus 1991). Magnetic anomalies are evaluated by several criteria, including their magnetic declination, total strength above or below the Earth’s ambient magnetic field, amplitude ratios, and magnetic gradient.

A primary issue with the interpretation of magnetic datasets is differentiating between non-archaeological anomalies (e.g., debris, pipeline crossings, or culturally insignificant targets, such as derelict fishing equipment) and archaeological resources. Shipwrecks represent a complex arrangement of ferromagnetic signatures, each with their own permanent magnetism. However, when taken as a composite, each of these signatures tends to cancel each other out. This leaves a shipwreck creating a general dipolar pattern based on the weaker induced magnetism created by the Earth’s magnetic field (Gearhart 2011). The premise of using induced magnetism to determine archaeologically sensitive anomalies versus non-archaeological single source signatures was suggested by Garrison et al. (1989) and later demonstrated through verified data by Gearhart (2011). Gearhart (2011, 106) states that “the

most important parameter to consider when interpreting anomalies based on their magnetic induction is the direction of magnetic moment [polar axis].” Further, “deviation from the northerly magnetic moment direction, common to all inducted anomalies, has proven to be the single most powerful discriminator between simple-source anomalies and complex-source anomalies, including shipwrecks” (2011, 104).

In addition to the polar alignment and induced magnetism of anomalies, their complexity must also be examined. Surveys that decrease sensor-to-source distance will produce higher magnetic signatures. Thus, a shipwreck signature, while demonstrating the general dipolar signature, will also include numerous smaller dipoles and monopoles in the signature, created by individual components. This is particularly true for wooden shipwrecks with numerous iron fasteners, weaponry, or machinery. Further, if a shipwreck is found in dynamic seafloor conditions, such as a surf zone or channel, the wreck may become disarticulated and become a discontinuous site and debris field. Depending on the level of disarticulation and distribution, such shipwreck sites may not demonstrate a principal dipole (Muckelroy 1978). Garrison et al. (1989) indicate that a shipwreck signature may cover an area between 107,640 to 538,195 square feet (10,000 and 50,000 square meters). Pearson et al. (1991) used this model to develop characteristics of magnetometer anomalies most likely to represent shipwrecks. They state that “the amplitude of magnetic anomalies associated with shipwrecks varies considerably, but in general, the signature of large watercraft or portions of watercraft range from moderate to high intensity (greater than 50 nanotesla) when the sensor is at distanced of 20 feet (6 meters) or so” (Pearson, Guevin, and Saltus 1991, 70). The data led to the conclusion that shipwrecks should produce signatures measuring at least 50-nanotesla with dimensions measuring at least 80 feet (24 meters) along its shortest horizontal axis.

The environment and nearby surroundings should be considered when conducting a magnetometer survey locating submerged cultural resources such as aircraft (Hanselmann et al. 2023). Hanselmann et al. (2023) illustrates the importance of tight lane spacing in coral reef environments to locate disarticulated submerged aircraft sites as they are difficult to distinguish in the side-scan sonar record because of masking by the coral reef. Hanselmann et al. (2023) recommends parallel survey transects spaced at 50 feet (15 meters) combined with a maximum of 20 feet (6 meters) magnetometer altitude to provide the best opportunity to locate small, disarticulated, submerged aircraft sites.

Lastly, a magnetic signature should be assessed with its relation to contacts found within the side-scan sonar record or built features in the landscape such as channel markers, buoys, docks, pipelines, bridges, and power lines. Power lines, bridges (as conduits for power lines), and pipelines have the potential to mask archaeologically significant magnetic signatures due to their own high magnetic fields affecting surrounding magnetic fields. Their presence is evident in magnetic contour maps and is easily separated from shipwreck signatures by their very high intensity.

SEI provided the marine cultural team with raw magnetic data. Due to variable and steep bathymetry in the survey areas, the layback of the magnetometer was 9.8 feet (3.0 meters) throughout the duration of the survey to avoid collision with the seafloor. Magnetic interference, such as that found at shoreline structures, is present within the dataset, masking potential smaller magnetic anomalies. Raw magnetic data were processed in HYPACK. Data were edited in profile view by examining each line of data for monopole and dipole signatures. Following this, the CAP JV normalized the edited data and gridded the data. The gridded data were exported as contour maps for importation into GIS applications for further interpretation.

The cultural dive director followed the interpretation methods above to analyze the magnetic data for potentially archaeological anomalies and in accordance with the work plan (DON 2023a). The work plan established an amplitude threshold of ± 5 gammas when analyzing magnetic anomalies. Recorded anomalies that do not meet this threshold likely represent noise caused by towfish positioning or an

artifact of contouring. Actual sources producing such low-amplitude anomalies are likely out of context and represent relatively small, insignificant debris sources. Such anomalies were not investigated.

Side-Scan Sonar

SEI provided high and low frequency raw acoustic imagery collected during the HRG survey. Raw data were imported into CTI's SonarWiz 7 software for contact identification. A limiting factor in side-scan sonar imagery is it only depicts what is exposed above the seafloor. Therefore, magnetic data must be correlated to acoustic imagery to assess whether the magnetic anomaly correlates to an exposed contact or a potentially buried anomaly.

The CAP JV focused on identifying potential shipwrecks, aircraft, and submerged infrastructure such as remnant piers and wharves. This was completed through review of the acoustic contact's size and shape, reflectivity compared to bottom sediments, and, when available, the contact's height above bottom sediments through measurements of the contact's acoustic shadow. Contacts that likely represent modern derelict fishing equipment or tires were noted but were not considered a potential submerged cultural resource.

Multibeam Echosounder

SEI conducted the MBES survey within Offshore Mooring (Survey Area 1) only. Data was collected and processed to support the marine cultural survey (CAP JV 2023b) and reviewed for potential submerged cultural resources where possible. A detailed description of MBES data collection and analysis can be found in Appendix A.

2.4 Marine Cultural Survey: Directed Investigations

2.4.1 Research Design and Required Materials

The marine cultural survey entailed the investigation of 30 targets with characteristics resembling potential submerged cultural resources. The 30 targets were chosen based on previously conducted archaeological investigations, remote sensing imagery, aerial imagery, and local consultants' knowledge. The total potential investigation area was divided into nine areas totaling approximately 608.6 acres (246.3 hectares). The purpose of the marine cultural survey was to 1) evaluate a representative sample of potential cultural resources identified through the marine remote sensing survey; and 2) characterize any resources that were present to the minimum degree needed to evaluate their NRHP eligibility. Directed investigations occurred in-water (i.e., diving), via shallow-water survey (i.e., some targets exposed at low tide could be recorded from shore), and via visual inspection from the vessel when possible, with review of drop camera footage providing additional data as outlined in the dive operations plan (CAP JV 2023a) and work plan (DON 2023a). No sediment-disturbing methods were employed, such as hand fanning, to minimize possible encounters with unexploded ordnance and other potentially hazardous items.

A team of five professional archaeologists (a cultural dive director, three cultural dive technicians, and a dive site safety officer) completed the directed investigations and review of the drop camera footage. The team functioned as divers, standby (safety) diver, and topside supervisor with a fifth diver ready to assist as needed. Manta Ray Bay Resort provided a vessel, vessel operator, and a dive guide during in-water operations (Figure 2-2).

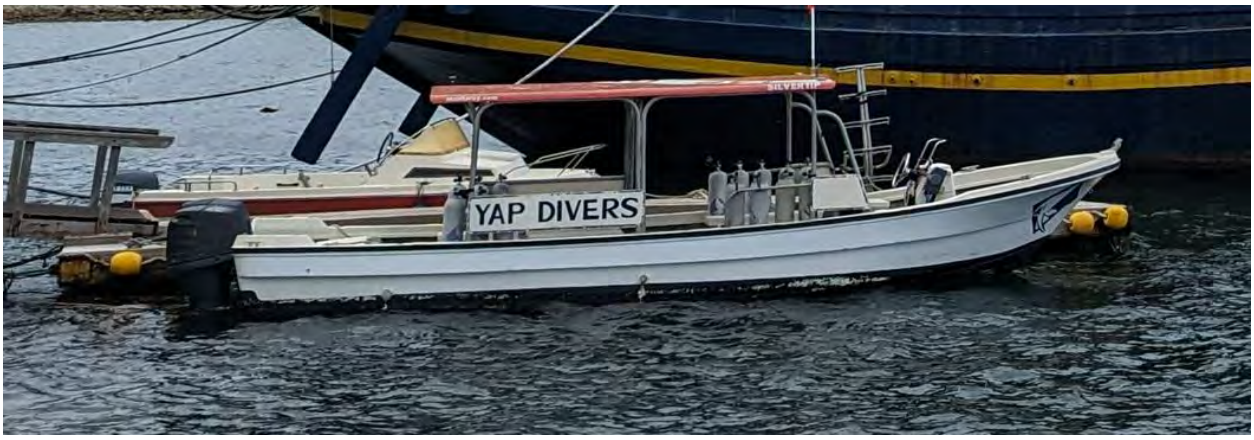


Figure 2-2 Dive Vessel Provided by Manta Ray Bay Resort

Pre-dive activities included a daily dive safety meeting, a pre-dive discussion of the upcoming dive target, raising of a dive flag, and deployment of dive site buoy markers. To relocate targets, a GPS unit was used to navigate to the location and a surface float was placed to visually mark the target prior to diver deployment. Dive operations met or exceeded those outlined in the U.S. Army Corps of Engineers Engineering Manual 385-1-1, *Safety and Health Requirements Manual* (USACE 2014), the American Academy of Underwater Sciences *Standard for Scientific Diving Manual* (AAUS 2018), the work plan (DON 2023a), and dive operations plan (CAP JV 2023a).

Visibility varied substantially depending on tide and weather from over 80 feet (24.3 meters) near the Tamil Harbor entrance at high tide on sunny days to approximately 3.0 feet (0.9 meter) at low tide in the Tamil Harbor. Some targets were easily re-located as soon as divers entered the water or even from the boat, while others required divers to conduct circle searches radiating out from buoy drop locations at regular intervals to locate targets. Additional equipment used during dive operations included both still and video cameras, scales, and reels to document identified targets.

A dive log was completed each time a diver entered and exited the water. Dive logs identified the divers, the dive location, and the diver-conveyed environmental conditions, which included water depth, water temperature, current, visibility, bottom type, and other pertinent observations. This log recorded each diver's time in, time out, air in (pounds per square inch), air out (pounds per square inch), and maximum water depth attained during the dive. The log provided space to describe work accomplished and recorded observations made during the dive.

Drop camera footage was collected by SEI and provided as .MP4 files. A detailed drop camera footage collection methodology is included as Appendix A. Available drop camera videography was reviewed for the presence of submerged cultural resources. Identified characteristics of objects were compared to those of known submerged cultural resources. This process was similar to that of identified acoustic contacts as described in Section 2.3.1.1 Survey Equipment subsection Side-Scan Sonar.

2.4.2 Survey Location Access Requirements

Access to Tamil Harbor and the Tamil Channel was coordinated through the YSHPO and other relevant Yap Government agencies. The survey team had a signed letter from the Council of Pilung granting permission to conduct the survey.

2.4.3 Data Management

Marine cultural survey data were managed during and following fieldwork to ensure security and fidelity.

2.4.3.1 In-Field Data Management

The archaeologists collected all field data using paper, cameras, and/or GPS units. Photographs and videos were taken using a GoPro or other appropriate digital cameras. Recorded imagery was downloaded every evening to a secure cloud repository and laptop computer (the laptop was not used in the field). A data manager ensured correct organization and integrity of this data throughout the fieldwork, and data were downloaded to a secure office-based server, as needed, for progress reporting or other communications.

The cultural dive director provided a GIS specialist with GPS data files for post-processing and exporting as GIS data files. The data were reviewed for integrity and completeness (e.g., all data fields are completed) and were compiled into a single geodatabase. The geodatabase conforms to SDSFIE.

No physical collections were generated.

2.4.3.2 Post-Survey Data Management

At the conclusion of the survey, the cultural dive director downloaded all project data from the secure cloud repository to a project folder on a secure office-based server. In the case of any files maintained separately during field recording, the cultural dive director compiled all project data into a master file of each type (e.g., master dive log or master sites description log).

A GIS specialist used appropriate software to correlate and combine GPS data and exported the corrected data into a combined ESRI file geodatabase. The GIS specialist used the geodatabase for data analysis and figure production during reporting. The GIS specialist produced data in a format meeting SDSFIE.

3 Survey Results

This section presents the results of the terrestrial and marine cultural surveys. The results for each survey are organized by location.

3.1 Terrestrial Cultural Survey

3.1.1 Results

Four cultural properties were identified through the terrestrial cultural survey: the NRHP-listed Spanish fort, two traditional Yapese retaining walls (Temporary Sites 01 and 02), and a large mid-20th-century earthen mound (Temporary Site 03) (Figure 3-1). Table 3-1 summarizes these cultural resources and their recommended NRHP eligibility.

Table 3-1 Terrestrial Cultural Sites Recorded during the Survey

Name/ Site Designation	Description	Age	Function	NRHP Eligibility
Spanish fort	Complex of Spanish colonial, Japanese administration, and modern Yapese features; the main component is a Spanish-period mound and embankment.	1886 (initial construction), early 20th century modifications (Japanese administration)	Military quartering and trading center (Spanish); hospital (Japanese)	Listed (Reference Number 76002215)
Temporary Site 01	Traditional Yapese masonry retaining wall.	Early 20th century?	Erosion control, land demarcation	Eligible (D)
Temporary Site 02	Traditional Yapese masonry retaining wall.	Early 20th century?	Erosion control, land demarcation	Eligible (D)
Temporary Site 03	Large earthen mound.	Mid-20th-century (immediate post-WWII)	Building foundation	Not eligible

Legend: NRHP = National Register of Historic Places; WWII = World War II.

3.1.2 Port Survey Area

Two cultural resources were documented within the Yap Port survey area.

3.1.2.1 Spanish Fort (National Register of Historic Places Reference Number 76002215)

The Spanish fort consisted of a large, rectangular earthen mound and earth and masonry embankment. Based on historical research, it was constructed on Blelaach Island (also identified as Apepelan, Herrans/Herranz, and, mistakenly, Tapalau) in 1886 and/or 1887 by the Spanish administration, with military quarters and the trading center built atop the structure. The interior buildings are no longer extant. The Japanese administration modified portions of the embankment with concrete and constructed a hospital complex in the interior. More recently, the Yap Government added stone and coral terraces and uses the Japanese hospital as the Yap State Administration building, including the Yap Governor's office (Figure 3-2 and Figure 3-3).

Seven features as components of the mound and embankment were designated during the survey (Table 3-2). Five construction episodes were visible, thus allowing for the development of a relative building chronology. Overall, the Spanish fort is in fair to good condition, but has areas with structural damage from infrastructure improvements, tree roots and vegetation, and general disrepair. The Spanish fort was listed in the NRHP in 1976 (NPS 1976) (NRHP Reference Number 76002215). The seven features are described in further detail in the following sections.

Table 3-2 Feature Components of the Spanish Fort

Feature Number	Description	Age	Construction Episode
01	Concrete staircase	Japanese administration	4
02	Drainage or sewer pipe	Japanese administration	4
03	Sitting area consisting of a staircase, levelled area, terrace, and masonry planters	Japanese administration	4
04	Terrace set	Yapese (20th century)	5
05	Concrete staircase	Japanese administration	4
06	Earth and masonry embankment and mound	Spanish colonial	1 and 2
07	Brick alignment	Spanish colonial	3

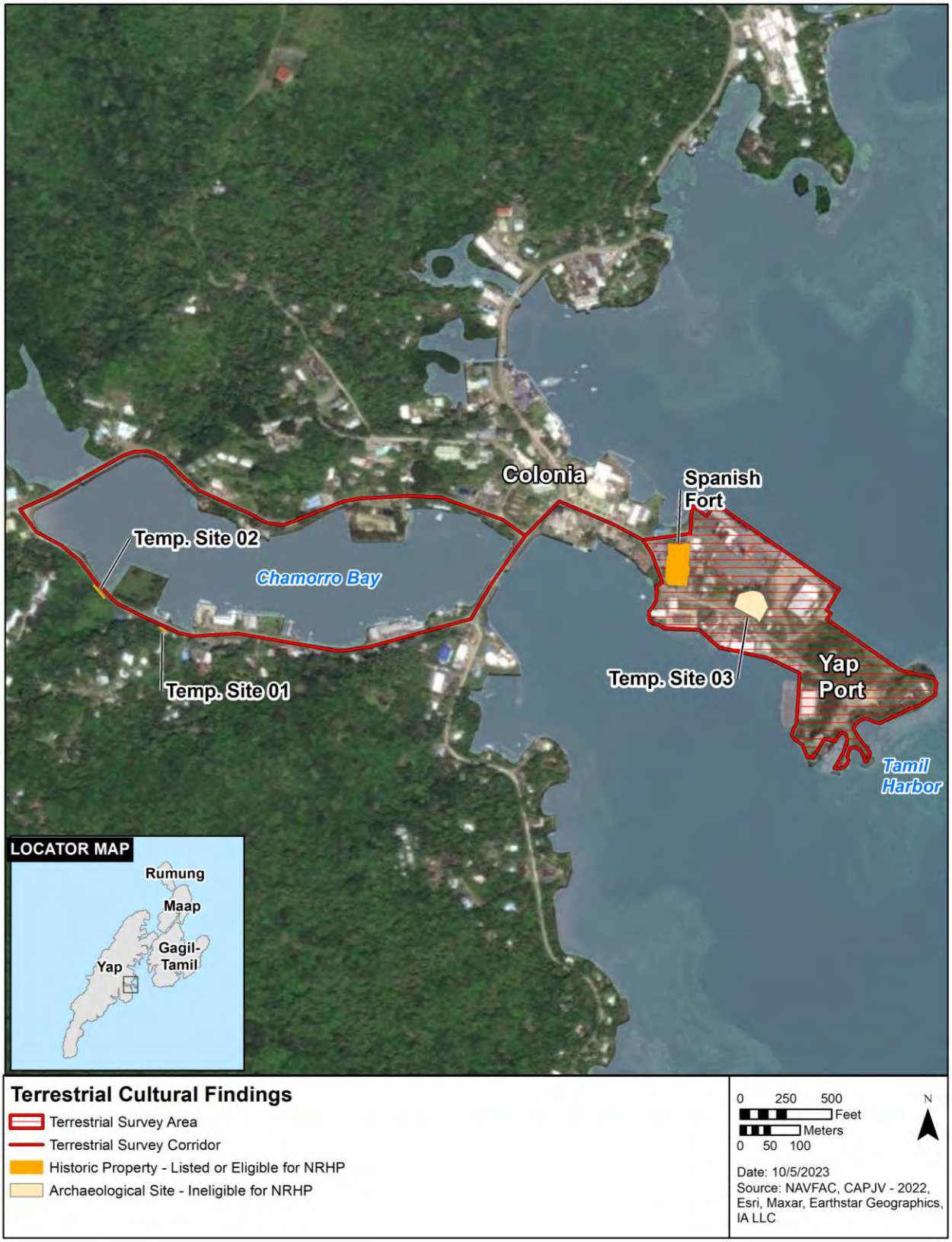


Figure 3-1 Cultural Properties Identified Within the Project Area Displayed on the 2021 World Imagery Orthoimage



Figure 3-2 Plan View Map of the Spanish Fort Identifying Individual Features on the 2021 World Imagery Orthoimage

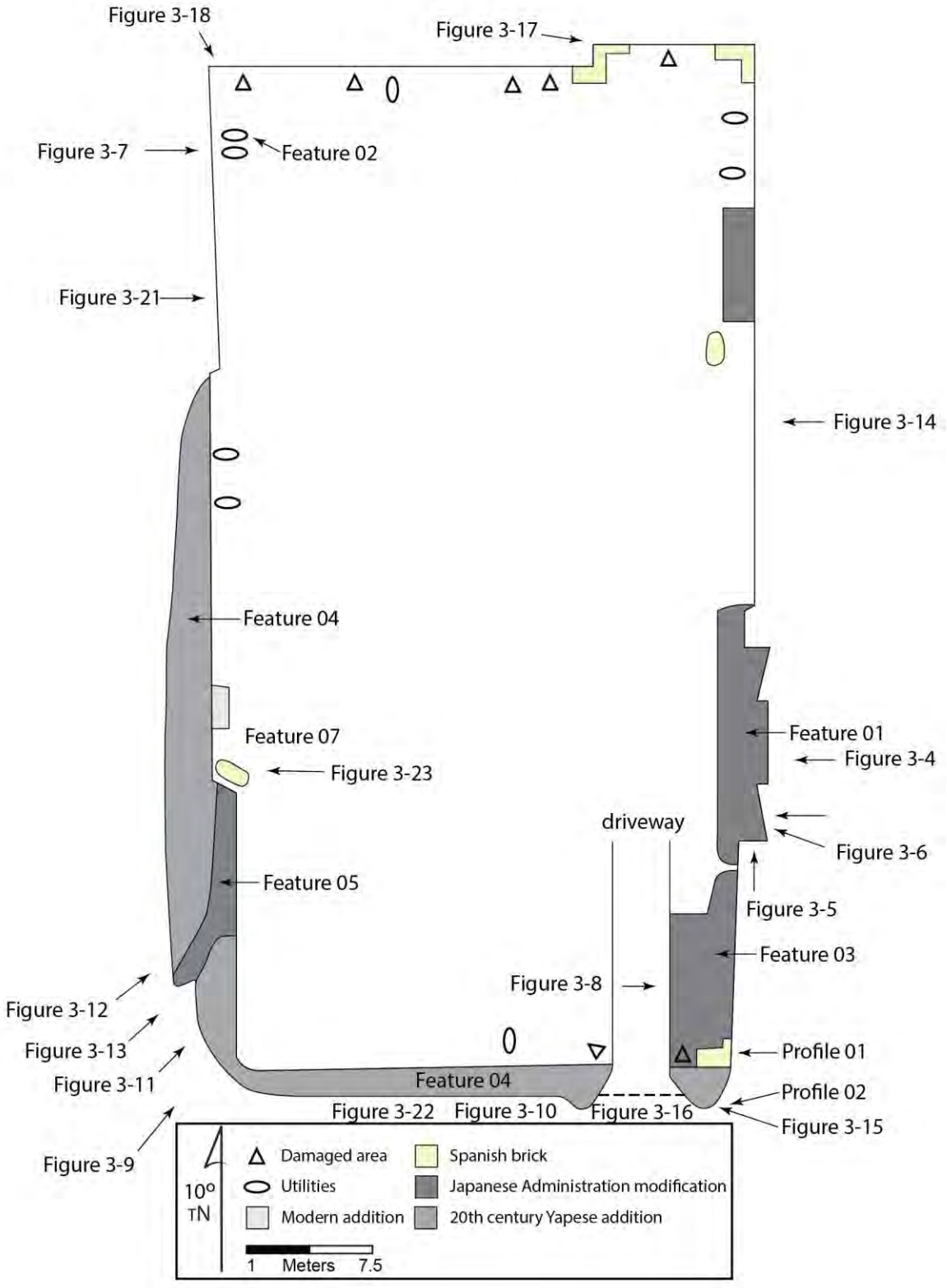


Figure 3-3 Detailed Plan View Map of the Spanish Fort with Spanish, Japanese, and Yapese Construction Episodes Demarcated

Feature 01: Concrete Stairs

Feature 01 was a pair of concrete staircases leading to a common landing on the east side of the Spanish fort. It is approximately 43.6 feet (13.3 meters) long, 7.6 feet (2.3 meters) wide, and 9.8 feet (3.0 meters) tall (Figure 3-4 and Figure 3-5). The characteristics of the concrete were consistent with other Japanese administration buildings and structures, and local consultants identified Feature 01 as a Japanese modification to the site. A U.S. Coast and Geodetic Survey benchmark was installed on one of the stairs in 1951 (Figure 3-6). The condition of the stairs was good, but some cracks with vegetation were observed.



Figure 3-4 Feature 01 Overview, a Pair of Large Concrete Staircases Built along the East Side of the Spanish Fort during the Japanese Administration; View West; Staircases Built against Feature 06, the Spanish Colonial Earthen and Masonry Embankment



Figure 3-5 Feature 01, Close-up of One Flight of the Japanese Administration Stairs on the East Side of the Site; View North



Figure 3-6 Feature 01, U.S. Coast and Geodetic Survey Benchmark, Installed in 1951, Embedded into One of the Steps of Feature 01

Feature 02: Drainage or Sewer Pipe

Feature 02 was a drainage or sewer pipe at the northwest corner of the Spanish fort (Figure 3-7). The pipe extended from the top of the Spanish colonial embankment and mound to the exterior grade. It likely originated from the Japanese hospital. The condition of the pipe was fair to good.



Figure 3-7 Feature 02, a Japanese Administration Drainage or Sewer Pipe at the Northwest Corner of the Site

Feature 03: Sitting Area

Feature 03 was a sitting area comprised of a staircase, a pair of terraces, and circular planters (Figure 3-8). It was adjacent to the driveway leading to the Japanese hospital (the driveway may be a modification of one of the two original Spanish access routes). The short staircase had three concrete steps that lead to a narrow, grass-covered terrace. Above the lower terrace was a second narrow terrace with two circular planters. The retaining walls for the terraces were constructed with stone, coral, concrete, and brick; the brick may be reused material from earlier Spanish colonial construction. The planters were made from concrete, stone, and coral. Vegetation covers some of the steps and the surface of the sitting area had some fractures, though overall, the area was maintained. Feature 03 was inferred to date to the Japanese administration based on the construction characteristics and spatial association with the driveway leading to the Japanese hospital (though it could have been a later modification). The condition was fair to good, and this area is still used as a sitting area.



Figure 3-8 Feature 03, Sitting Area Comprised of Stairs, a Level Area, a Terraced Sitting Area, and Planters; View East

Feature 04: Terrace Set

Feature 04 was a 20th-century Yapese terrace set built along the south and west sides of the embankment (Feature 06) (Figure 3-9 to Figure 3-12). Four terrace tiers were present, with the facings built of stone with some coral. The lowest terrace was the longest, with each successive terrace shorter in length; the uppermost tier was present along a short section on the west side of Feature 06. The terraces were built around a Japanese staircase on the west side (Feature 05). The surfaces of each terrace were covered with grass and ornamental plants. The terrace set is inferred to be a 20th-century Yapese addition based on construction characteristics and its placement around the pre-existing Japanese staircase.



Figure 3-9 Feature 04, Traditionally Constructed Yapese Terraces Built along the South and West Sides of the Spanish Colonial Embankment and Mound (Feature 06); View Northeast; the Building is the Former Japanese Hospital



Figure 3-10 Feature 04, Traditionally Constructed Yapese Terrace Set along the South Side of Feature 06; View North



Figure 3-11 Feature 04, Traditionally Constructed Yapese Terrace Set near the Southwest Corner of Feature 06; View Northeast



Figure 3-12 Feature 04, Traditionally Constructed Yapese Terrace Set on the West Side of Feature 06; View North-northeast; Feature 05, Japanese Concrete Staircase, is in the Foreground

Three Burmese rosewood trees (*laach*; *Pterocarpus indicus*) were planted on the south side of the terrace set and may have been incorporated into the design of the terrace set. *Laach* is a threatened and endangered species that is significant in Yapese culture as a medicinal plant and source of lumber (Merlin et al. 2019). These trees appear to have replaced the coconut palms that are described in the NRHP nomination (NPS 1976). *Laach* have a distinctive root system, which grows laterally with large buttresses that grow out of the ground. The sprawling root system had disturbed the terrace set (Feature 04) and much of the brick and stonework of Feature 06. The condition of the terrace set was fair to good.

Feature 05: Concrete Staircase

Feature 05 was a concrete staircase along the west side of the Spanish colonial embankment and mound (Feature 06) (Figure 3-13). The staircase was smaller and narrower than the double staircase on the east side of the site (Feature 01). The characteristics of the staircase suggested it was constructed during the Japanese administration. The condition was fair to poor as most of the steps had large cracks.



Figure 3-13 Feature 05, Japanese Staircase on the West Side of the Site; View Northeast

Feature 06: Earthen and Masonry Embankment and Mound

Feature 06 was an earthen and masonry embankment and mound and was the primary component of the Spanish fort. It is approximately 216–223 feet (66–68 meters) long, 98–118 feet (30–36 meters) wide, and 10 feet (3 meters) high. Based on historical documents (Lévesque 2005a), the naturally hilly center of Blelaach Island was leveled for fill, which was then deposited along the southern shore of Yap Island for the construction of the governor's house. The sides of the now-level elevated area were stabilized with mortared brick, stone, and coral (the embankment sides).

Masonry reinforcement included segments of square, hand-cut stone masonry or rough ashlar (also known as large square-cut stone) (*silleria*) (Figure 3-14) with mortared fired clay bricks and formed three of the extant corners (southeast, northeast, and northwest) (Figure 3-15 to Figure 3-20); the southwest corner was destroyed or removed and had a traditional Yapese terrace set (Feature 04). The southeast corner was an exemplar of the different masonry techniques that were applied. Coursed, mortared bricks form the bulk of the corner, including the exterior faces. Abutting the brickwork on the interior edge was *silleria*. This, in turn, was covered by mortared rubble masonry, which formed the interior surface of the embankment. The original masonry that was plastered though portions of this finish have since eroded.



Figure 3-14 Feature 06, North Section of the East Spanish Colonial Embankment and Mound Exhibiting *Silleria* Masonry; View West



Figure 3-15 Feature 06, Southeast Corner Revealing Coursed Mortared Brick within an Interior Veneer and Cap of Mortared Masonry; View North



Figure 3-16 Feature 06, Detail of the Southeast Corner Showing Rubble (Left), Rough Ashlar (Center), and Brick (Right) Construction; View North



Figure 3-17 Feature 06, Northeast Corner Built of Coursed, Mortared Brick; View Facing Southeast; Note the Remnant Plaster



Figure 3-18 Feature 06 Northwest Corner of the Embankment Facing South

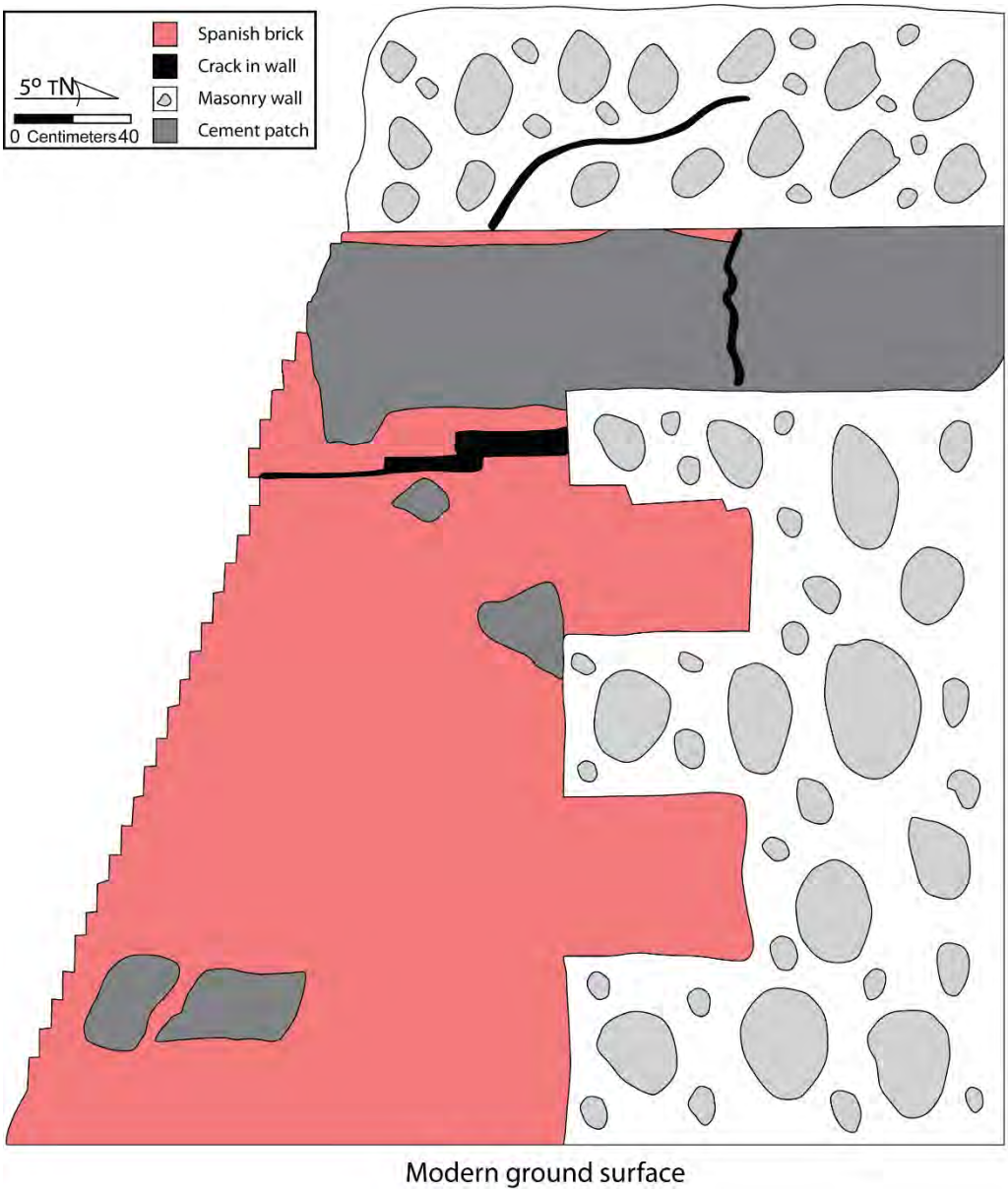


Figure 3-19 Feature 06, Profile of the Southeast Corner Facing West (Profile 1 in Figure 3-3)

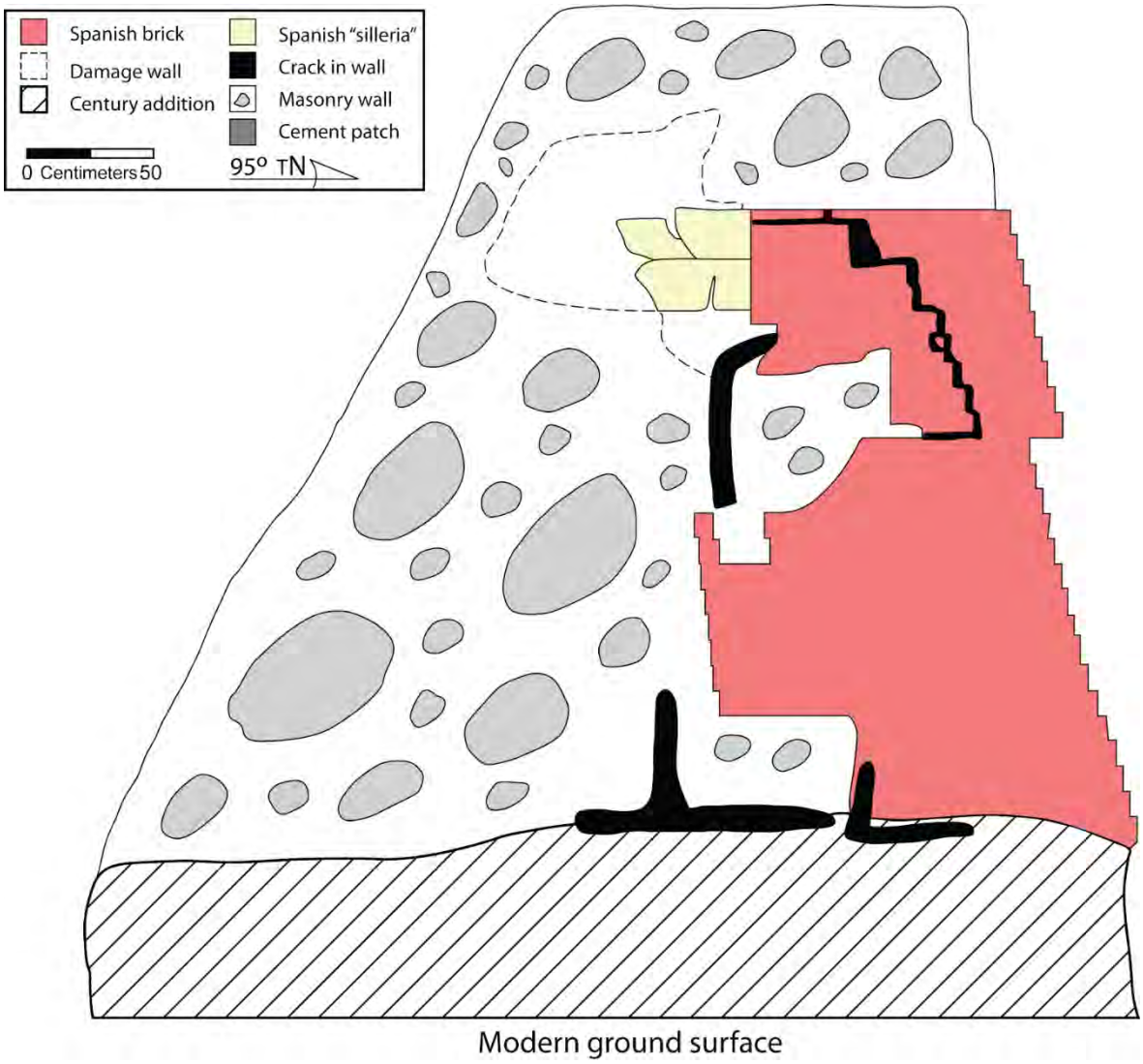


Figure 3-20 Feature 06, Profile of the Southeast Corner Facing North (Profile 2 in Figure 3-3)

A section of the west foundation wall appeared to have been modified or rebuilt in a more recent construction episode. The stones were smaller, less weathered, and dry stacked, which is more consistent for *chamog* (Figure 3-21). Utility lines have been installed through this section of the embankment, and modification may be associated with these more recent installations. More extensive damage was observed on the south wall, which showed rebuilding using recycled fragments of stone and brick (Figure 3-22).



Figure 3-21 Feature 06, Section of the West Wall Revealing a Modification Reminiscent of Traditional Yapese Masonry; View East-northeast



Figure 3-22 Feature 06, Section of the South Wall Damaged and Rebuilt Using Original Spanish Brickwork Fragments; View North

Extensive modifications were made to the mound and embankment during the Japanese administration. Three staircases and a driveway were added to allow access to the top of the site, which supports concrete buildings constructed by the Japanese.

Feature 07: Brick Alignment

Feature 07 was a short section of Spanish brick inset into the top of the earthen mound (Feature 06) (Figure 3-23). The concrete foundation of the Japanese hospital overlaid a portion of the brickwork, and its full extent was unknown. Based on its location, it is possible that Feature 07 was the remnants of a Spanish colonial building, particularly one of the brick columns (*pilotes*) for the infantry quarters noted in historical documents. The condition was fair because of 20th-century modifications above and around the brickwork.



Figure 3-23 Feature 07, a Small Section of Spanish Brickwork That May Be a Remnant Foundation of a Former Building or Structure

Construction Episodes

The construction sequence for the Spanish fort was based on historical research and field observations. Additional archival and field research should refine this chronology of the construction episodes:

- Episode 1 was the leveling of the naturally hilly central area of Blelaach Island in 1886. This area was used as a borrow to obtain fill, which was deposited along the island's south shore for the construction of the governor's house.
- Episode 2 was the construction of the rectangular embankment around the newly leveled mound (Feature 06). This entailed at least five construction sequential methods:
  - Episode 2a is presumed to have been the deposition of an earthen core for at least parts of the embankment.
  - Episode 2b was the construction of coursed, mortared brick corners.
  - Episode 2c was the construction of the *silleria* or ashlar masonry abutting and capping the brickwork and forming portions of the embankment sides.
  - Episode 2d was the placement of a rubble masonry veneer over at least portions of the interior embankment faces.
  - Episode 2e was the application of plaster, presumably a locally made lime plaster, on the masonry and brickwork.
- Episode 3 was the construction of the military quarters, trade center, and sentry boxes (*garitas*). Feature 07 may be a remnant of one of these buildings or structures.
- Episode 4 encompassed the various Japanese-built concrete structures (Features 01, 03, and 05), utilities (Feature 02), and buildings built on and around the mound and embankment.
- Episode 5 was the more recent Yapese modifications to the exterior southern and western walls (Feature 04).

3.1.2.2 Temporary Site 03: Mound

Temporary Site 03 was a large anthropogenic mound that was constructed in the mid-20th-century at the edge of what had been Tablaaw Island, but was encompassed into the Yap Port peninsula through land reclamation. The mound was approximately 197 feet (60 meters) long and 164 feet (50 meters) wide. According to local consultants, the mound was constructed by Japanese residents who remained in Yap after World War II. The mound was covered with vegetation and faced with stone in some areas. The Yap State Legislature (YSL) building and associated features were built on the mound in the 1980s (Figure 3-24).



Figure 3-24 Temporary Site 3, a Large Anthropogenic Mound Built During the Mid-20th-Century, Which Supports the Yap State Legislature Building

A concrete staircase leading to the YSL building was similar to Japanese-administration-era structures and is likely contemporaneous with the construction of the mound. A U.S. Coast and Geodetic Survey Benchmark survey was installed on one of the steps in 1951. Modern features associated with the YSL building included a traditional stone path, a traditional platform, and a Japanese shrine (Figure 3-25). Two *rai* that were dedicated during the opening ceremony of the YSL building were leaning on the platform. A Spanish canon, relocated from another location (source unknown), was outside of the main entrance to the building (Figure 3-26). None of the structures or relocated items atop the mound were considered components of the site, though they have cultural significance to contemporary Yapese. The mound retains integrity of location and materials, but late-20th-century construction resulted in the loss of integrity for design, setting, workmanship, feeling, and association. It is recommended as not eligible for listing in the NRHP.



Figure 3-25 Temporary Site 3 with a Stone Path (Right) that Leads to a Japanese Shrine and Traditional Yapese Platform (Top), Adjacent to the Stairs to the YSL Entrance (Left)



Figure 3-26 Temporary Site 3, a Spanish Canon was Placed in Front of the Entrance to the YSL

3.1.3 Chamorro Bay Linear Survey Area

No archaeological sites were identified within the Chamorro Bay Linear Survey Area, but two sites abut the survey area and, therefore, were preliminarily documented.

3.1.3.1 Temporary Site 01: Retaining Wall

Temporary Site 01 was a stone and coral retaining wall with a concrete staircase (Figure 3-27). The wall was approximately 70 feet (21 meters) long and 6 feet (1.8 meters) high. It was built along the south edge of the road around Chamorro Bay in the village of Woorwoo, Rull Municipality. The retaining wall was on privately owned property. The concrete steps were similar to Japanese-administration-era structures, and a local consultant with family from this village stated the stairs were built by the Japanese. While the retaining wall was built in a traditional Yapese fashion, its construction date was uncertain. The stairs are an example of structural modifications to village features during the Japanese administration. Temporary Site 01 was in good condition; it is recommended as eligible for listing in the NRHP.



Figure 3-27 Temporary Site 01, Stone and Coral Retaining Wall with Japanese-era Concrete Steps, in Woorwoo Village, Rull Municipality; View South

3.1.3.2 Temporary Site 02: Retaining Wall

Temporary Site 02 was a stone and coral retaining wall (Figure 3-28). It was approximately 85 feet (26 meters) long by 3 feet (0.9 meters) high. It was approximately 16 feet (5 meters) south of the road around Chamorro Bay in the village of Woorwoo, Rull Municipality. The retaining wall was on privately owned property adjacent to a drainage leading into Chamorro Bay. In Yapese, this type of erosion control retaining wall is known as *tanayboch*. A large, vertically placed *Tridacna* sp. shell is at the southeast corner of the wall and the feature was covered with vegetation. The age of Temporary Site 02 was unclear, but a local consultant indicated its construction was approximately contemporaneous to Temporary Site 01. Temporary Site 02 was in good condition; it is recommended as eligible for listing in the NRHP.



Figure 3-28 Temporary Site 02, Stone and Coral Retaining Wall in Woorwoo Village, Rull Municipality; View West

3.2 Marine Cultural Survey

3.2.1 Results

SEI provided the CAP JV archaeologists with raw remote sensing data (magnetometer and side-scan sonar), which were processed following the methods described in Section 2. A copy of the SEI survey report can be found in Appendix A. The research, methods, and hypotheses described in the work plan guided the archaeological analysis and assisted in developing the results and recommendations presented below (DON 2023a). The characteristics of the magnetic anomalies that met the amplitude threshold (±5 gammas) were compared with verified examples of shipwreck magnetic signatures. SEI used side-scan sonar imagery to identify acoustic contacts and create mosaicked imagery for all survey areas to layer with other project data.

The CAP JV identified 25 magnetic anomalies and 43 acoustic contacts. Archaeologists used remote sensing data, aerial imagery, historical maps, local consultants, visual inspection from the vessel, and previous archaeological surveys to select targets for directed (diver or drop camera) investigation. In total, 30 targets were subjected to directed investigations (Figure 3-29, Table 3-3). Maps and tables of findings depicting survey results, including a survey post plot, magnetic anomaly statistics, and an acoustic contact report, are presented in Appendix B.

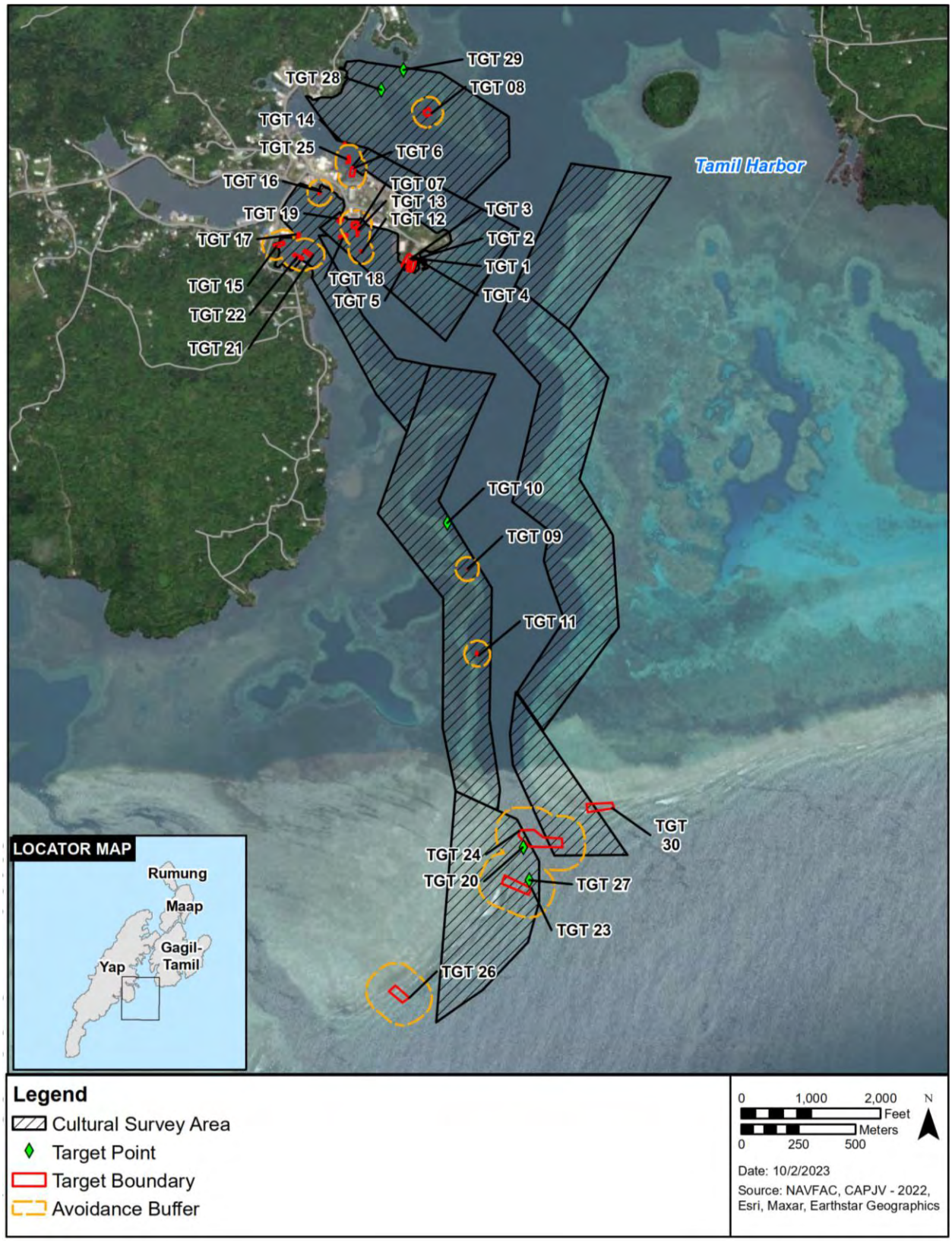


Figure 3-29 Identified Targets within Marine Cultural Survey Areas

Table 3-3 Targets Subjected to Direct Investigations

ID	Survey Area	Preliminary Identification	NRHP Eligibility	Recommended Avoidance Buffer
Target 01	Yap Port (Survey Area 4)	Shipwreck	Not eligible	N/A
Target 02	Yap Port (Survey Area 4)	Shipwreck	Not eligible	N/A
Target 03	Yap Port (Survey Area 4)	Shipwreck	Not eligible	N/A
Target 04	Yap Port (Survey Area 4)	Shipwreck	Not eligible	N/A
Target 05	Yap Port (Survey Area 4)	Shipwreck	Not eligible	N/A
Target 06	Yap Port (Survey Area 4)	Shipwreck	Treat as eligible (D) pending additional information	164 ft
Target 07	Yap Port (Survey Area 4)	Shipwreck	Treat as eligible (D) pending additional information	164 ft
Target 08	Yap Port North (Survey Area 7)	Shipwreck	Treat as eligible (D) pending additional information	164 ft
Target 09	Tamil Channel (West) (Survey Area 2)	Shipwreck	Treat as eligible (D) pending additional information	164 ft
Target 10	Tamil Channel (West) (Survey Area 2)	Natural	Not a historic property	N/A
Target 11	Tamil Channel (West) (Survey Area 2)	Shipwreck, U.S. Navy LCM 3	Eligible (D)	164 ft
Target 12	Yap Port (Survey Area 4)	Possible pontoon/pier	Treat as eligible (D) pending additional information	164 ft
Target 13	Yap Port (Survey Area 4)	Shipwreck	Treat as eligible (D) pending additional information	164 ft
Target 14	Yap Port–North (Survey Area 7)	Crane	Not eligible	N/A
Target 15	Yap Port–Southwest (Survey Area 5)	Shipwreck	Treat as eligible (D) pending additional information	164 ft
Target 16	Yap Port–Southwest (Survey Area 5)	Shipwreck, Landing Craft	Treat as eligible (D) pending additional information	164 ft
Target 17	Yap Port–Southwest (Survey Area 5)	Possible pier	Not eligible	N/A
Target 18	Yap Port (Survey Area 4)	Natural	Not a historic property	N/A
Target 19	Yap Port (Survey Area 4)	Natural	Not a historic property	N/A
Target 20	Tamil Channel Entrance (West) (Survey Area 3)	Isolated find	Treat as eligible (D) pending additional information	Encompassed within Target 24 buffer
Target 21	Yap Port–Southwest (Survey Area 5)	Shipwreck	Treat as eligible (D) pending additional information	164 ft

ID	Survey Area	Preliminary Identification	NRHP Eligibility	Recommended Avoidance Buffer
Target 22	Yap Port–Southwest (Survey Area 5)	Shipwreck	Treat as eligible (D) pending additional information	164 ft
Target 23	Tamil Channel Entrance (West) (Survey Area 3)	Shipwreck	Treat as eligible (D) pending additional information	328 ft
Target 24	Tamil Channel Entrance (East and West) (Survey Area 3)	Shipwreck, SMS *Planet* or *Kokura Maru*	Treat as eligible (D) pending additional information	328 ft
Target 25	Yap Port (Survey Area 4)	Shipwreck	Treat as eligible (D) pending additional information	164 ft
Target 26	Tamil Channel Entrance (West) (Survey Area 3)	Shipwreck	Treat as eligible (D) pending additional information	328 ft
Target 27	Tamil Channel Entrance (West) (Survey Area 3)	Isolated find	Treat as eligible (D) pending additional information	Encompassed within Target 23 buffer
Target 28 (W48)	Yap Port–North (Survey Area 7)	No longer extant	Not eligible	N/A
Target 29 (W49)	Yap Port–North (Survey Area 7)	No longer extant	Not eligible	N/A
Target 30	Tamil Channel Entrance (East) (Survey Area 3)	Natural	Not a historic property	N/A

Legend: ft = foot or feet; ID = identification; LCM = landing craft mechanized; NRHP = National Register of Historical Places; U.S. = United States.

Preliminary target boundaries were defined based on aerial imagery, diver surveys, and acoustic imagery, where available. Due to complexities surrounding the collection of magnetic data and acoustic imagery, and the limited sub-sea bottom investigations, target boundaries may not encompass potential buried cultural objects.

3.2.1.1 Offshore Mooring (Survey Area 1)

No potential submerged cultural resources were identified in collected remote sensing data or during directed investigations within Offshore Mooring (Survey Area 1).

3.2.1.2 Tamil Channel (East) (Survey Area 2)

No potential submerged cultural resources were identified in collected remote sensing data or during directed investigations within Tamil Channel (East) (Survey Area 2).

3.2.1.3 Tamil Channel (West) (Survey Area 2)

Three targets (Targets 09, 10, and 11) were identified within Tamil Channel (West) (Survey Area 2): (Figure 3-30).

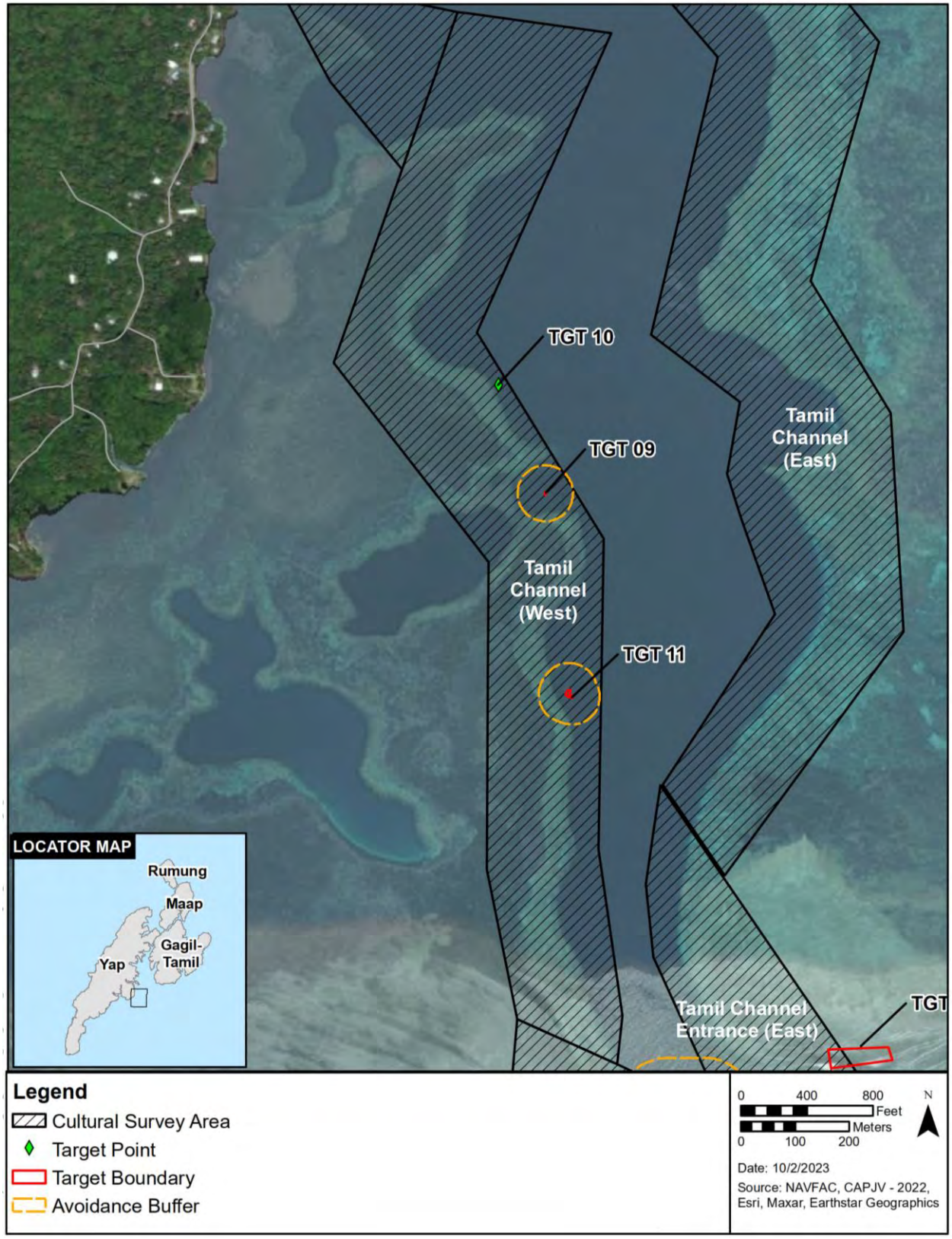


Figure 3-30 Tamil Channel (West) (Survey Area 2)

Target 09

Target 09 was recorded as Acoustic Contact S006, in approximately 65 feet (20 meters) of water (Figure 3-31). It was a late-20th-century general cargo ship denoted as kml_78 in the NOAA ENC shipwreck database as a submerged shipwreck. The Navy Seabee MBES data designates Target 09 as a wreck, 102 feet (31 meters) long and 30 feet (9 meters) wide (Figure 3-32). Target 09 is known locally as the "Circus Wreck," formerly named *Laura Marie*, which was purposefully sunk as an artificial reef in 1992 by Yap Divers Dive Center operating out of Manta Ray Bay Resort (2023). It is the first and only known artificial reef in the FSM.

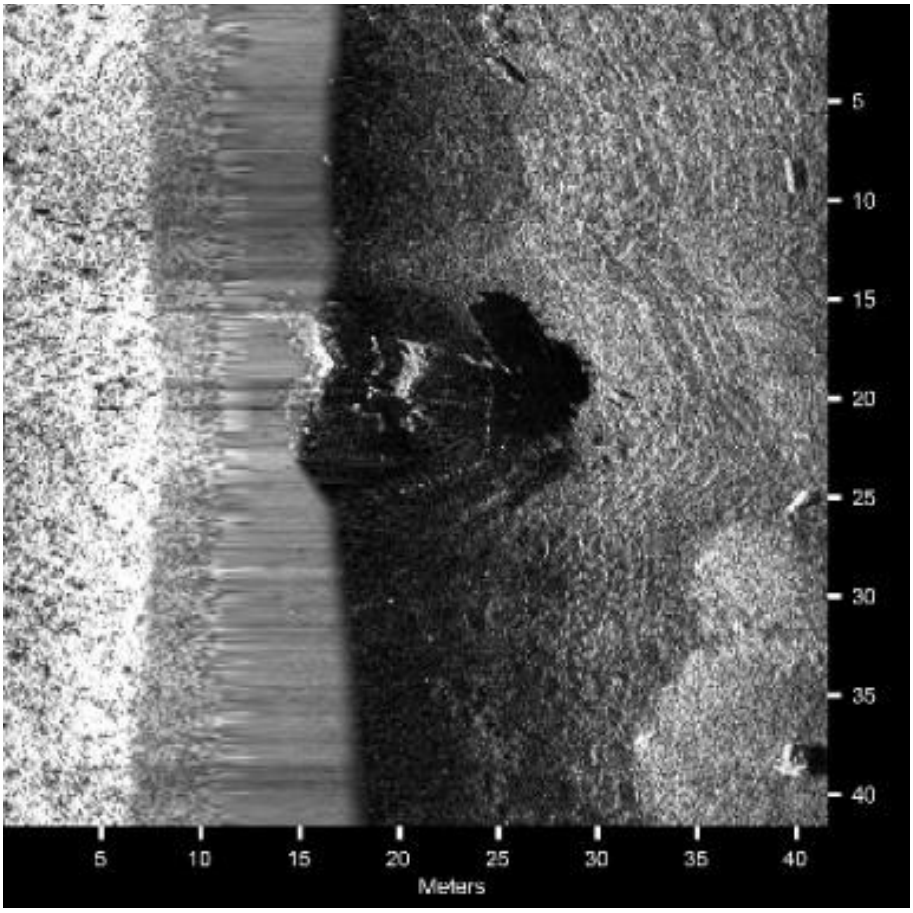


Figure 3-31 Target 09 (Acoustic Contact S006)

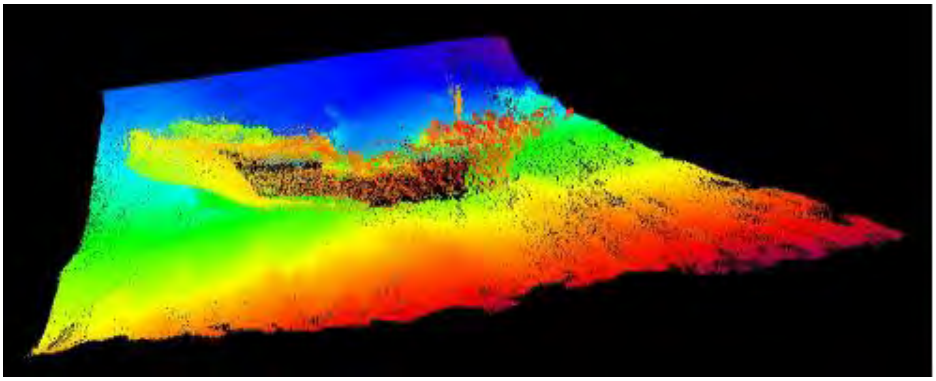


Figure 3-32 Target 09 (Navy Seabee MBES image)

Divers spent 112 minutes investigating Target 09 and confirmed the source as the shipwreck. Target 09 was predominantly intact and lays on its port side along the western side of the Tamil Channel (West) (Survey Area 2) (Figure 3-33). Several ship construction elements were observed, including multiple hatches, the weather deck, the cabin, boat rails, a propeller, a rudder, and a stern frame. The upper decks have collapsed and now rest beside the main structure (Figure 3-34 to Figure 3-36). Local dive operators recalled that the “Circus Wreck” brought elephants and other circus animals to Yap when they were children in the 1980s.



Figure 3-33 Target 09 Lying on its Port Side (Photo by AECOM)



Figure 3-34 Collapsed Upper Decks on Target 09 (Photo by AECOM)



Figure 3-35 Target 09 Ship Construction Features (Photos by AECOM)

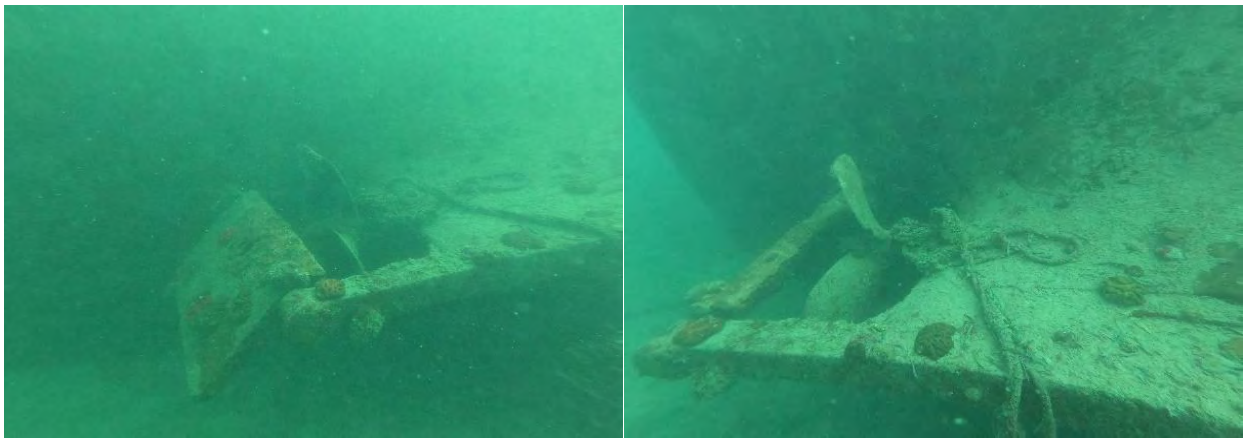


Figure 3-36 Target 09 Propeller and Rudder (Photo by AECOM)

Further research is needed to document the work life and ship construction of *Laura Marie*; however, the observed ship construction elements are consistent with late-20th-century, ocean-going general cargo ships. Attempts to identify the *Laura Marie* in ship registries were unsuccessful. Based on observed characteristics and available data, Target 09 may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. It is recommended treating Target 09 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.

Target 10

Target 10 was located in approximately 45 feet (13 meters) of water (Figure 3-37). Divers did not identify any acoustic contact in the vicinity of Target 10. The source of Target 10 was a natural coral head, a non-anthropogenic object. Navy Seabee MBES data denotes Target 10 as a wreck, 30 feet (9 meters) long and 16 feet (5 meters) wide, exposed approximately 18 feet (5.6 meters) above the sea bottom.

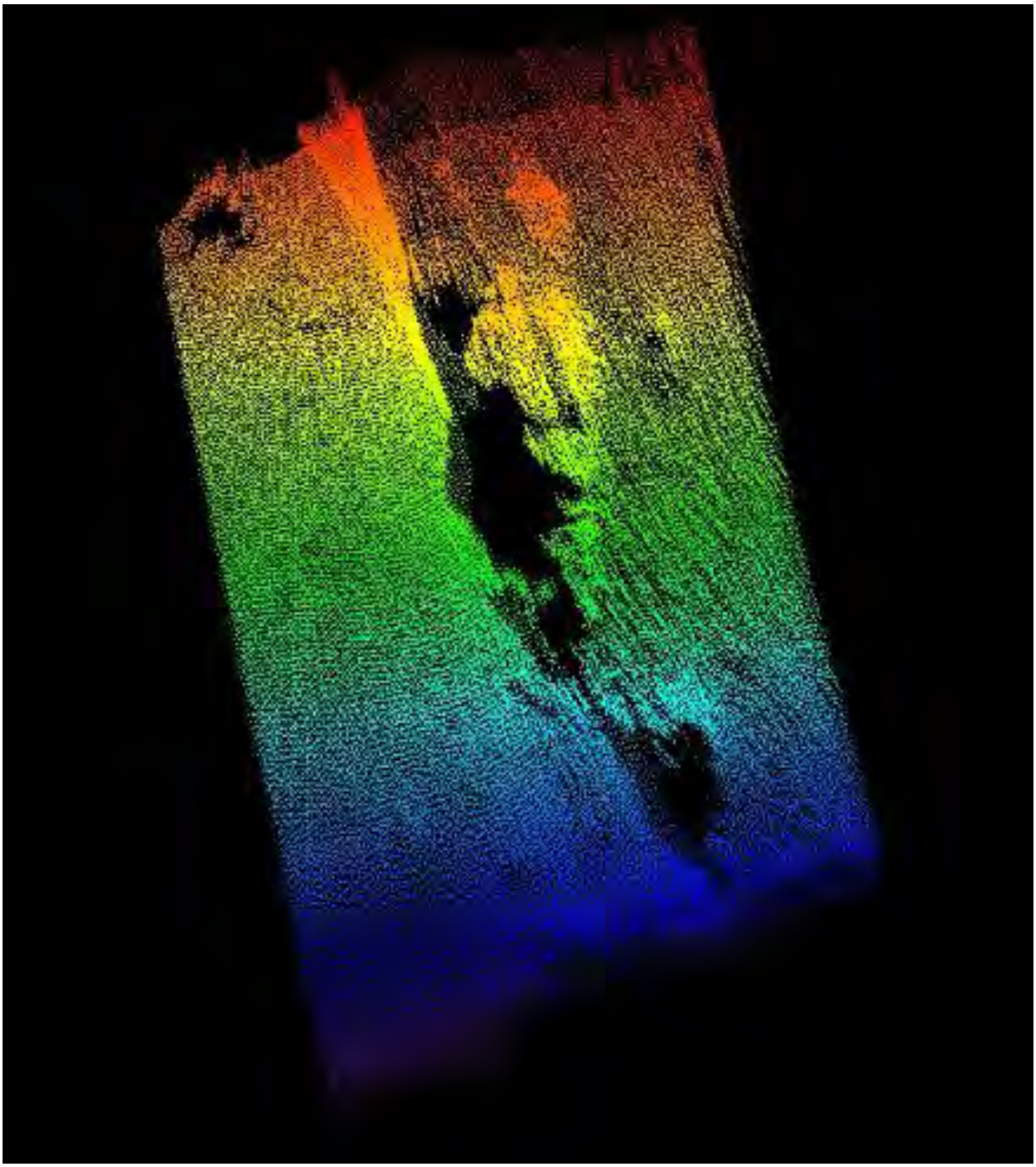


Figure 3-37 Target 10 (Navy Seabee MBES image)

Divers spent 18 minutes investigating Target 10 and identified the source as a coral head with substantial relief. The coral head was bulbous and elongated, which was consistent with recorded MBES data.

Target 11

Target 11 was Acoustic Contact S012, which was in approximately 65 feet (20 meters) of water (Figure 3-38). It was classified as a landing craft mechanized (LCM). The Navy Seabee MBES data designates Target 11 as a landing craft, 50 feet (15 meters) long and 15 feet (4.6 meters) wide (Figure 3-39).

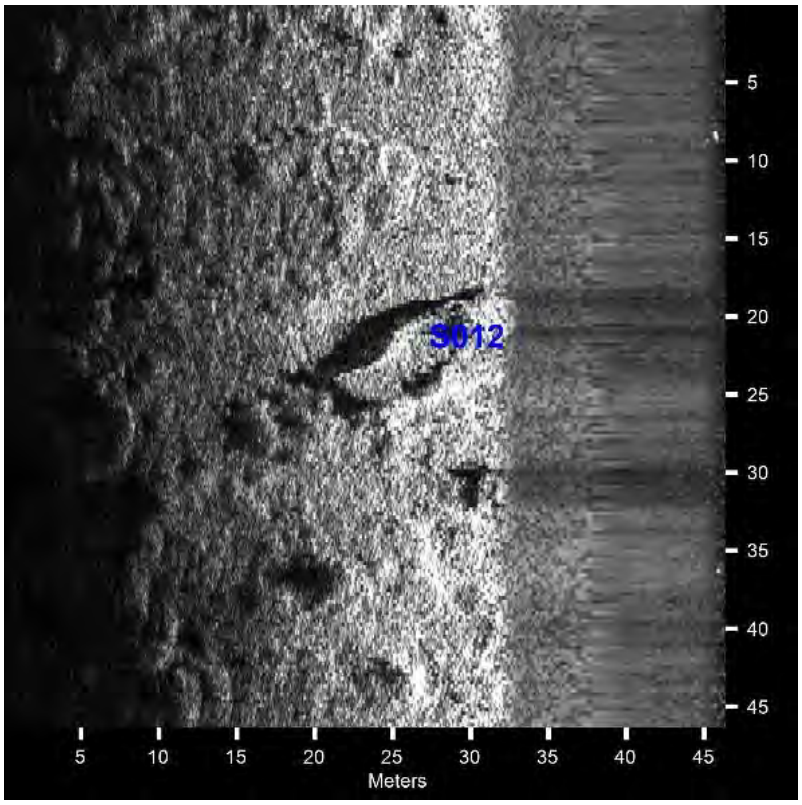


Figure 3-38 Target 11 (Acoustic Contact S012)

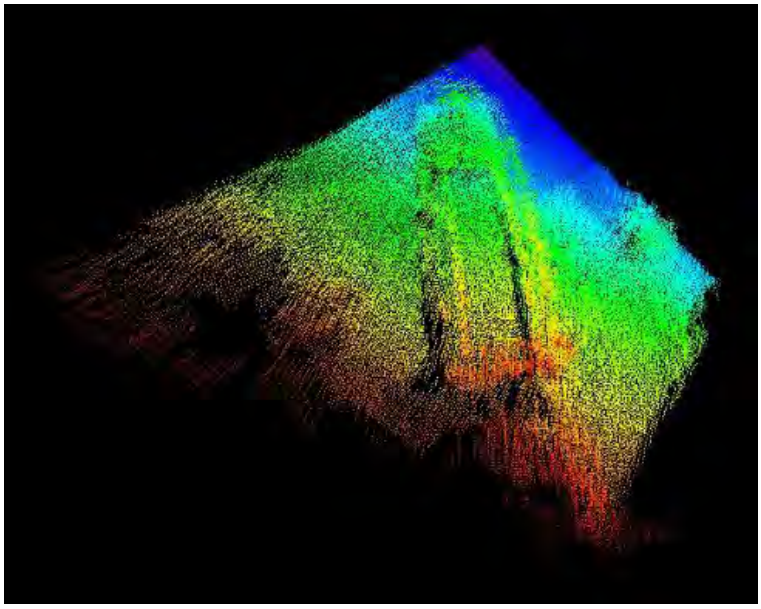


Figure 3-39 Target 11 (Navy Seabee MBES image)

Divers spent 46 minutes investigating Target 11 and identified the source as a landing craft. Archaeologists confirmed site dimensions and observed several distinguishing features consistent with a LCM, including the pilot house, access hatch, cowl vent, ramp, two ladder rungs, and corrugated floor. Substantial marine growth obscured details along the exterior sides of the landing craft. Based on the dimensions of the landing craft and distinguishing LCM features, further research determined that Target 11 is likely an LCM 3 (Figure 3-40).

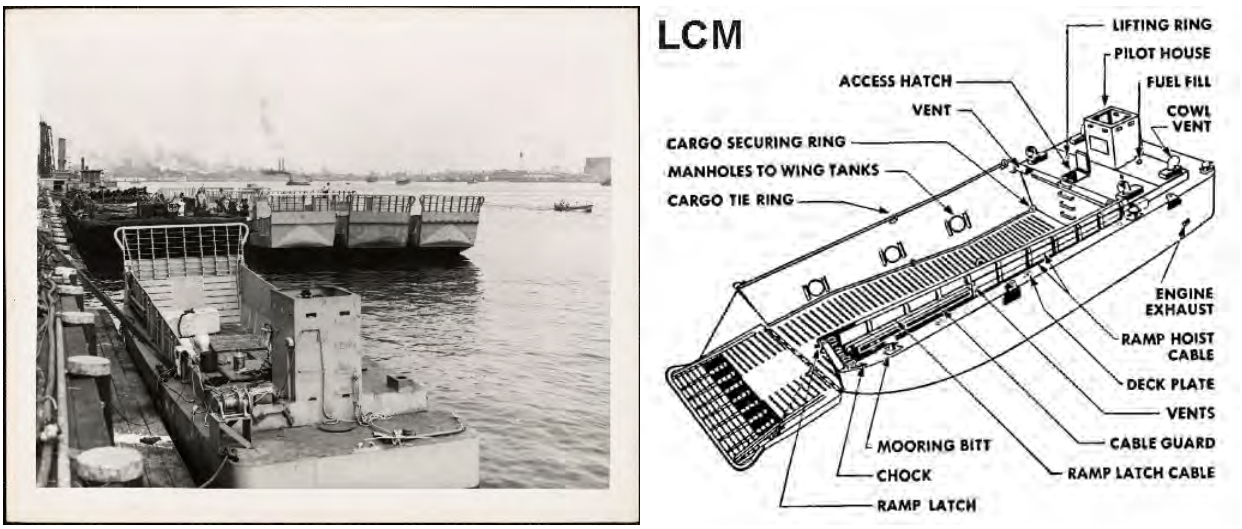


Figure 3-40 Representative Example of LCM Model 3 (Photo Courtesy of the U.S. National Archives Catalog and USS *Rankin* Association)

Based on observed characteristics and available data, Target 11 is recommended as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents.

3.2.1.4 Tamil Channel Entrance (East) (Survey Area 3)

Divers identified two targets (Targets 24 and 30) within Tamil Channel Entrance (East) (Survey Area 3) (Figure 3-41).

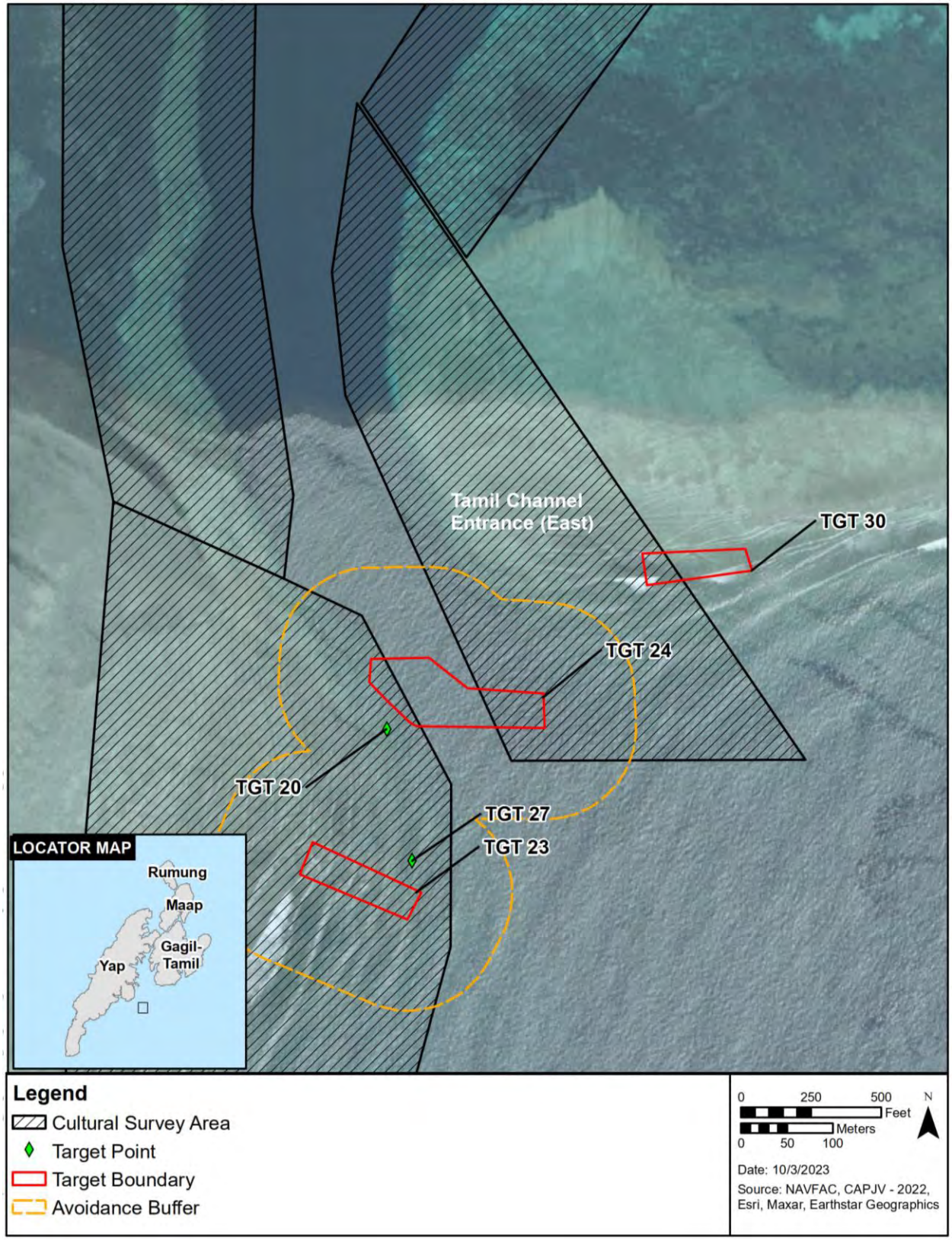


Figure 3-41 Tamil Channel Entrance (East) (Survey Area 3)

Target 24

Target 24 was recorded as Acoustic Contact S018 and was a large debris field that extended from the navigation channel marker number 2 (2 pin) across the navigation channel in water depths between approximately 20 feet (6.1 meters) to over 100 feet (30.1 meters) (Figure 3-42). The eastern portion of Target 24 was recorded within acoustic imagery. The wreck was depicted on the U.S. Navy Hydrographic Office (1924) map. The source of Target 24 was identified as the scattered remains of a late-19th-century to early-20th-century steam vessel, possibly identified as either the SMS *Planet*, a German survey vessel, or the *Kokura Maru*, a cargo vessel.

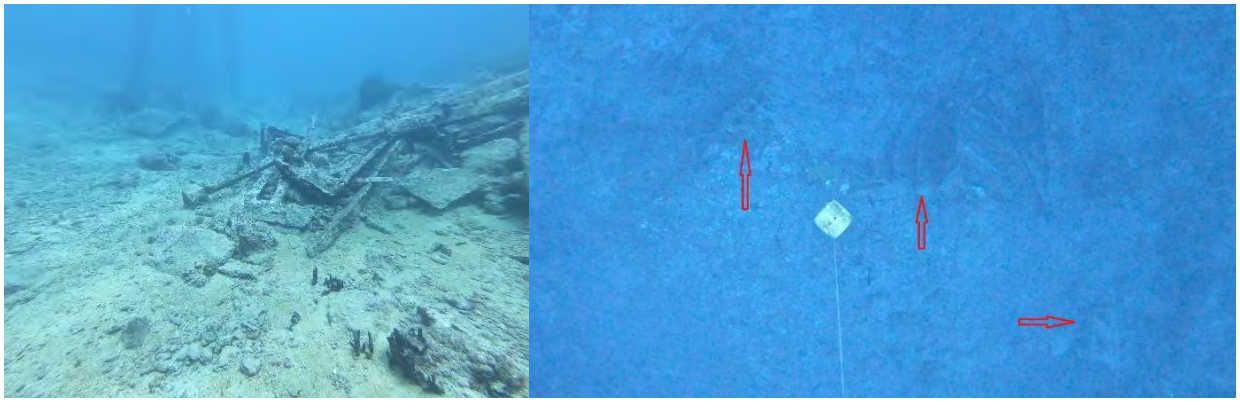


Figure 3-42 Target 24 with 2 Pin in Background (Left; Photo by AECOM) and Target 24 as Seen by the Drop Camera (Right; Photo by SEI)

Divers spent 185 minutes investigating Target 24 within water depths approved for diving, while drop camera footage was collected in depths beyond approved diving limits. Target 24 consisted of several ship construction elements including a Scotch boiler, which dates to the mid-19th to early 20th century, a smokestack, and a mast (Figure 3-43). Other ship construction elements included a windlass, metal framing, and exterior hull sheeting with window ports (Figure 3-44). Various sizes of chains were strewn about the site. Archaeologists noted two anchors, with the smaller one resembling a Rodger-style anchor, which dates to the mid- to late 19th century. The larger anchor had a single fluke and portion of the stock visible and exposed portions resemble an admiralty anchor (Figure 3-45).



Figure 3-43 Target 24 Scotch Boiler (Top Left), Metal Sheeting (Top Right), Smokestack (Bottom Left), and Mast (Bottom Right) (Photos by AECOM)

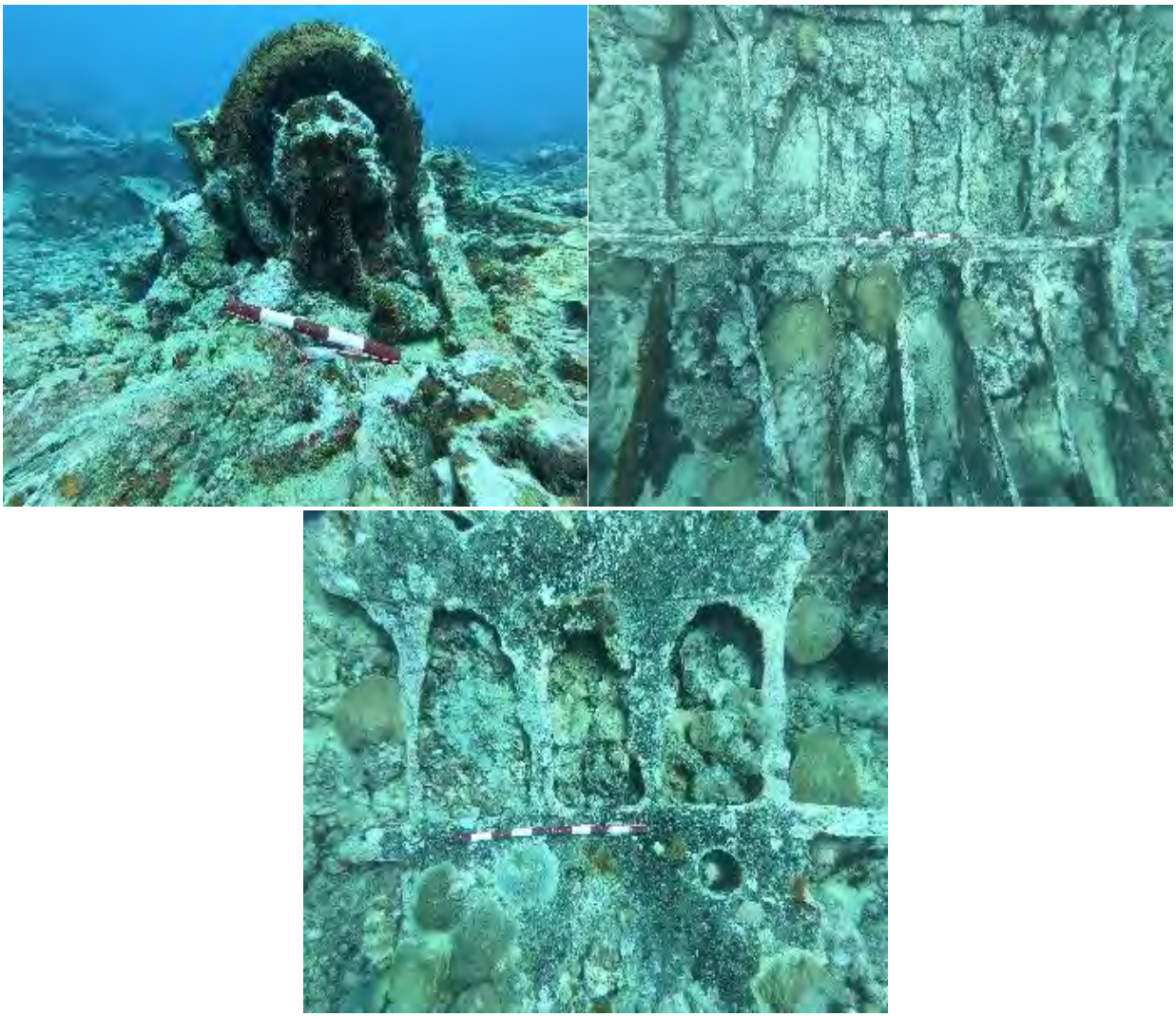


Figure 3-44 Target 24 Windlass (Top Left), Metal Framing (Top Right), and Exterior Hull Plating with Window Ports (Bottom) (Photos by AECOM)



Figure 3-45 Target 24 Large Admiralty Anchor (Left) and Small Rodger-style Anchor (Right) (Photos by AECOM)

SMS Planet (1905–1914) and Kokura Maru (1887–1920)

Post-fieldwork historical research found that Target 24 corresponds to historical accounts of both the SMS *Planet*, a German survey vessel that was purposefully scuttled to avoid capture by Japanese forces in 1914, and the *Kokura Maru*, a cargo vessel that was hit by a tropical squall while leaving the port of Tamil (Hobbs 1922, 93; Saxon 2000, 8). SMS *Planet* was built in Bremen, Germany by Aktien-Gesellschaft, Weser (A.G. Weser) and launched on August 2, 1905. It was commissioned later that year on November 16 by the Kaiserliche Marine (Imperial German Navy) as a survey ship to replace the SMS *Möwe*, the sister ship to SMS *Planet.* SMS *Planet* was 195.2 feet (59.5 meters) long with a beam of 31.3 feet (9.54 meters), a gross tonnage of 826, and a draft of 10.67 feet (3.26 meters). The ship was outfitted with two-cylinder boilers, two three-cylinder triple expansion engines, and one propeller, and was rigged with auxiliary sails. Additionally, it carried three 3.7 centimeter revolver cannons (Deutsche Digitale Bibliotek, n.d.) (Figure 3-46).

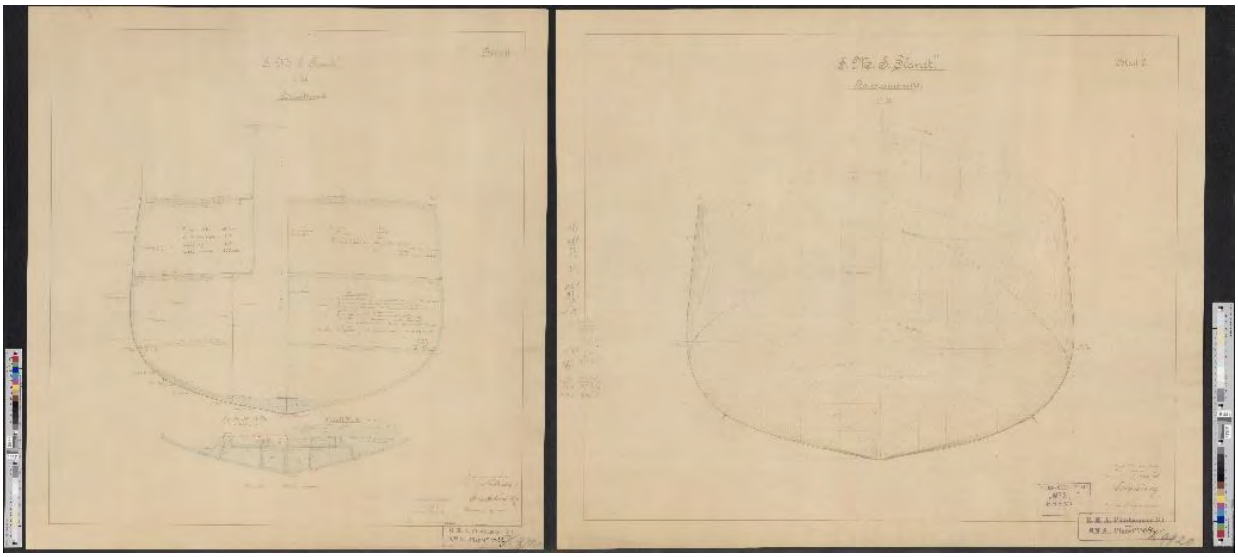


Figure 3-46 Ship Plans for SMS Planet (National Archives of Germany)

Commissioned by the German Imperial Navy to survey the German South Seas, the SMS *Planet* began sailing south in 1906 to conduct a series of scientific surveys along the West and East African coastlines, Maldives and Ceylon, Celebes, and the Moluccas (Deutsche Digitale Bibliotek, n.d.). During the 1906 to 1907 scientific expedition, surveyors aboard the ship recorded atmospheric pressure, air temperature, and sea temperature and conducted 211 deep-sea soundings (Brohan 2023; Deutsche Digitale Bibliotek, n.d.) (Figure 3-47). Anthropological and ethnographic surveys were also conducted for the Museum of Ethnology in Berlin (Krämer 1909). During the South Seas Expedition to the South Pacific Islands, notably the Caroline Islands and Palau from 1908 to 1910, surveyors continued their ethnographic, cartographic, and geographical surveys (Thilenius and Krämer 1917, 158–173). The culmination of German logbooks, journals, and nautical surveys conducted from 1897 to 1913 were published in a series of 39 numbered volumes (Mulligan 2006, 2). Volumes 31-37, titled *Punkt-Verzeichnis Südsee, Index of Navigational Points, South Pacific Islands*, constitute the surveys conducted by the SMS *Planet* and the other German naval survey vessels SMS *Möwe*, SMS *Condor*, and SMS *Cormoran* (Mulligan 2006, 4). The SMS *Planet* was photographed while moored in Farm Cove, Sydney Harbour, Australia on June 1, 1913 (Australian National Maritime Museum 2018) (Figure 3-48).

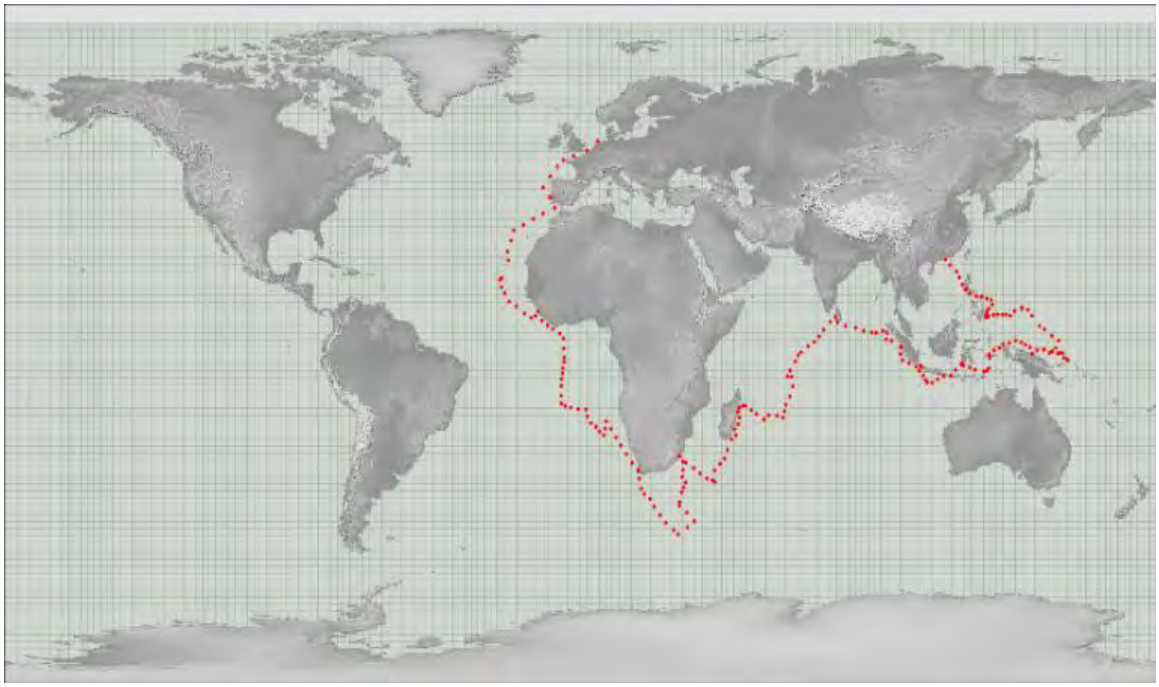


Figure 3-47 Daily Positions of SMS Planet Recorded during the 1906–1907 Expedition (Brohan 2023)



Figure 3-48 SMS *Planet* in Sydney Harbour in 1913 (Courtesy of the Australian Maritime Museum)

With the onset of World War I, the SMS *Planet* received orders to anchor at Tamil Port in Yap. On August 10, 1914, the vessel moved inside Dugor Bay, Yap, where it could be hidden from the Japanese First Fleet, which began seizing German colonies in late 1914 (Deutsche Digitale Bibliotek, n.d.; Saxon 2000, 6). According to German archives, the SMS *Planet* was "decommissioned" after shifting to Dugor Bay (Deutsche Digitale Bibliotek, n.d.). Other sources state that the SMS *Planet* was purposely scuttled on October 7, 1914, to avoid capture (Saxon 2000, 8; Mulligan 2006, 7). While some of the crew of the SMS *Planet* were picked up by SMS *Cormoran* in September 1914, the paymaster and 12 crewmen remained on Yap where they were taken prisoner by Japanese forces on October 7, 1914 (Deutsche Digitale Bibliotek, n.d.).

One account regarding the vessel's involvement in World War I was included in a newspaper article from December 1914. The Sydney Morning Herald reported that English passengers aboard the Nord-Deutscher Lloyd liner *Coblenz* were politely arrested by the first lieutenant of the German "gunboat" *Planet*, explaining that war had broken out between Great Britain and Germany (*The Sydney Morning Herald* 1914). While the English passengers were held as prisoners of war on Yap, they were treated well and allowed to roam freely on the island (*The Sydney Morning Herald* 1914). By the time the passengers returned to Sydney and the article was published, the SMS *Planet* had been destroyed and the remaining crew captured. Hobbs (1922, 93) writes that the SMS *Planet* was salvaged by the Japanese when they came into possession of the islands. No corroborating accounts of salvage efforts have been located.

The *Kokura Maru* was built in 1887 by Sir Raylton Dixon & Co (LD) and owned by Nippon Yūsen Kabushiki Kaisha (Lloyd's Register of Shipping 1901). *Kokura Mura* had a gross tonnage of 2,468–2,590 and was listed as a steel screw vessel (Lloyd's Register of Shipping 1901; 1920). Hobbs (1922) mentions *Kokura Maru* sinking in 1920 due to a tropical rain squall at the mouth of the harbor of Tomil. The shipwreck could be seen "upon the reef of the western wall by the strong cross-tide, where the bones remain a grim warning to all vessel which enter the port" (Hobbs 1922, 77). Hobbs (1922) states that the *Kokura Maru* sank in December 1920, but the Lloyd's (1920) casualty returns was published in July 1920 and covers the reported losses during the period of January 1–March 31, 1920 (and reported on July 22, 1920), which raises questions about the current understanding of the timeline. Additional research is necessary to further investigate the potential identification of Target 24.

Based on observed characteristics and available data, Target 24 may retain the potential to yield significant information about late-19th-century to early-20th-century shipping. It is recommended treating Target 24 as eligible for listing in the NRHP with an avoidance buffer of 328 feet (100 meters) from the defined site extents, pending additional information.

Target 30

Target 30 was identified through aerial imagery as an unknown contact measuring 340 feet (103 meters) long and 26 feet (8 meters) wide in approximately 10 feet (3 meters) of water. Target 30 was visible from the surface and, after several passes investigating the target, archaeologists identified the source as a substantial linear patch of sea grass (Figure 3-49). The historic aerial imagery suggested that the linear outcrop could represent an *aech* due to its size and linear characteristics. Upon examination, however, archaeologists determined that Target 30 contained no evidence of rock or coral features. The source of Target 30 is a natural sea grass formation, a non-anthropogenic feature.

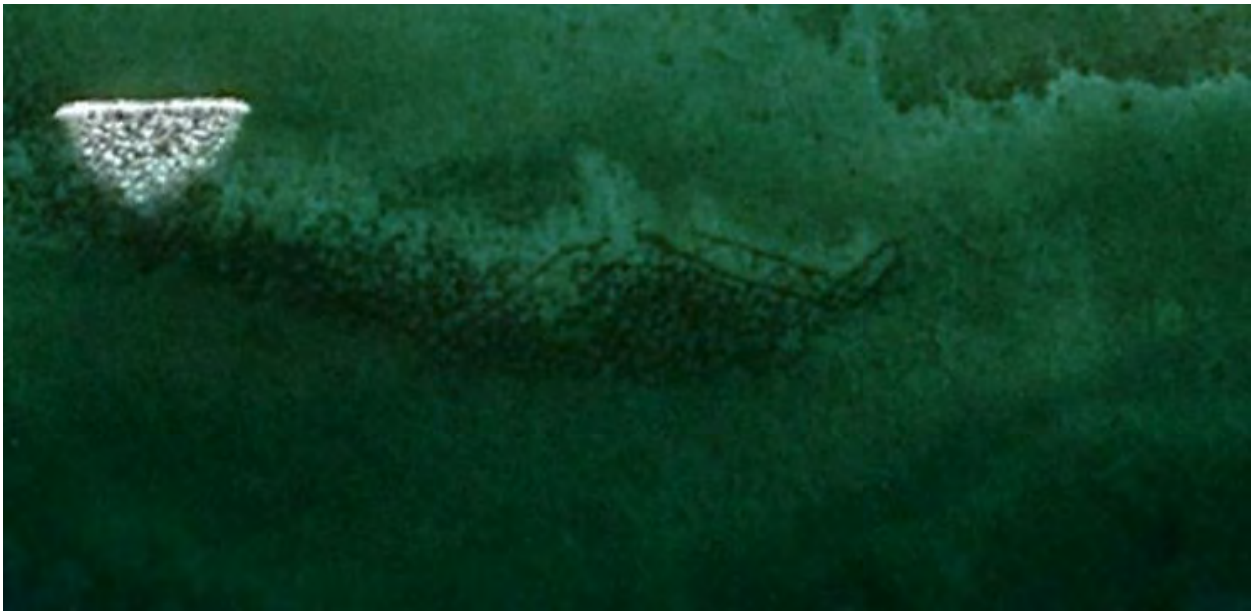


Figure 3-49 Modern Aerial Imagery Depicting Target 30

3.2.1.5 Tamil Channel Entrance (West) (Survey Area 3)

Five targets (Targets 20, 23, 24, 26, and 27) were identified within Tamil Channel Entrance (West) (Survey Area 3): (Figure 3-50).

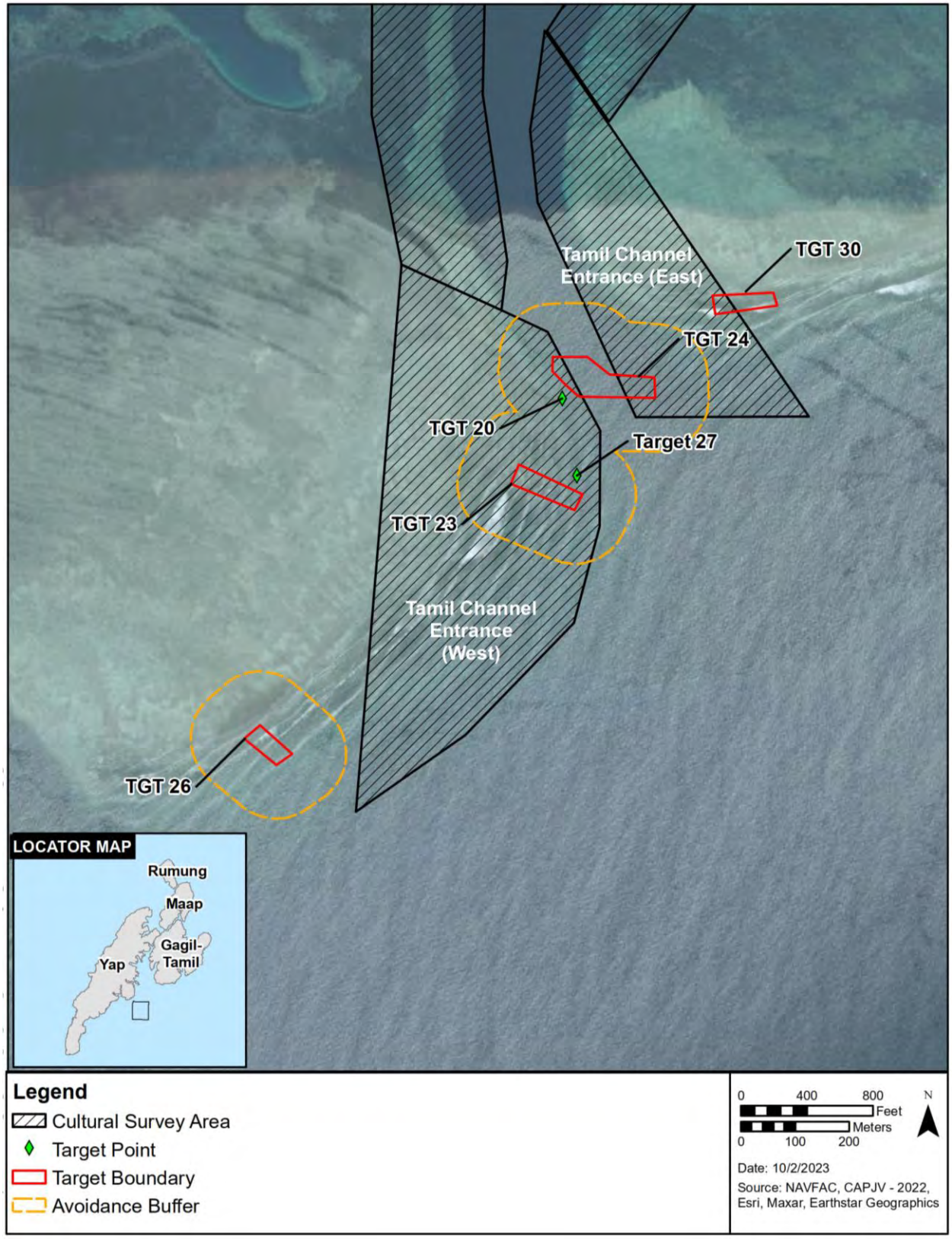


Figure 3-50 Tamil Channel Entrance (West) (Survey Area 3)

Target 20

Target 20 was located in Tamil Channel Entrance (West) (Survey Area 3) in 15 feet (5 meters) of water and near Targets 23 and 24. Target 20 was an isolated object measuring 8 feet (2.5 meters) by 6.5 feet (2 meters) (Figure 3-51). Target 20 is an unknown piece of machinery that may be associated with Targets 23 or 24 or may be an isolated find. It is possible that Target 20 may have associated buried material. Based on observed characteristics and available data, Target 20 may be related to Target 23 or 24 and, as such, may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. Due to its potential association with Target 23 or 24, it is recommended treating Target 20 as eligible for listing in the NRHP pending additional information. Target 20 was encompassed within the recommended avoidance zone of Target 24 and may be related; therefore, an additional avoidance buffer for Target 20 is not currently recommended.

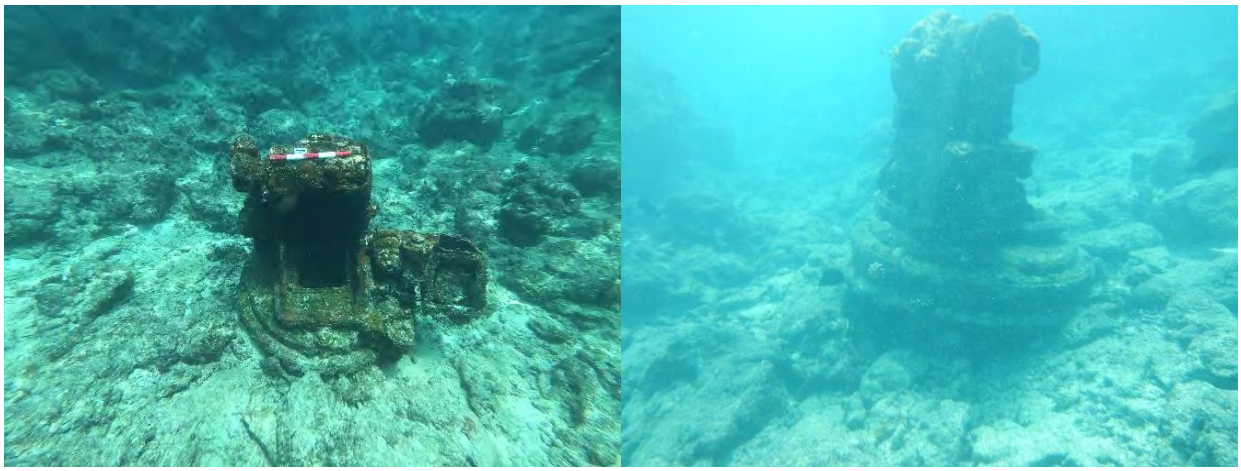


Figure 3-51 Target 20 (Photos by AECOM)

Target 23

Target 23 was located near Tamil Channel Entrance (West) (Survey Area 3) in approximately 14 feet (4 meters) of water. Target 23 was denoted as kml_76 in the NOAA ENC shipwrecks database as always dry. Target 23 rests along the edge of the outer reef and, while investigating the target, archaeologists noted that during low tide sections of the wreck became exposed. Divers spent 146 minutes investigating Target 23 and identified the source as a large, early- to mid-20th century wreck. Target 23 was approximately 400 feet (122 meters) long by 100 feet (30 meters) wide and consisted of an early- to mid-20th-century ship with construction features including large engine pieces that may be from an internal combustion engine, large metal frames and outer hull plating, and a reinforced keelson with triangular supports (Figure 3-52). Target 23 also consisted of two propellers, the blades each measuring 3 feet (1 meters) long and 2 feet (0.5 meters) wide, prop shafts, and two propulsion engines (Figure 3-53). Two large anchors that stylistically resemble a Danforth anchor were located near the propeller shafts (Figure 3-54). Additional details were documented, such as a partial serial number on a fitting, two rectangular metal radiator-like objects, and a large variety of cupreous artifacts (Figure 3-55). Observed construction elements such as engine and prop shafts appear to reflect its historic design prior to the wrecking event. Due to heavy amounts of surge and shallow water, the entirety of Target 23 was not observed during diver investigations. Strong surge and waves, as well as tropical weather, may have dispersed the site onto the reef. The wreck is depicted on the U.S. Navy Hydrographic Office (1944) map. Based on the observed construction elements, Target 23 is likely an early- to mid-20th-century vessel. Based on observed characteristics and available data, Target 23 may retain the potential to yield significant information about early- to mid-20th-century shipping and site formation processes. It is recommended treating Target 23 as eligible for listing in the NRHP with an avoidance buffer of 328 feet (100 meters) from the defined site extents, pending additional information.



Figure 3-52 Probable Diesel Engine (Upper Left) and Large Metal Frames and Hull Sections (Remainder) (Photos by AECOM)



Figure 3-53 Propeller (Upper Left), Propeller and Shaft (Upper Right), and Propulsion Engine (Bottom) on Target 22 (Photos by AECOM)



Figure 3-54 Danforth-type Anchors (Photos by AECOM)

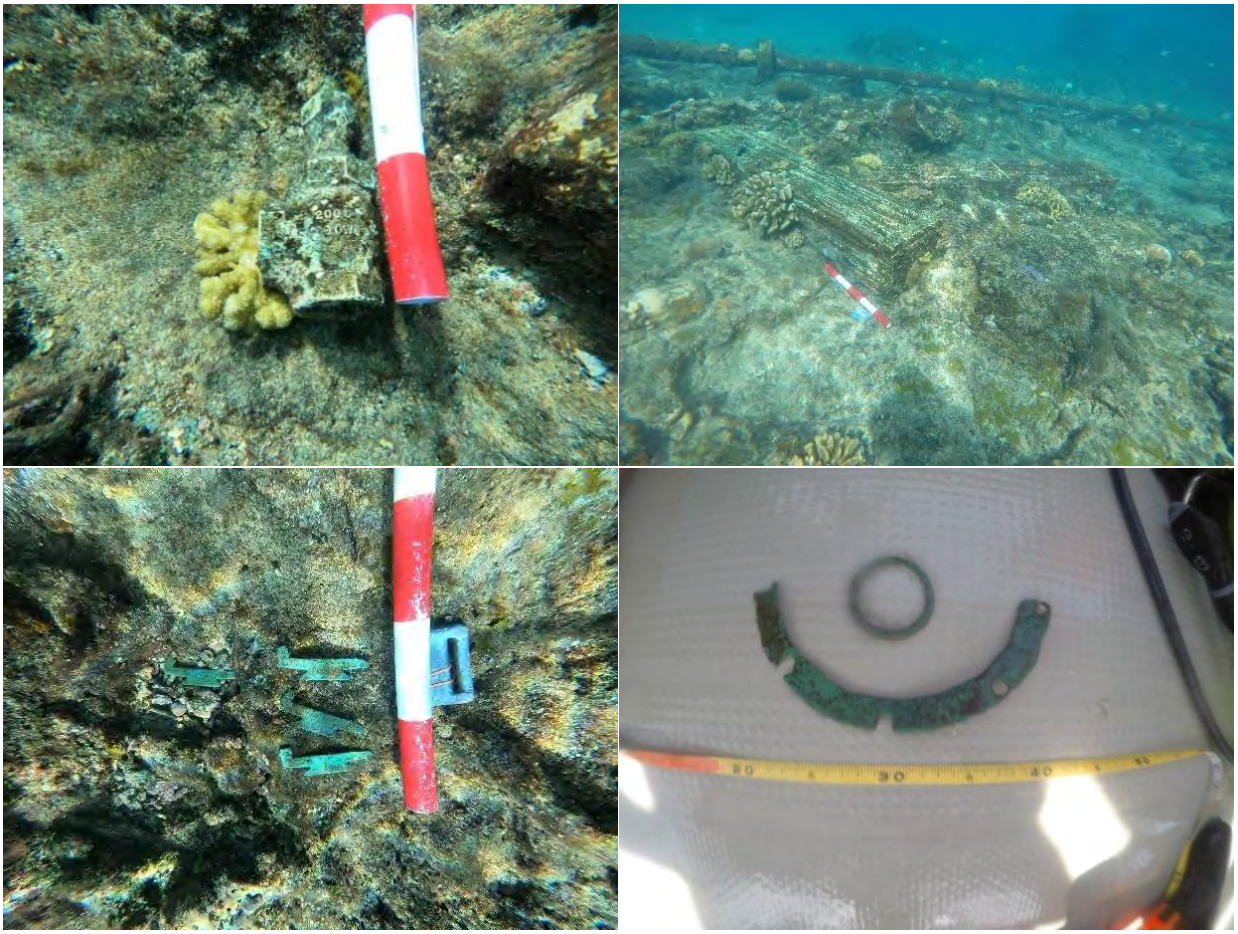


Figure 3-55 Detailed Features (Top and Bottom Left) and Cupreous Artifacts (Bottom Right) (Photos by AECOM)

Target 26

Target 26 was located near Offshore Mooring (Survey Area 1) in approximately 10 feet (3 meters) of water along the edge of a reef. Target 26 was denoted as kml_77 in the NOAA ENC shipwreck database as a visible shipwreck, always dry. Target 26 rests along the outer edge of the reef and, while investigating the target, archaeologists noted that during low tide sections of the wreck became exposed. Divers spent 34 minutes investigating Target 26 and identified the source as having elements consistent with late-19th-century to early-20th-century ships with construction features including large machinery, such as an engine and a large windlass (Figure 3-56). Target 26 also consisted of two partially buried propellers, the blades each measuring 2 feet (0.5 meters) long and 1 foot (0.4 meters) wide, and prop shafts (Figure 3-57). Two Rodger- or kedge-Admiralty-style anchors, typical of the 19th century, were located near the propellers (Figure 3-58). Archaeologists observed a large gouge in the seabed that led up to the shipwreck, implying the ship ran into the reef during the wrecking event (Figure 3-59). Observed construction elements such as engine and prop shafts appear to reflect its historic design prior to the wrecking event. Due to heavy amounts of surge and shallow water, the entirety of Target 26 was not observed during diver investigation. Strong surge and waves, as well as tropical weather, may have dispersed the site onto the reef. Based on the observed construction elements, Target 26 is likely a late-19th-century to early-20th-century vessel. Based on observed characteristics and available data, Target 26 may retain the potential to yield significant information about late-19th-century to early-20th-century shipping and site formation processes. It is recommended treating Target 26 as eligible for listing in the NRHP with an avoidance buffer of 328 feet (100 meters) from the defined site extents, pending additional information.



Figure 3-56 Propulsion Engine (Top Left and Top Right) and Windlass (Bottom Left and Bottom Right) (Photos by AECOM)

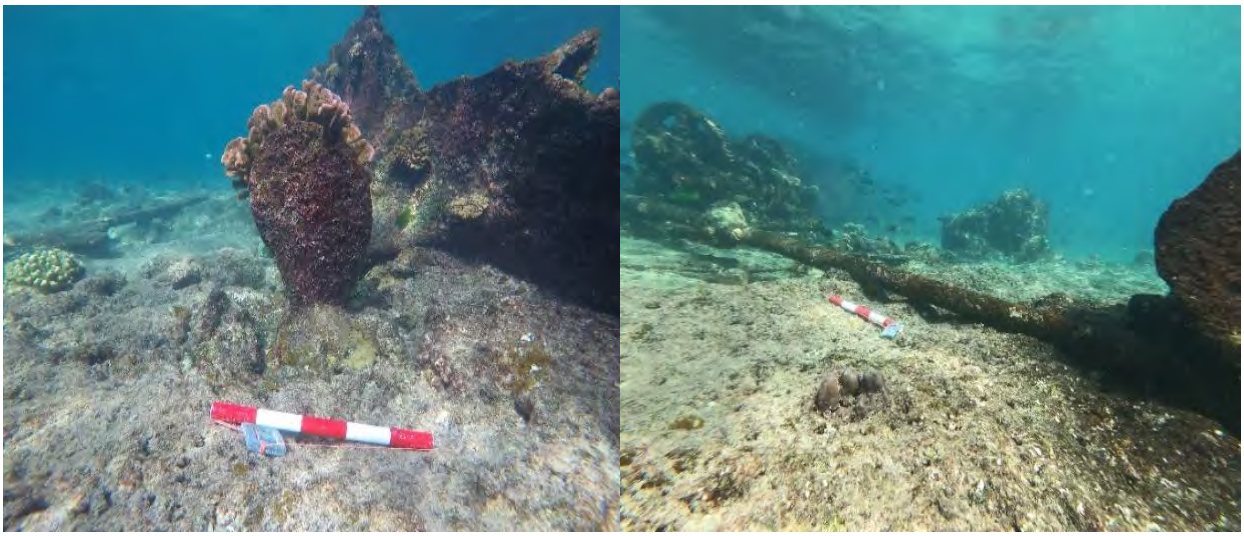


Figure 3-57 Propeller Prop (Left) and Shaft (Right) (Photos by AECOM)



Figure 3-58 Anchor on Target 26 (Photo by AECOM)



Figure 3-59 Large Gouge in Seabed Leading Up to Target 26 (Photo by AECOM)

Target 27

Target 27 was located near Tamil Channel Entrance (West) (Survey Area 3) in approximately 10 feet (3 meters) of water near Target 23. Target 27 is an isolated object, measuring 10 feet (3 meters) long and 5 feet (1.5 meters) wide, that resembles a section of a windlass or cargo winch (Figure 3-60). The lack of context and lack of anchor chain suggest that it is not an anchor windlass but could be a windlass or winch used for hauling yards or cargo. The make of the windlass/winch was reminiscent of an early- to mid-20th-century windlass. Target 27 was a probable early- to mid-20th century windlass and may be related to Target 23. It is possible that Target 27 had associated buried material. Based on observed characteristics and available data, Target 27 may be related to Target 23 and, as such, may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. Due to its potential association with Target 23, it is recommended treating Target 27 as eligible for listing in the NRHP pending additional information. Target 27 was encompassed within the recommended avoidance zone of Target 23 and may be related; therefore, an additional avoidance buffer for Target 27 is not currently recommended.

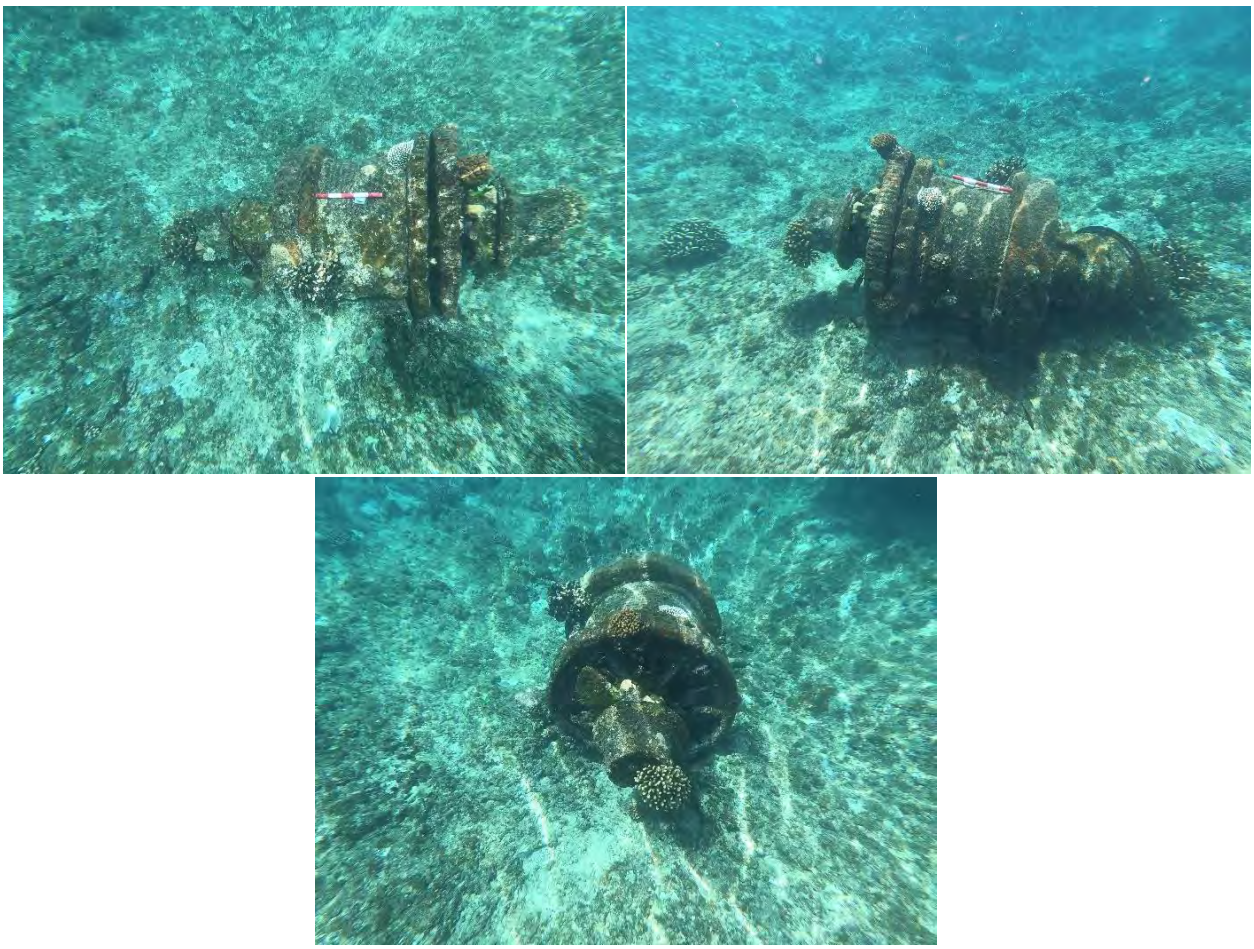


Figure 3-60 Target 27 (Photos by AECOM)

3.2.1.6 Yap Port (Survey Area 4)

Twelve targets (Targets 01–07, 12, 13, 18, 19, and 25) were identified within Yap Port (Survey Area 4) (Figure 3-61).

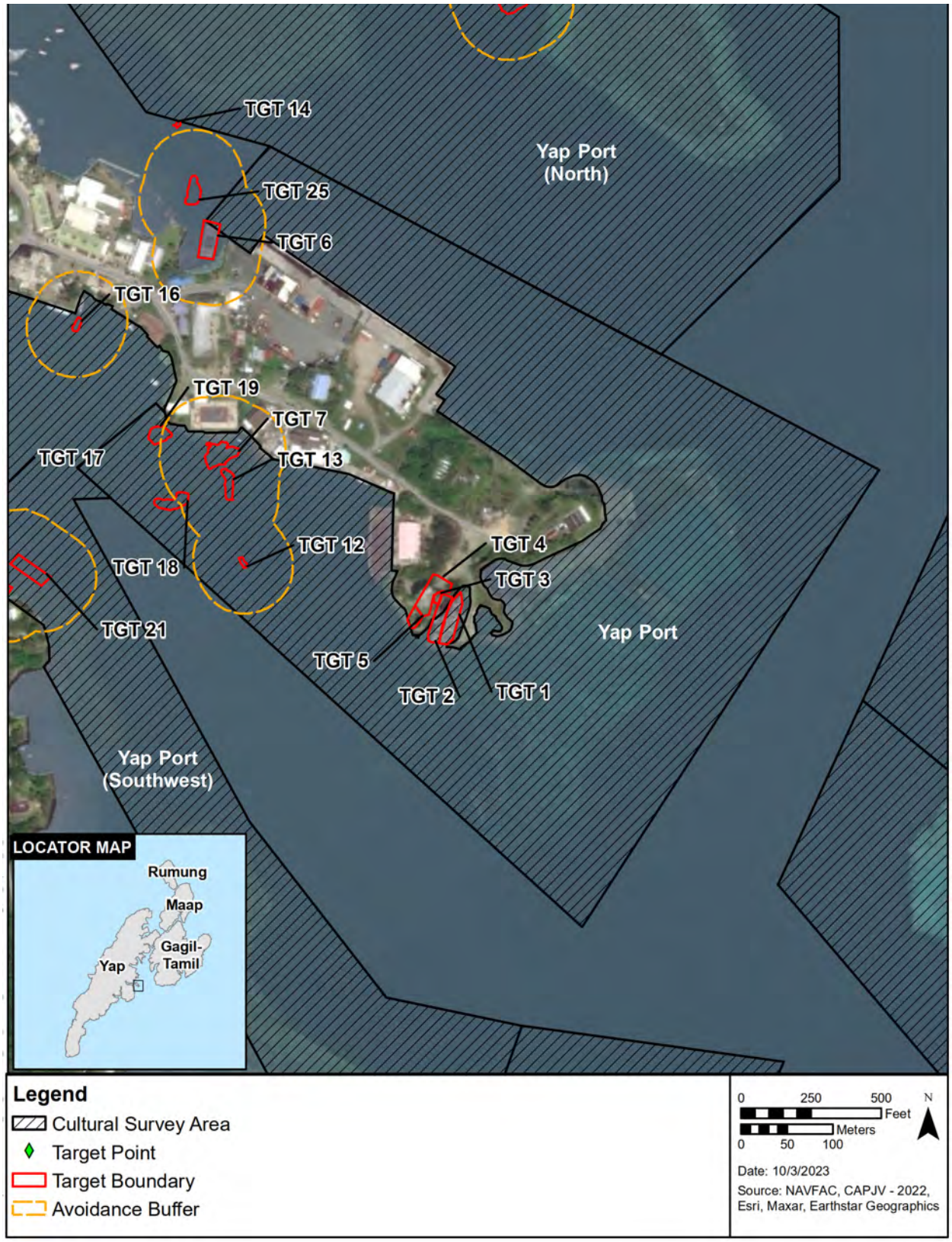


Figure 3-61 Yap Port (Survey Area 4)

Target 01

Target 01 was located in Yap Port (Survey Area 4). Target 01 was first identified via aerial imagery as an unknown contact measuring 184 feet (56 meters) long and 43 feet (10 meters) wide (Figure 3-62). Target 01 first appeared in aerial imagery in 2013, with its upper decks and superstructure intact, but was not visible in 2008 imagery. Archaeologists conducted a pedestrian survey at low tide and with access around a majority of the target. Archaeologist identified Target 01 as a general cargo ship and observed the name *Micro Spirit* and "Yap" across the stern (Figure 3-63). Target 01 contained multiple ship construction elements, including welded deck plating, Plimsoll mark, fixed skeg, and rudders (Figure 3-64). The superstructure was salvaged along with the bulwark, leaving the weather deck and two hatchways (Figure 3-65). The *Micro Spirit* was a general cargo ship built in 1978 by Hashimoto Shipbuilding in Kobe, Japan (ShipSpotting 2010) (Figure 3-66). Owned by the Micronesian Government, *Micro Spirit* served as a cargo and passenger ship for the islands of Micronesia until the late 2000s, when it was abandoned near the Yap Recycling Center and partially salvaged. Figure 3-67 shows the state of the target in 2014 compared to what archaeologists examined in 2023. Based on observed construction elements and research into *Micro Spirit*, Target 01 is a late-20th-century general cargo ship. Based on observed characteristics and available data, Target 01 has been substantially altered and no longer retains integrity as it relates to its original use. Additionally, Hashimoto Shipbuilding built other similar vessels, such as the *Micro Chief*, some of which are still afloat (BalticShipping.com 2023). It is recommended that Target 01 is not eligible for listing in the NRHP.



Figure 3-62 2013 Aerial Images of Target 01 (Google Earth)



Figure 3-63 Image of Nameplate Micro Spirit, Yap on Target 01 (Photo by AECOM)



Figure 3-64 Welded Deck Plating, Plimsoll Mark, Fixed Skeg, and Rudders on Target 01 (Photo by AECOM)



Figure 3-65 Weather Deck and Two Hatchways on Target 01 (Photo by AECOM)



Figure 3-66 Image of Micro Spirit from 2010 (Kyle Stubbs, ShipSpotting.com 2010)



Figure 3-67 Image of Micro Spirit from 2014 (Lewis Ham, vesselfinder.com, 2023)

Target 02

Target 02 was located in Yap Port (Survey Area 4). Target 02 was first identified partially exposed in aerial imagery as an unknown contact measuring 175 feet (53 meters) long and 37 feet (11 meters) wide (Figure 3-68). Target 02 first appeared on aerial imagery in 2013 but is not visible in 2008 aerial imagery (Figure 3-69). Archaeologists conducted a pedestrian survey at low tide and with access around a majority of the target. Archaeologists identified Target 02 as a rectangular barge and observed multiple ship construction elements, including welded deck plating, Plimsoll mark, rub rails, and iron I-beam support/framing (Figure 3-70). Target 02 was partially salvaged, with evidence that a superstructure in the aft section once existed. A partial nameplate remained visible on the stern with, “ANIL_A_” legible (Figure 3-71). Attempts to identify the vessel in ship registries were unsuccessful; however, observed construction elements are consistent with late-20th-century, open-ocean barge construction methodologies. Large structural cracks observed along the hull and its location near other identified vessels imply Target 02 was likely pulled ashore to facilitate the salvage/scrapping process. Based on observed construction elements and vessel size, Target 02 was likely an ocean-going barge. Based on observed characteristics and available data, Target 02 has been substantially salvaged and no longer retains integrity as it relates to its original use. Additionally, the presence of construction materials such as PVC piping and rubberized electrical coating suggest a recent construction date. Target 02 is recommended as not eligible for listing in the NRHP.



Figure 3-68 Target 02 (Photos by AECOM)



Figure 3-69 Aerial Imagery of Target 02 (Google Earth)



Figure 3-70 Evidence of Superstructure and Construction Elements of Target 02 (Photo by AECOM)



Figure 3-71 Partial Nameplate on the Stern of Target 02 (Photo by AECOM)

Target 03

Target 03 was located in Yap Port (Survey Area 4) (Figure 3-72). Target 03 did not appear in the aerial imagery from 2022 (Figure 3-73). Archaeologists conducted a pedestrian survey at low tide and with access around a majority of the target. Archaeologists identified Target 03 as a small metal sailing yacht, relatively intact with a tiller and rudder mounted to the stern, electronics, aluminum railing, and rubber gasketing and scuppers. While the target appeared relatively intact, it is unclear whether the target is afloat at high tide or permanently rests on the ground. Target 03 was partially salvaged with evidence that a mast once existed. No evidence of a name or make and model of Target 03 could be discerned. Attempts to identify the vessel in ship registries were unsuccessful; however, the observed construction elements are consistent with late-20th-century recreational sailboat construction methodologies and contains electronics likely dating to the early 2000s. Based on observed characteristics and available data, Target 03 is a personal watercraft of recent construction, of which numerous examples are still afloat. Target 03 is recommended as not eligible for listing in the NRHP.



Figure 3-72 Target 03 (Photo by AECOM)



Figure 3-73 2022 Aerial Imagery of Target 03 (Google Earth)

Target 04

Target 04 was located in Yap Port (Survey Area 4) (Figure 3-74). Target 04 was scattered in approximately four locations and was visible in aerial imagery as an unknown contact encompassing an area of about 130 feet by 50 feet (40 meters by 15 meters). Target 04 first appeared on aerial imagery in 2022 but was not visible in 2019 aerial imagery; however, in the 2019 aerials, within the vicinity of the Target 04 remains are two beached vessels (Figure 3-75 and Figure 3-76). These vessels first appeared in the aerial imagery from 2018 but not in 2017. It is possible these two vessels may be the intact vessels for Targets 04 and 05. Archaeologists conducted a pedestrian survey at low tide and with access around a majority of the target. Archaeologists identified Target 04 as the disarticulated remains of a wooden vessel. Target 04 is single-framed, with 2-inch (5-centimeter) outer hull planking. The frames were 3.5 inches (9 centimeters) wide and between 10 inches and 10.5 inches (25 centimeters and 26.7 centimeters) apart (Figure 3-77). Target 04 also has evidence of heavy fastening using both wooden treenails and iron bolts (Figure 3-78). Archaeologists identified a distinguishable keelson and rudder-like timbers in the largest pile. Archaeologists also identified an engine, prop shaft, and propeller with cloth or fibrous matting or pay between the wood timbers (Figure 3-79). An additional engine, prop shaft, and propeller sits at the edge the adjacent forest. Archaeologists could not confirm a relationship between the engine/propeller and the main timber piles during the investigation. Observed construction elements are consistent with early-20th-century shipbuilding techniques; however, due to Micronesia's remoteness and a potential lack of access to large iron bolts, the use of treenails as a common material may be more commonplace in more recent ship construction activities. The modern engine, prop, and shaft suggested that Target 04 may have been retrofitted to update the propulsion capabilities of the vessel. Based on observed construction elements, Target 04 was possibly a mid- to late-20th-century wooden vessel retrofitted with a modern engine, propeller, prop, and shaft. Although identified ship elements can be seen within the disarticulated remains, the site lacks integrity for design, setting, workmanship, feeling, and association and, therefore, is not likely to yield important information. Target 04 is recommended as not eligible for listing in the NRHP.



Figure 3-74 Target 04 (Photos by AECOM)



Figure 3-75 Aerial Imagery of Target 04 (Google Earth)



Figure 3-76 2019 Aerial Imagery Depicting Two Beached Vessels (Google Earth)



Figure 3-77 Frames and Outer Hull Planking (Photo by AECOM)



Figure 3-78 Treenails and Iron Bolts (Photo by AECOM)



Figure 3-79 Engine, Propeller, Prop and Shaft, and Fiber Insulation on Target 04 (Photos by AECOM)

Target 05

Target 05 was located in Yap Port (Survey Area 4) (Figure 3-80). Target 05 was identified as exposed in aerial imagery as an unknown contact measuring roughly 35 feet (10 meters) long and 3 feet (9 meters) wide. Target 05 first appeared on aerial imagery in 2022 but was not visible in 2019 aerial imagery; however, in the 2019 aerials, within the vicinity of the Target 05 remains are two beached vessels (Figure 3-80). These vessels first appeared in the aerials from 2018 but not in 2017. It is possible these two vessels are the intact vessels for Targets 04 and 05. Archaeologists conducted a pedestrian survey at low tide and with access around a majority of the target. Archaeologists identified Target 05 as the disarticulated remnants of a fiberglass boat in pieces within the same scrap pile as the main structure of Target 04 (Figure 3-81). A potential relationship with Target 04 was not established during the investigation; however, observed construction elements are consistent with features of a late-20th-century fiberglass boat. Based on observed construction materials, Target 05 was likely the remains of a modern fiberglass boat with an unknown relationship to Target 04. Target 05 is a modern fiberglass vessel that lacks integrity and, therefore, is not likely to yield important information. Target 05 is recommended as not eligible for listing in the NRHP.



Figure 3-80 Aerial Imagery of Target 05 (Google Earth)



Figure 3-81 Target 05 (Photo by AECOM)

Target 06

Target 06 was located in Yap Port (Survey Area 4) (Figure 3-82). Target 06 was identified as an unknown contact partially exposed in aerial imagery measuring 120 feet (36 meters) long and 45 feet (14 meters) wide. Target 06 first appeared on aerial imagery in 2013 but was not visible in 2008 aerial imagery (Figure 3-83). Archaeologists conducted a pedestrian survey at low tide and surveyed from a boat at high tide, with access around a majority of the target. Archaeologists identified Target 06 as a rectangular crane barge and observed multiple ship construction elements, including welded deck plating, mooring bitts—some with dock line still threaded—and a large support for a mounted crane. Target 06 was partially salvaged with evidence that the crane and boom have been removed. Archaeologists could not locate an identifying name or nameplate, and attempts to identify the vessel in ship registries were unsuccessful; however, observed construction elements are consistent with late-20th-century crane barge construction methodologies. Based on observed construction elements and vessel size, Target 06 was likely a crane barge. Based on observed characteristics and available data, Target 06 may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. It is recommended treating Target 06 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.



Figure 3-82 Target 06 (Photo by AECOM)



Figure 3-83 Aerial Imagery of Target 06 (Google Earth)

Target 07

Target 07 consisted of Acoustic Contact S020, which was located in Yap Port (Survey Area 4) in approximately 15 feet (4.6 meters) of water. Target 07, which was 105 feet (32 meters) long and 26 feet (8 meters) wide, was situated just north and adjacent to a boat ramp, lying parallel against the sea wall (Figure 3-84). While investigating Target 07, archaeologists noted that the target was completely submerged during high tide but became substantially exposed during low tide (Figure 3-85). Divers spent 34 minutes investigating Target 07 and identified the source as a cargo shipwreck with mid- to late-20th-century features such as an anchoring system, iron deck plating, hatches, and welded metal deck planking (Figure 3-85). Substantial marine growth obscured details including names or other potential identification markers; however, observed construction elements are consistent with mid- to late-20th-century ship construction methodologies. Based on observed construction elements and vessel size, Target 07 was likely a cargo ship. Based on observed characteristics and available data, Target 07 may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. It is recommended treating Target 07 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.

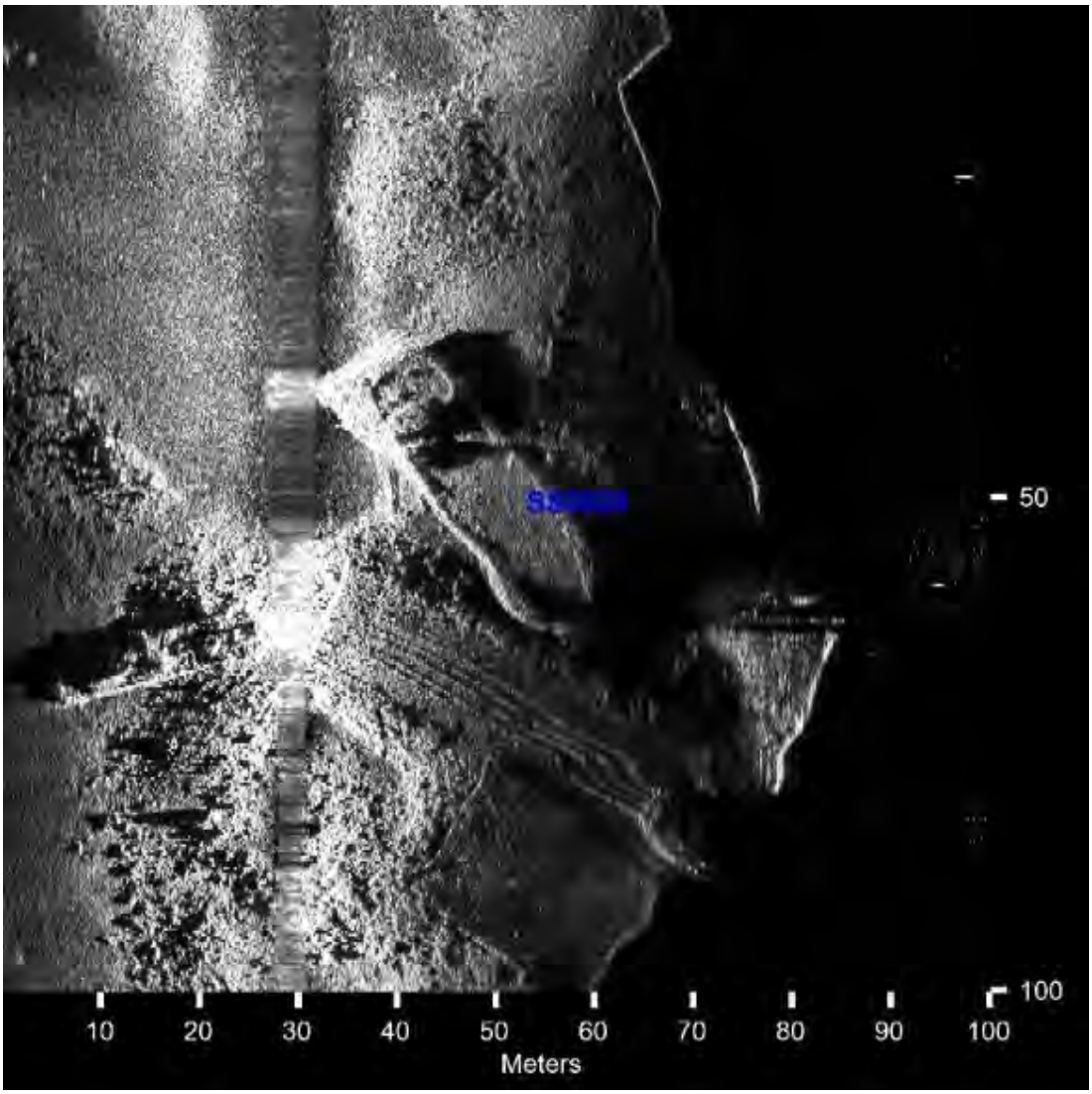


Figure 3-84 Target 07 (Acoustic Contact S020)



Figure 3-85 Target 07 Ship Construction Elements (Photos by AECOM)

Target 12

Target 12 consisted of Acoustic Contact S026 and was located in Yap Port (Survey Area 4) in approximately 65 feet (20 meters) of water (Figure 3-86). Navy Seabee MBES data denotes Target 12 as a wreck measuring 50 feet (15 meters) long and 16 feet (5 meters) wide (Figure 3-87). Divers spent 40 minutes investigating Target 12 and identified the source as a partially buried metal object, likely a shipwreck or pontoon pier. Archaeologists observed four long rectangular hatches separated by two perpendicular gaps. Additionally, a small, circular feature bisected by a bar was noted on the target (Figure 3-88). The features observed are consistent with mid- to late-20th-century marine construction. Based on observed characteristics and available data, Target 12 may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. It is recommended treating Target 12 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.

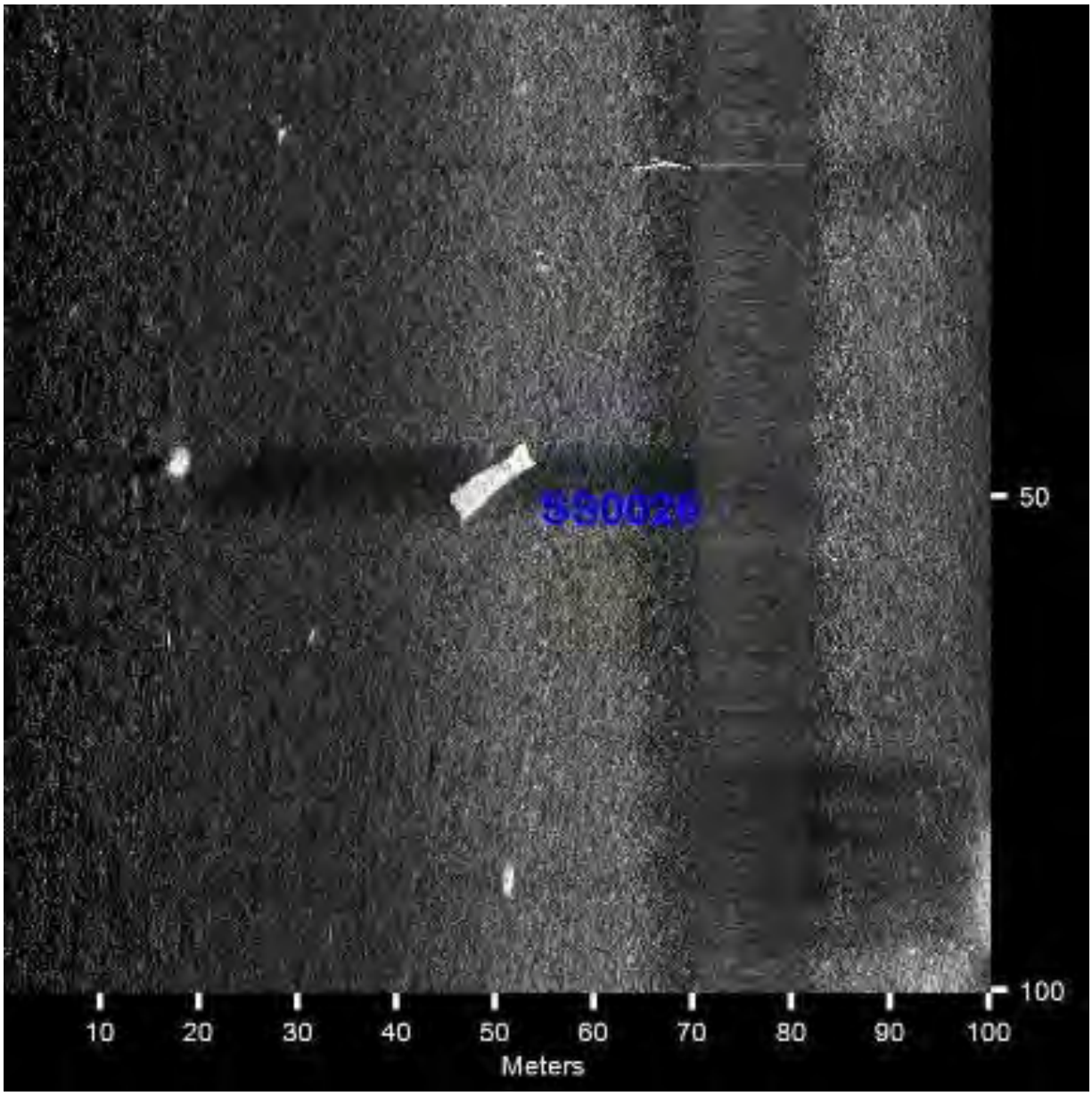


Figure 3-86 Target 12 (Acoustic Contact S026)

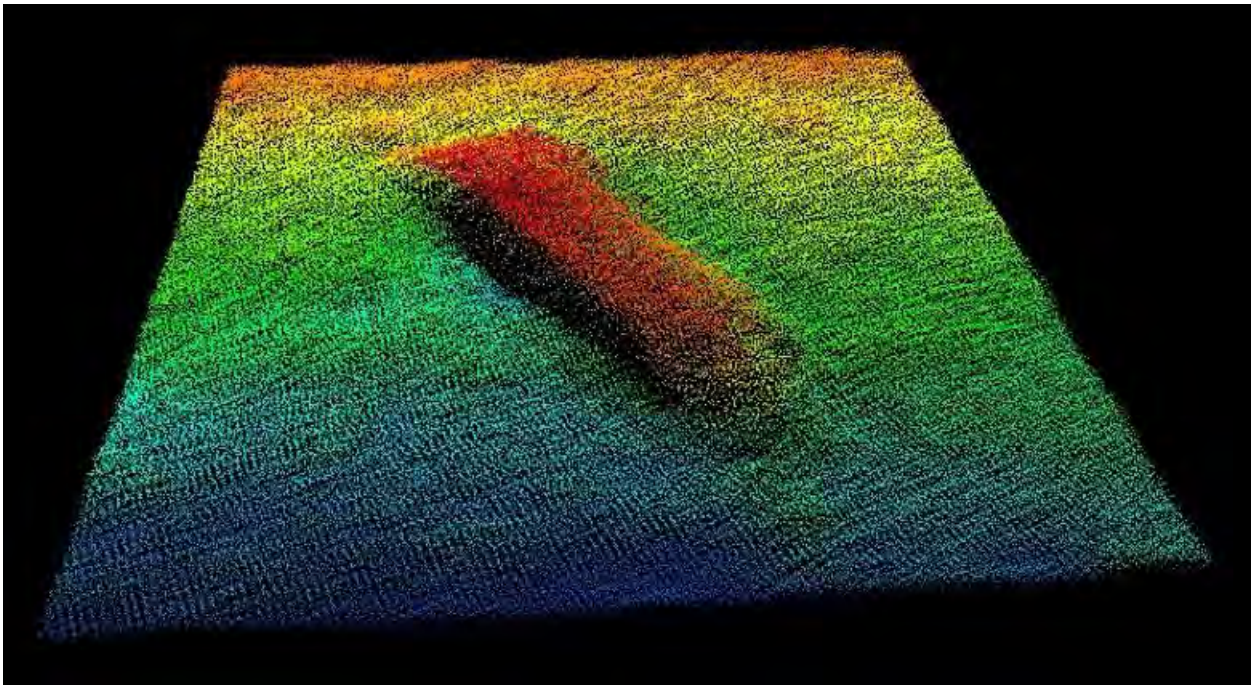


Figure 3-87 Target 12 (Navy Seabee MBES Imagery)

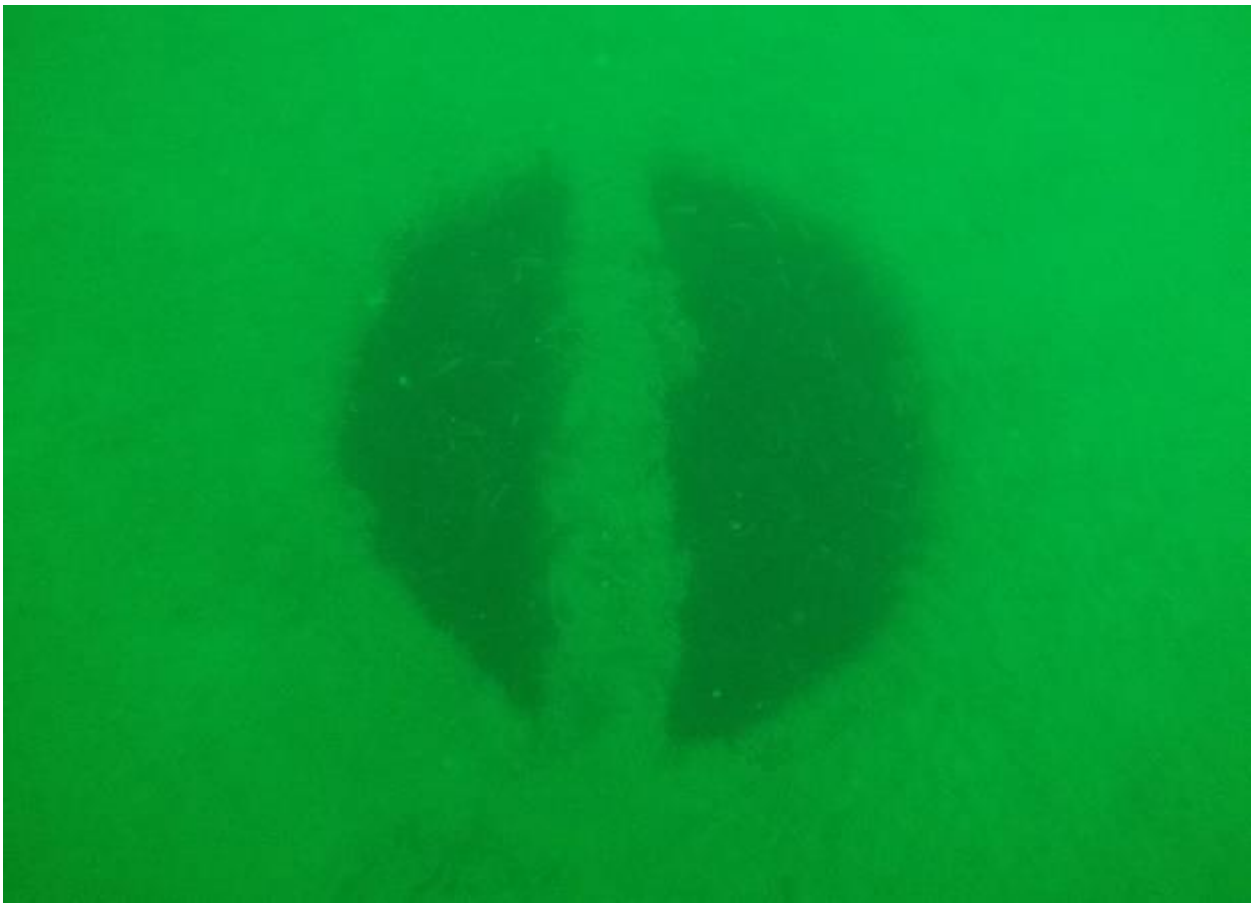


Figure 3-88 Circular Feature on Target 12 (Photo by AECOM)

Target 13

Target 13 consisted of Acoustic Contact S023 and was located in Yap Port (Survey Area 4) in approximately 45 feet (14 meters) of water (Figure 3-89). Navy Seabee MBES data denotes Target 13 as a wreck, measuring 79 feet (24 meters) long and 20 feet (6 meters) wide (Figure 3-90). Divers spent 34 minutes investigating Target 13 and identified the source as a barge or work craft, observing multiple ship construction elements including welded deck plating, open hatches, mooring bitts, and a 55-gallon drum (Figure 3-91 and Figure 3-92). Archaeologists also noted an unidentified anchor, similar to a kedge Admiralty-style anchor, hanging off the vessel (Figure 3-93). Substantial marine growth obscured details including names or other potential identification markers; however, observed construction elements are consistent with mid- to late-20th-century shipbuilding techniques. Based on observed construction elements and vessel size, Target 13 is likely a barge or work craft. Based on observed characteristics and available data, Target 13 may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. It is recommended treating Target 13 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.



Figure 3-89 Target 13 (Acoustic Contact S023)

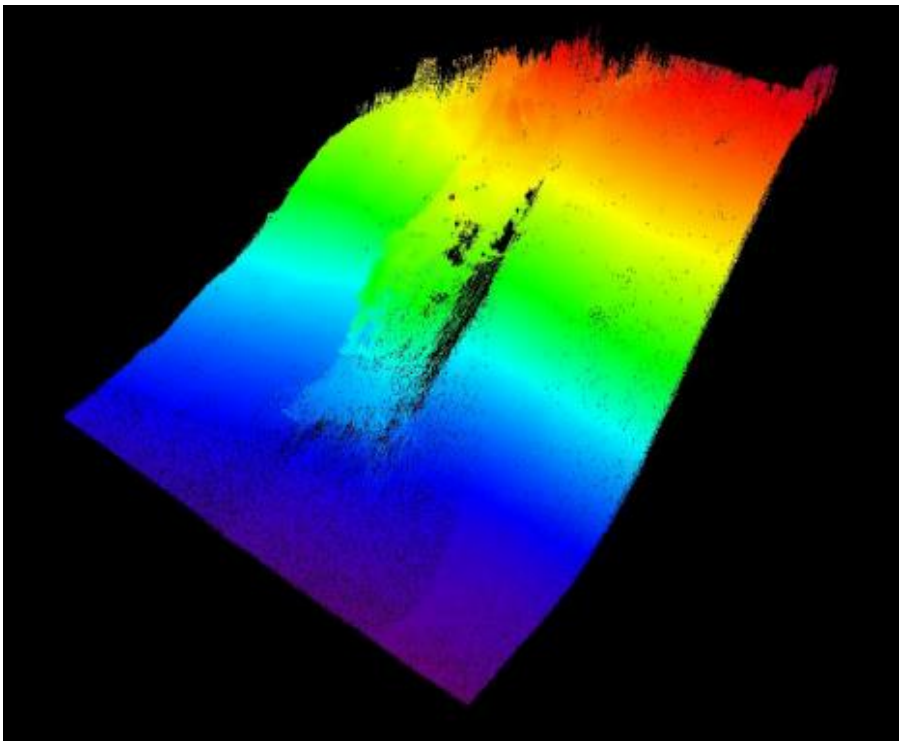


Figure 3-90 Target 13 (Navy Seabee MBES Imagery)



Figure 3-91 Welded Decking and Open Hatch of Target 13 (Photos by AECOM)



Figure 3-92 55-Gallon Drum and Other Features of Target 13 (Photos by AECOM)



Figure 3-93 Unidentified Anchor on Target 13 (Photo by AECOM)

Target 18

Target 18 consisted of Acoustic Contact S025 and was located in Yap Port (Survey Area 4) in approximately 40 feet (12 meters) of water (Figure 3-94). Contact S025 was an unknown contact measuring 35 feet (10 meters) long and 16 feet (5 meters) wide. Divers spent 20 minutes investigating Target 18 and identified the source as a ridge of rocks/coral reef with substantial relief (Figure 3-95). The rock/coral reef was long and linear, which is consistent with recorded sonar imagery. The source of Target 18 was a natural rock/coral ridge, a non-anthropogenic object.

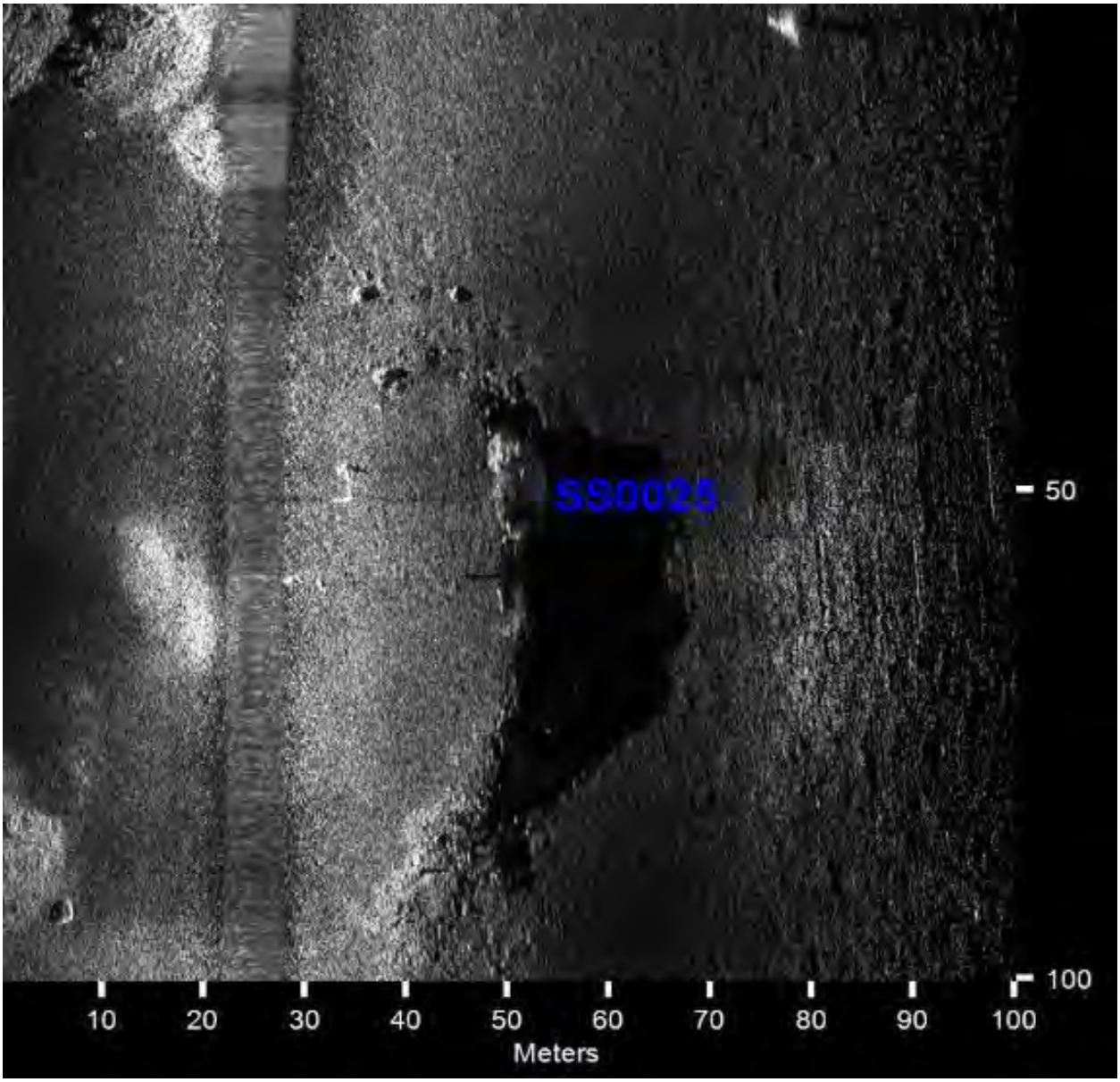


Figure 3-94 Target 18 (Acoustic Contact S025)



Figure 3-95 Target 18 (Photo by AECOM)

Target 19

Target 19 consisted of Acoustic Contact S024 and was located in Yap Port (Survey Area 4) in approximately 19 feet (6 meters) of water (Figure 3-96). Contact S024 was an unknown contact measuring 50 feet (15 meters) long and 50 feet (15 meters) wide. Divers spent 18 minutes investigating Target 19 and identified the source as a large rock with substantial relief. The rock was rectangular in form, which was consistent with recorded sonar imagery. The source of Target 19 was a natural rock, a non-anthropogenic object.

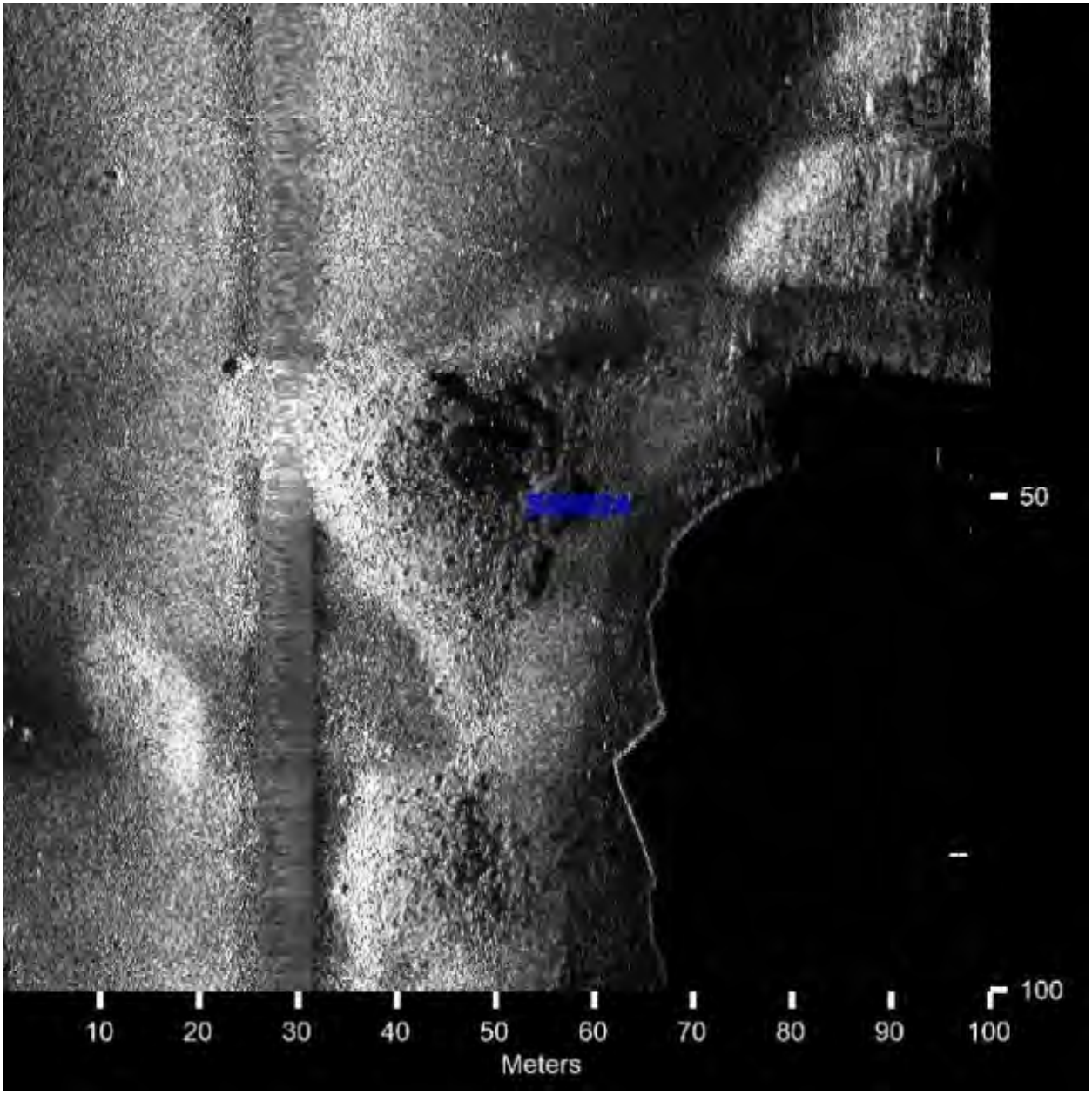


Figure 3-96 Target 19 (Acoustic Contact S024)

Target 25

Target 25 consisted of Acoustic Contact S002 and was located near Yap Port (Survey Area 4) in approximately 47 feet (14 meters) of water. Navy Seabee MBES data designates the target as a wreck, measuring 43 feet (13 meters) long and 16 feet (5 meters) wide (Figure 3-97). Divers spent 139 minutes investigating Target 25 and identified the source as a towboat or work boat, with a portion of an old sea wall wrapped around the cabin and still attached to shore via a line (Figure 3-98). Archaeologists observed a large bollard or mooring bitt that was uprooted from the aft metal deck plating (Figure 3-99). The mooring bitt was pointed toward a large towing winch (Figure 3-100). It is probable that the uprooted mooring bitt was caused by what the winch was towing. Other construction elements observed included several hatches, an engine room, machinery in the cabin, access holes, H-bits, and rub rails off the stem and stern (Figure 3-101). Several cables and dock lines were tied and strewn about the target. Roughly 30 feet (10 meters) from Target 25 was a section of metal sheeting that may have also been associated with a nearby seawall. Based on the observed construction elements, Target 25 was likely a mid- to late-20th-century towboat or similar work boat. Based on observed characteristics and available data, Target 25 may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. It is recommended treating Target 25 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.

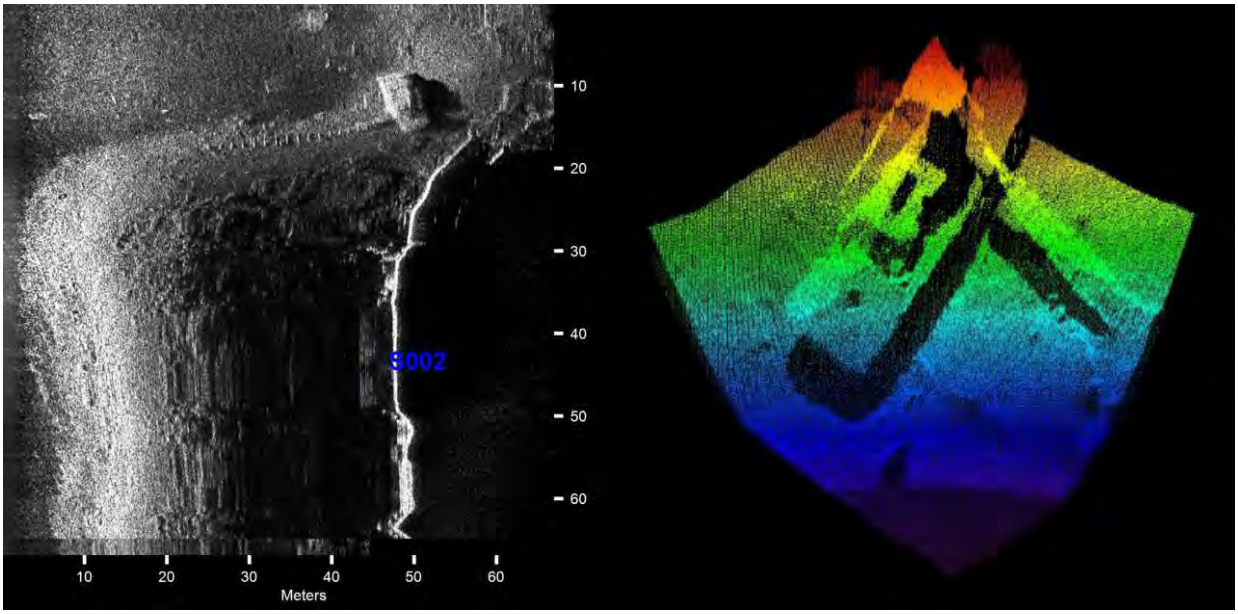


Figure 3-97 Target 25 (Acoustic Contact S002) (Left) and Navy Seabee MBES Imagery (Right)

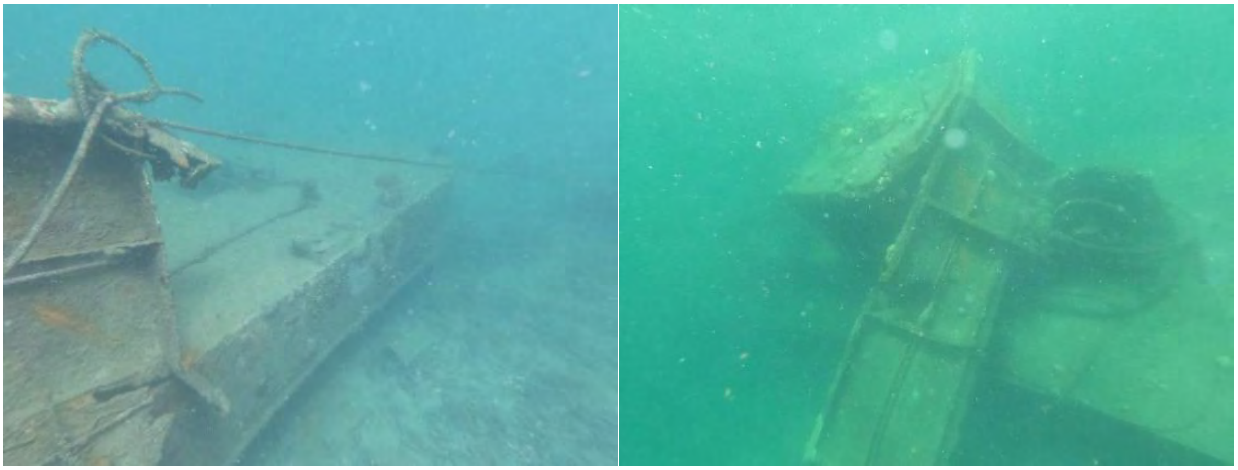


Figure 3-98 Target 25 with Sea Wall Wrapped Around and Attached to Shore by a Mooring Line (Photo by AECOM)



Figure 3-99 Mooring Bitt Unrooted Towards Towing Winch (Photo by AECOM)

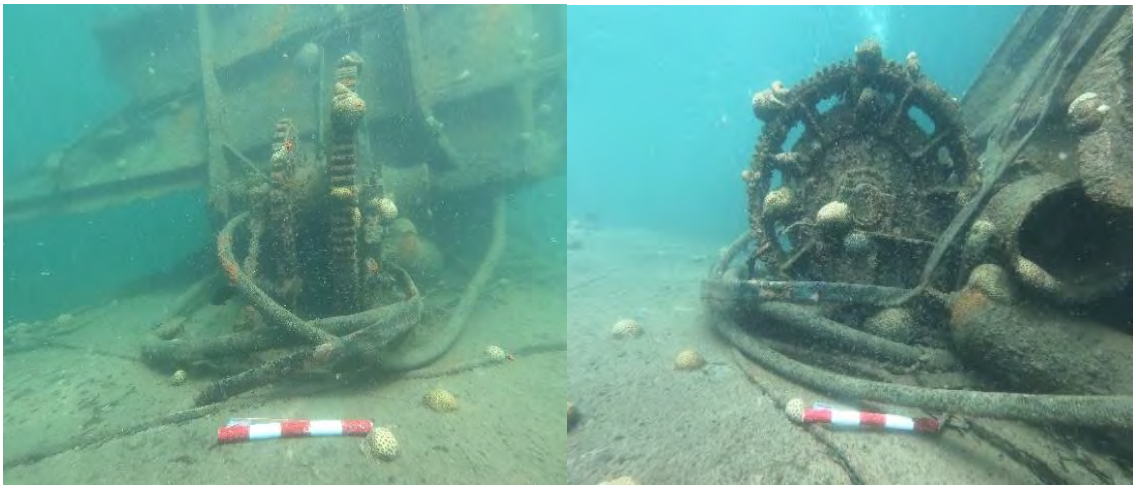


Figure 3-100 Towing Winch (Photos by AECOM)



Figure 3-101 Hatch (Top Left), Machinery in Cabin (Top Right), Rub Rail (Bottom Left), and Dock Line (Bottom Right) on Target 25 (Photos by AECOM)

3.2.1.7 Yap Port–Southwest (Survey Area 5)

Five targets (Targets 15, 16, 17, 21, and 22) were identified within Yap Port–Southwest (Survey Area 5) (Figure 3-102).

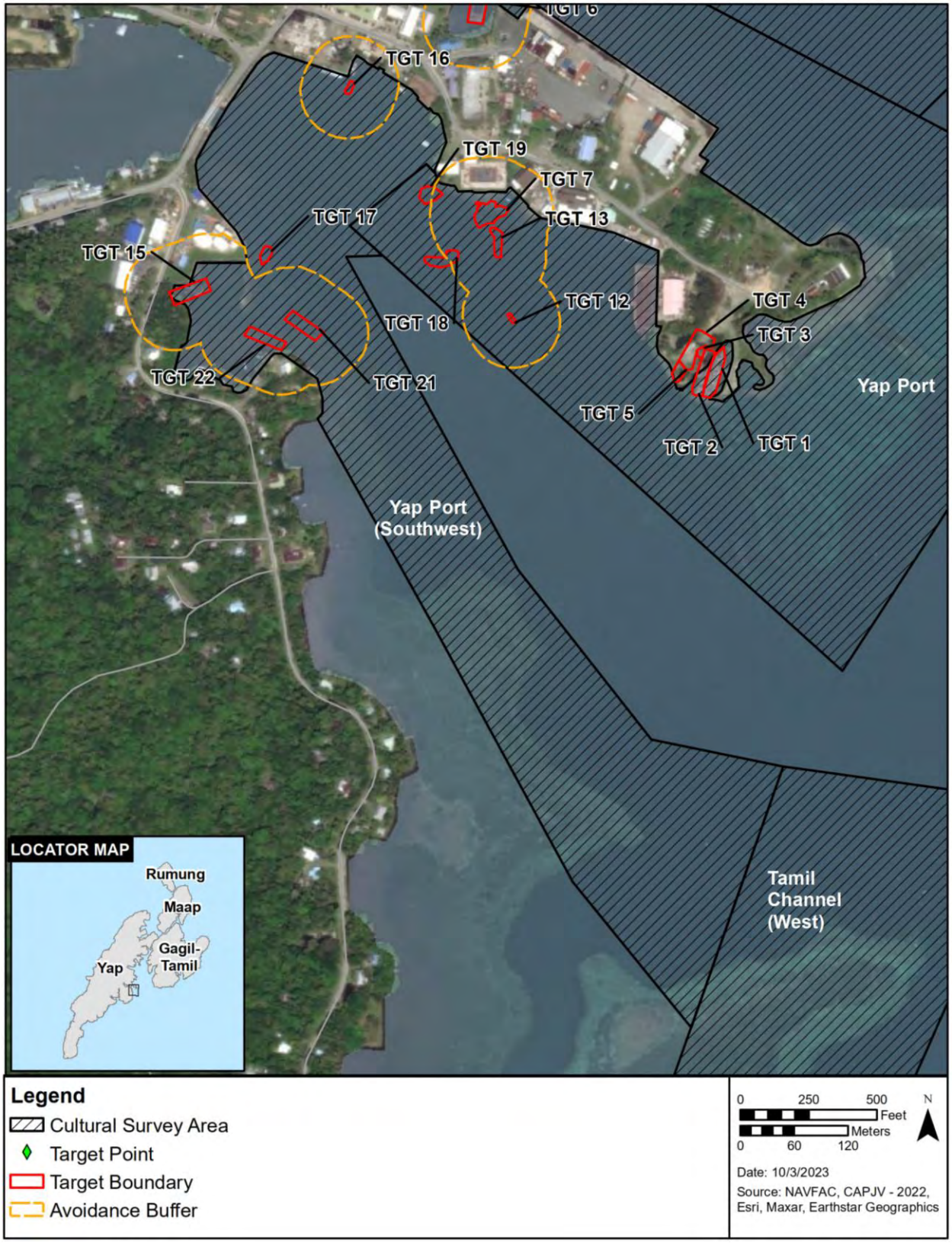


Figure 3-102 Yap Port–Southwest (Survey Area 5)

Target 15

Target 15 was located in Yap Port–Southwest (Survey Area 5) (Figure 3-103). Divers identified Target 15 partially exposed in aerial imagery as an unknown contact measuring 130 feet (40 meters) long and 35 feet (10 meters) wide (Figure 3-104). Aerial imagery from 2005 depicted Target 15 and corresponded with shipwreck locations identified on a 1981 U.S. Geological Survey (USGS 1981). Archaeologists identified Target 15 as a rectangular barge and observed multiple ship construction elements, including welded deck plating, iron transverse hold frames, and iron I-beam support/framing (Figure 3-105). Other notable construction elements included mooring bitts, large cleats, and two toeing pad eyes. A name or other identifying markings were not observed; however, observed construction elements were consistent with those of mid- to late-20th-century barges. Based on observed construction elements and vessel size, Target 15 was likely an ocean-going barge. Based on observed characteristics and available data, Target 15 may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. It is recommended treating Target 15 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.



Figure 3-103 Target 15 (Photo by AECOM)



Figure 3-104 Aerial Image of Target 15 (Google Earth)



Figure 3-105 Target 15 (Photos by AECOM)

Target 16

Target 16 consisted of Acoustic Contact S028 and was located in Yap Port–Southwest (Survey Area 5) in approximately 33 feet (10 meters) of water (Figure 3-106). Navy Seabee MBES data designated Target 16 as a wreck, measuring 46 feet (14 meters) long and 20 feet (6 meters) wide (Figure 3-107). Target 16 sat parallel to a seawall in the harbor. Divers spent 92 minutes investigating Target 16 and identified the source as a landing craft or similarly styled cargo transport. Archaeologists observed several features including the pilot house, cargo tie rings, access holes to wing tanks, and corrugated flooring (Figure 3-108). The deck plating near the pilot house was missing, exposing the engine room and engine parts (Figure 3-109). The ramp was detached and laying on the sea bottom, partially buried (Figure 3-110). Substantial marine growth obscured details along the interior and exterior sides of the landing craft. Based on observed construction features, Target 16 was likely a landing craft. Based on observed characteristics and available data, Target 16 may have the potential to yield significant information about World War II activities on Yap. It is recommended treating Target 16 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.

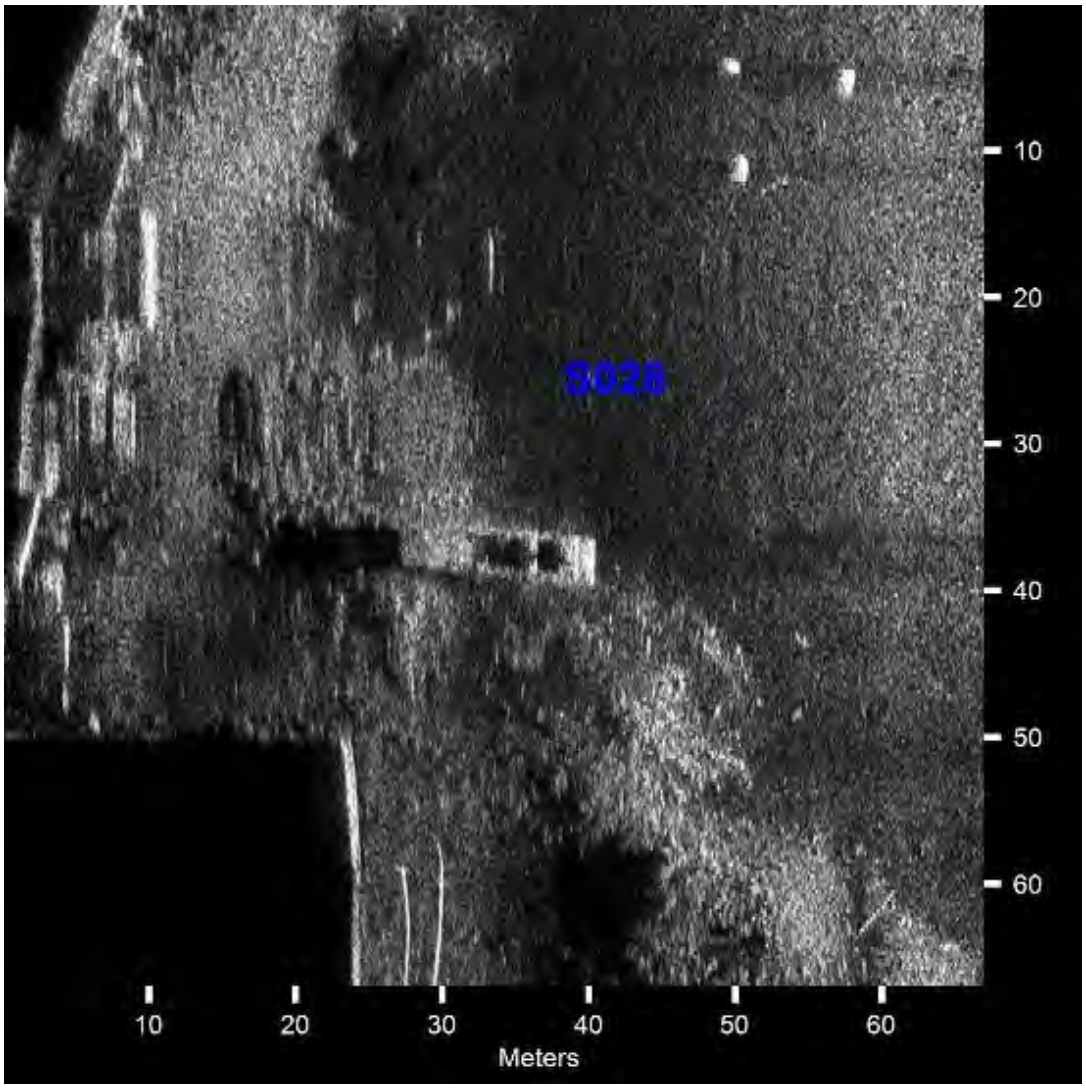


Figure 3-106 Target 16 (Acoustic Contact S028)

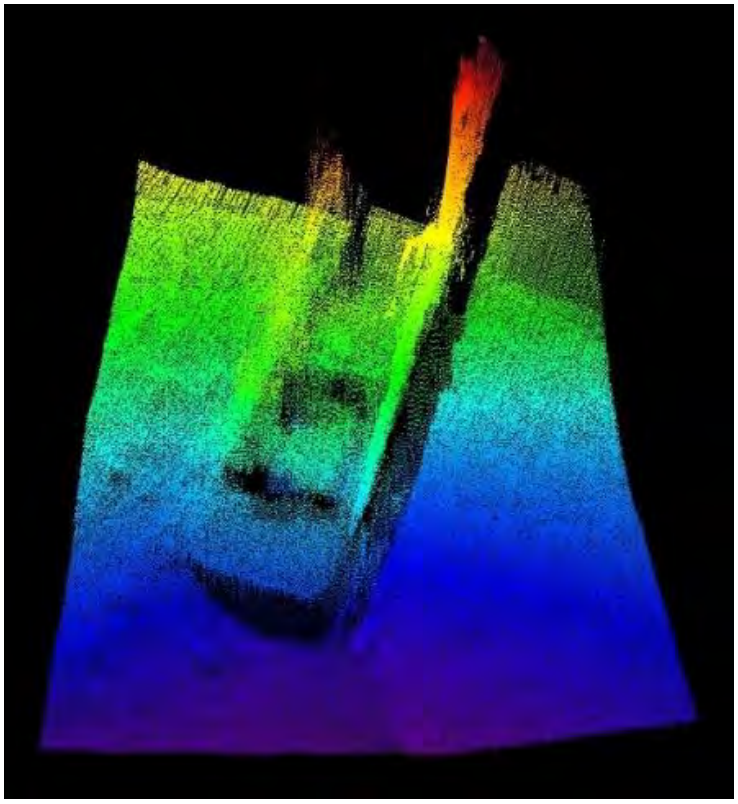


Figure 3-107 Target 16 (Navy Seabee MBES Imagery)



Figure 3-108 Pilot House (Top Left), Cargo Tie Rings (Top Right), Access Holes to Wing Tanks (Bottom Left), and Corrugated Flooring (Bottom Right) on Target 16 (Photos by AECOM)



Figure 3-109 Missing Deck Plating, Exposed Engine Parts on Target 16 (Photo by AECOM)

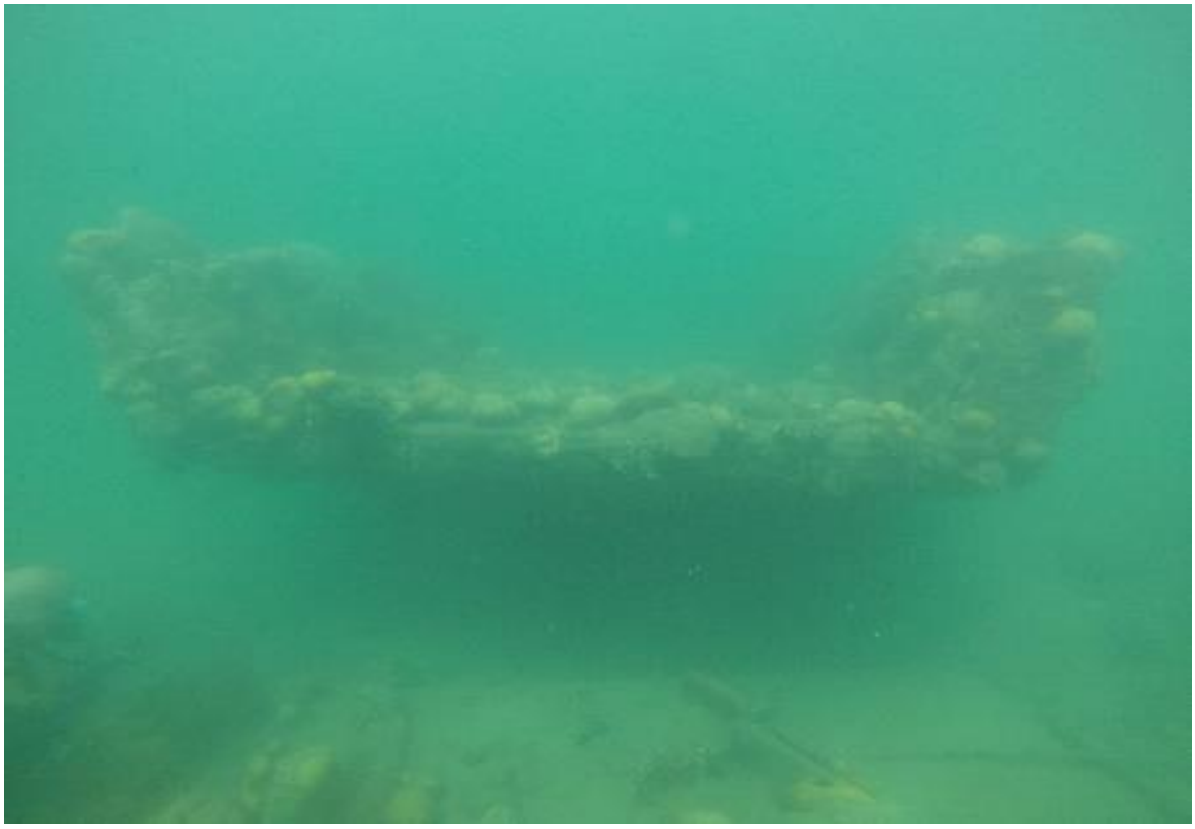


Figure 3-110 Detached Ramp of Target 16 (Photo by AECOM)

Target 17

Target 17 consisted of Acoustic Contact S007 and was located in Yap Port–Southwest (Survey Area 5) in approximately 15 feet (4.5 meters) of water (Figure 3-111). Target 17 was located off the Vital FSM Petrocorp petroleum plant in Tamil Harbor. Divers spent 112 minutes investigating Target 17 and identified the source as consistent with pier remnants. The main features observed at Target 17 consisted of five partially buried parallel metal beams each measuring 33 feet (10 meters) long and 1.3 feet (0.4 meters) wide (Figure 3-112). Throughout the site, archaeologists noted several vertical metal supports existing parallel to the beams. Some of the supports were connected by a crossbar, while others were freestanding. Archaeologists also noted triangular support brackets (Figure 3-112). Historical charts from Japanese surveys dated 1917–1921 depicted a pier in the location of Target 17 (U.S. Navy Hydrographic Office 1924). Photographs from 1945 depict the pier as a raised stretch of dirt without visible structure (Figure 3-113) (MissingAirCrew.com, n.d.). By 1976, this location consisted of the current petrol facility with substantial shoreline improvements and stabilization efforts, including a spit extending southward. Based on the historical charts, Target 17 may be the disarticulated remains of a pier dating to the Japanese administration. Based on observed characteristics and available data, Target 17 is a disarticulated pier structure that lacks integrity for design, setting, workmanship, feeling, and association and, therefore, is not likely to yield important information. Target 17 is recommended as not eligible for listing in the NRHP.

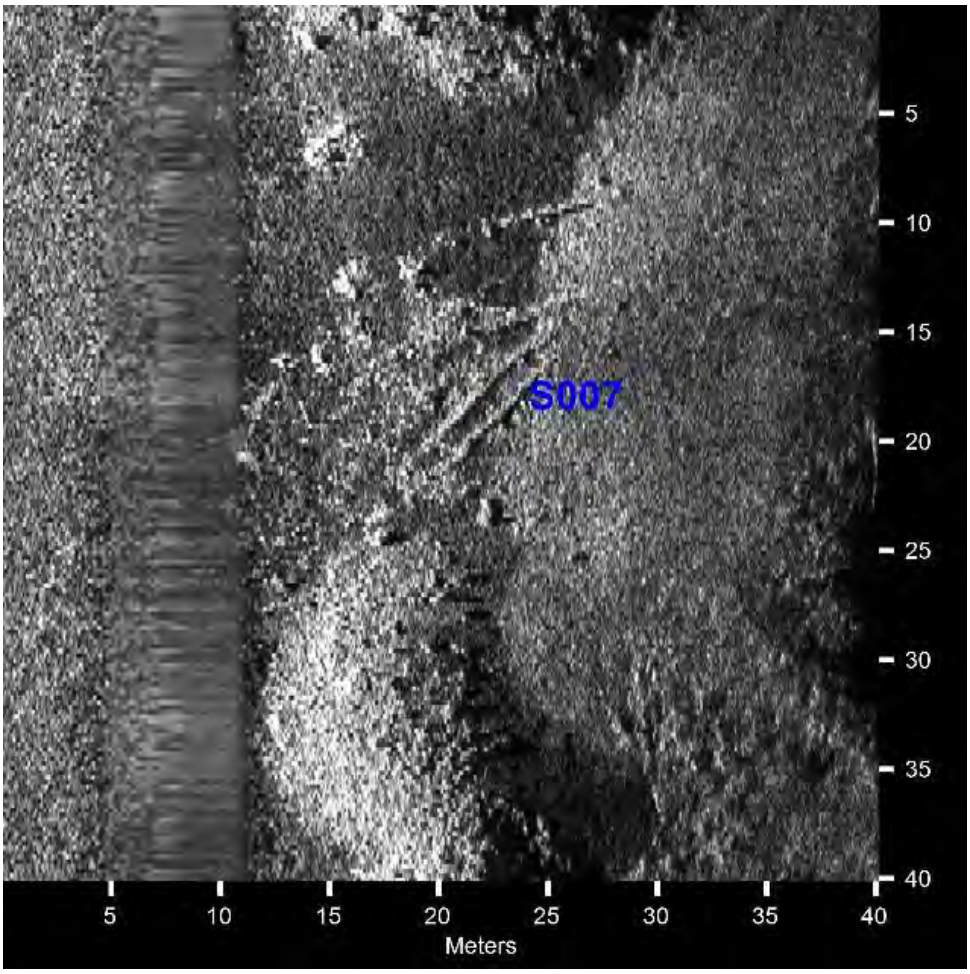


Figure 3-111 Target 17 (Acoustic Contact S007)

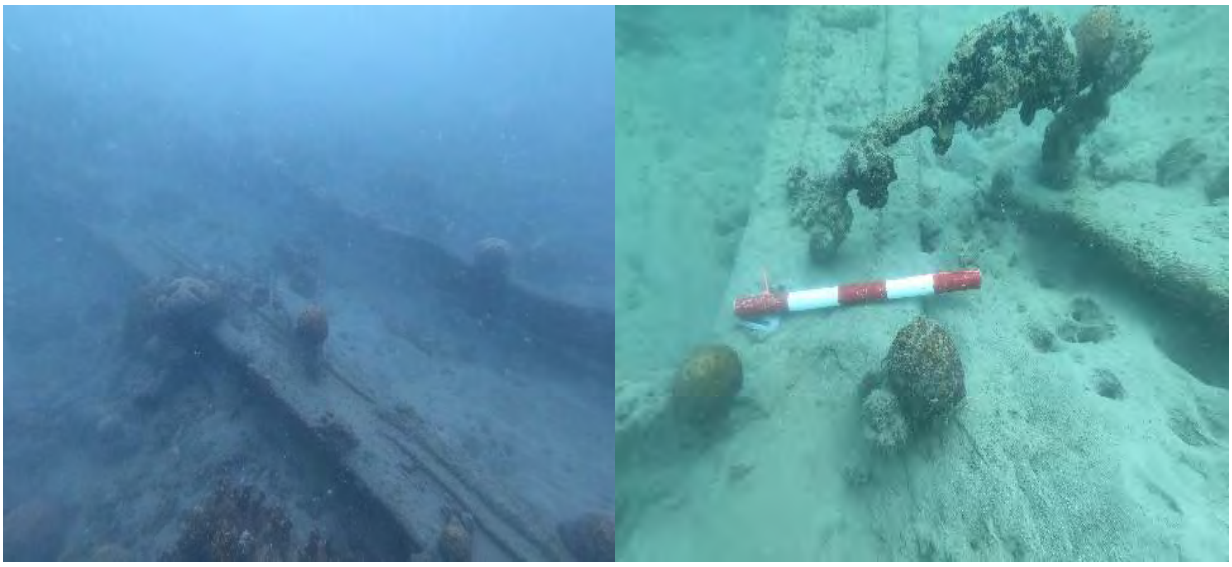


Figure 3-112 Large Metal Beams on Target 17 (Photos by AECOM)



Figure 3-113 Left: "Yap Island, August 28, 1945" and right: "Copy of picture of SB2C over Yaptown on August 28, 1945 after message appeared on the airstrip" with approximate location of Target 17 at the red arrow (photos courtesy of missingaircrew.com)

Target 21

Target 21 was located in Yap Port–Southwest (Survey Area 5) and is denoted as kml_79 in the NOAA ENC shipwrecks database as a visible shipwreck, always dry. Target 21 was partially exposed and first appeared on aerial imagery in 2013, but was not visible in 2008 aerial imagery. Target 21 may correspond with a shipwreck identified on a 1981 U.S. Geological Survey map (USGS 1981) (Figure 3-114). While investigating Target 21, archaeologists noted that the target was completely submerged during high tide but became substantially exposed during low tide (Figure 3-114). Divers spent 42 minutes investigating Target 21 and identified the source as a rectangular barge, observing multiple ship construction elements including iron deck frames that support deck plating and are secured by a series of single riveting butt straps. The rivets measured 4 inches (10 centimeters) across (Figure 3-115). Divers measured Target 21 at 75 feet (23 meters) long and 16 feet (5 meters) wide. Target 21 contained other features such as 10-inch (25-centimeter) cleats and heavy-duty U-bolts (Figure 3-116). Observed construction elements were consistent with mid- to late-20th-century barge construction methodologies. Based on observed construction elements and vessel size, Target 21 was likely a barge. Based on observed characteristics and available data, Target 21 may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. It is recommended treating Target 21 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.



Figure 3-114 2013 Aerial Imagery of Target 21 (Google Earth)



Figure 3-115 Target 21 at High and Low Tides (Photos by AECOM)



Figure 3-116 Single Riveting Butt Straps and Deck Plating (Photos by AECOM)



Figure 3-117 Cleat (Left) and U-bolt (Right) (Photos by AECOM)

Target 22

Target 22 was located in Yap Port–Southwest (Survey Area 5) and was partially exposed at low tide (Figure 3-118). Target 22 was denoted as kml_75 in the NOAA ENC shipwrecks database as a visible shipwreck, always dry. Target 22 was partially exposed and first appears on aerial imagery in 2013, but was not visible in 2008 aerial imagery, and may correspond with shipwreck location identified on a 1981 U.S. Geological Survey map (USGS 1981) (Figure 3-119). Divers spent 40 minutes investigating Target 22 and identified the source as likely to be a rectangular barge split in two, with a section of structure exposed during low tide. Divers measured Target 22 at an overall length of 43 feet (13 meters) and 23 feet (7 meters) wide. Archaeologists observed ship construction elements such as welded deck plating and iron deck frames (Figure 3-120). A white polyvinyl chloride pipe was mounted to a portion of the structure that was exposed to mark the wreck as an obstruction, but likely not contemporaneous with Target 22. Observed construction elements are consistent with mid- to late-20th-century construction methodologies. Based on observed construction elements and vessel size, Target 22 was likely a barge. Based on observed characteristics and available data, Target 22 may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. It is recommended treating Target 22 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.



Figure 3-118 Target 22 (Photo by AECOM)



Figure 3-119 2013 Aerial Imagery of Target 22 (Google Earth)

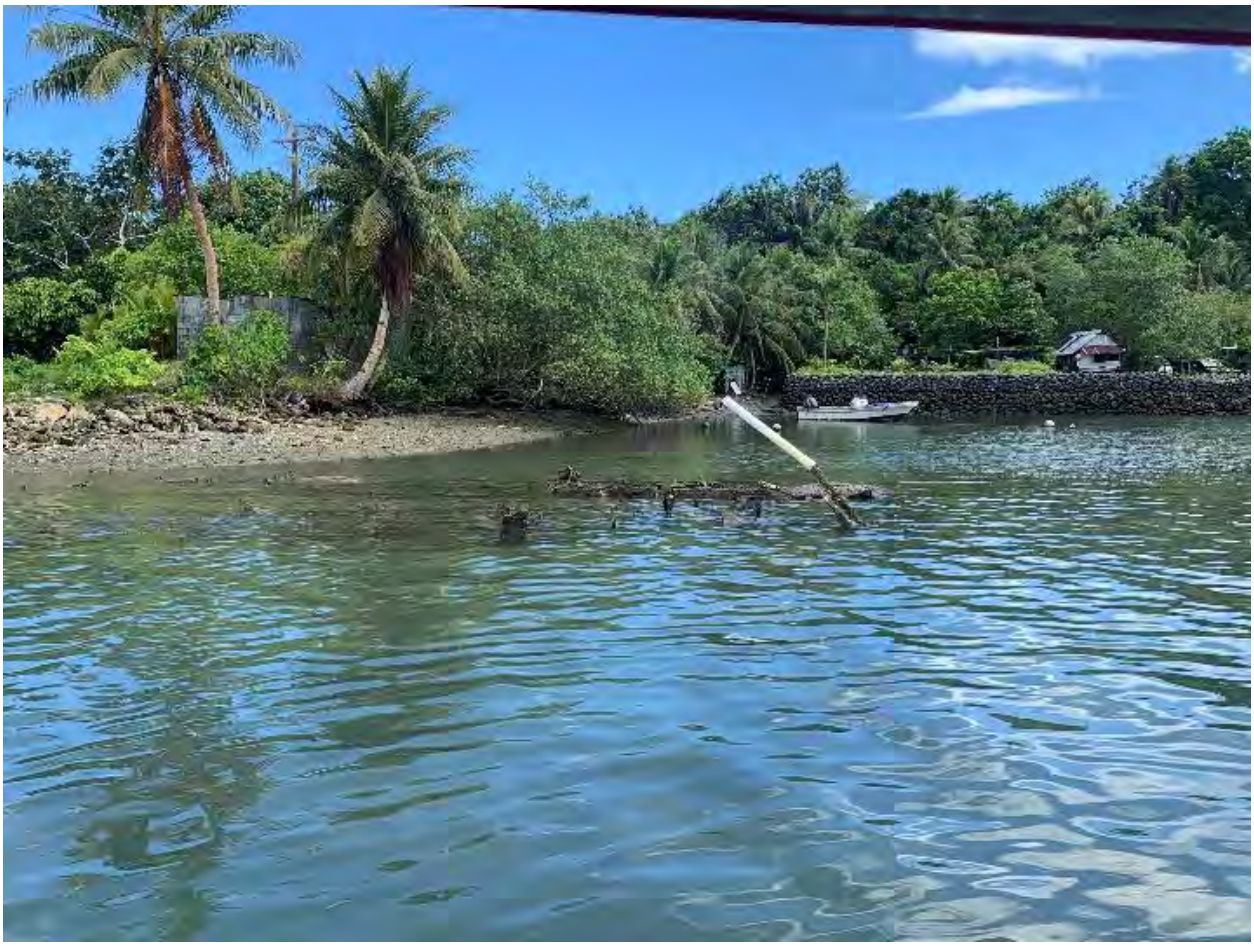


Figure 3-120 Framing Elements of Target 22 (Photo by AECOM)

3.2.1.8 Yap Port–Southeast (Survey Area 6)

No potential submerged cultural resources were identified in collected remote sensing data or during directed investigations within Yap Port–Southeast (Survey Area 6).

3.2.1.9 Yap Port–North (Survey Area 7)

Four targets (Targets 08, 14, 28, and 29) were identified within Yap Port–North (Survey Area 7) (Figure 3-121).

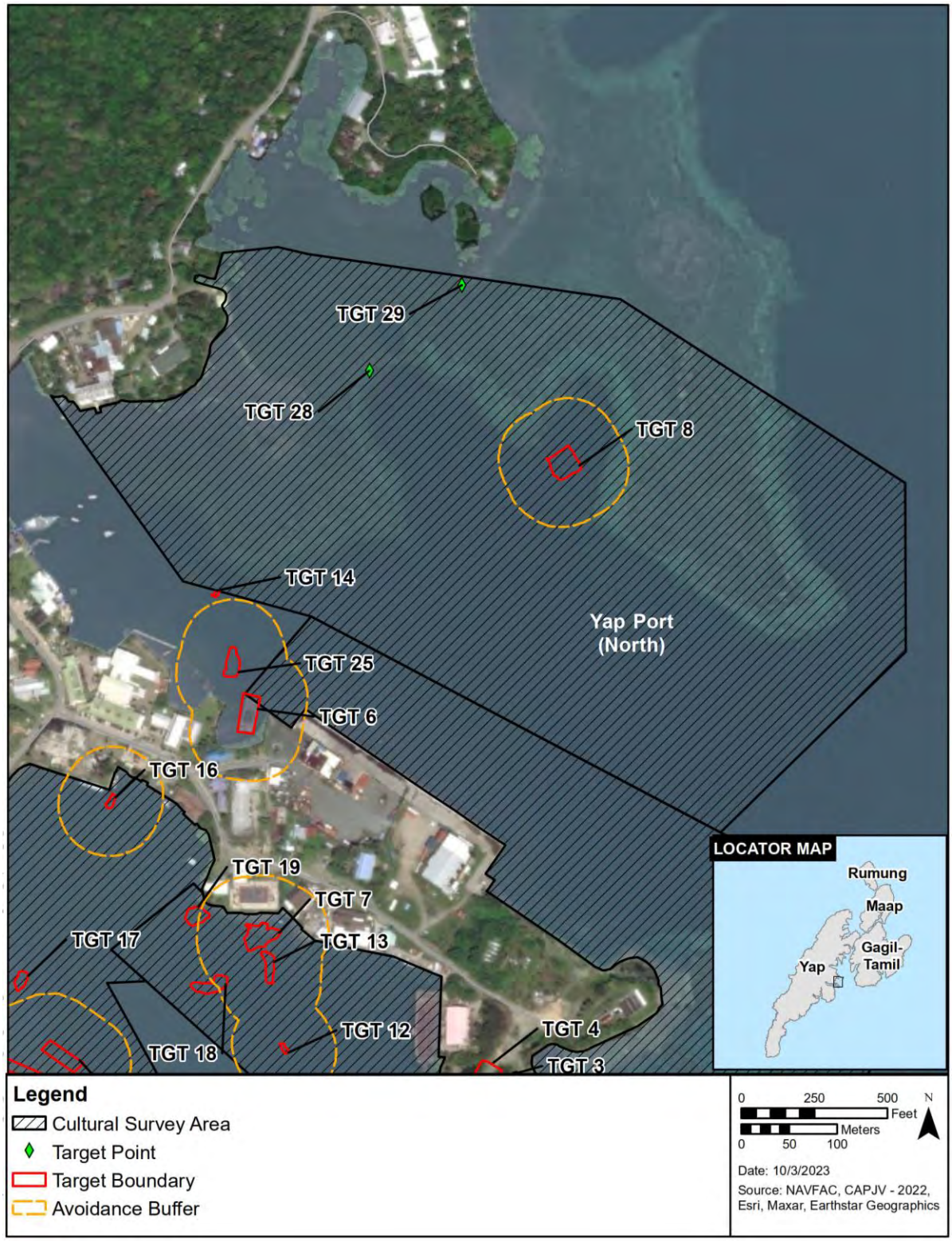


Figure 3-121 Yap Port–North (Survey Area 7)

Target 08

Target 08 was recorded as Acoustic Contact S013 and located in Yap Port–North (Survey Area 7) in approximately 41 feet (12.5 meters) of water (Figure 3-122). Target 21 was listed as kml_73 in the NOAA ENC shipwreck database as a submerged shipwreck. The Navy Seabee MBES data designated Target 08 as a wreck and corresponded in size and shape with the acoustic image, measuring 66 feet (20 meters) long and 79 feet (24 meters) wide (Figure 3-123). Local diving operators informed archaeologists that Target 08 was a sunken barge that was previously used as a floating pier. Divers spent 64 minutes investigating Target 08 and identified the source as a mid- to late-20th-century barge with evidence of mooring bits, rub rails, and an open hatch (Figure 3-124). Substantial marine growth obscured details including names or other potential identification markers. The source of Target 08 was a mid- to late-20th-century barge. Based on observed characteristics and available data, Target 08 may retain the potential to yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history. It is recommended treating Target 08 as eligible for listing in the NRHP with an avoidance buffer of 164 feet (50 meters) from the defined site extents, pending additional information.

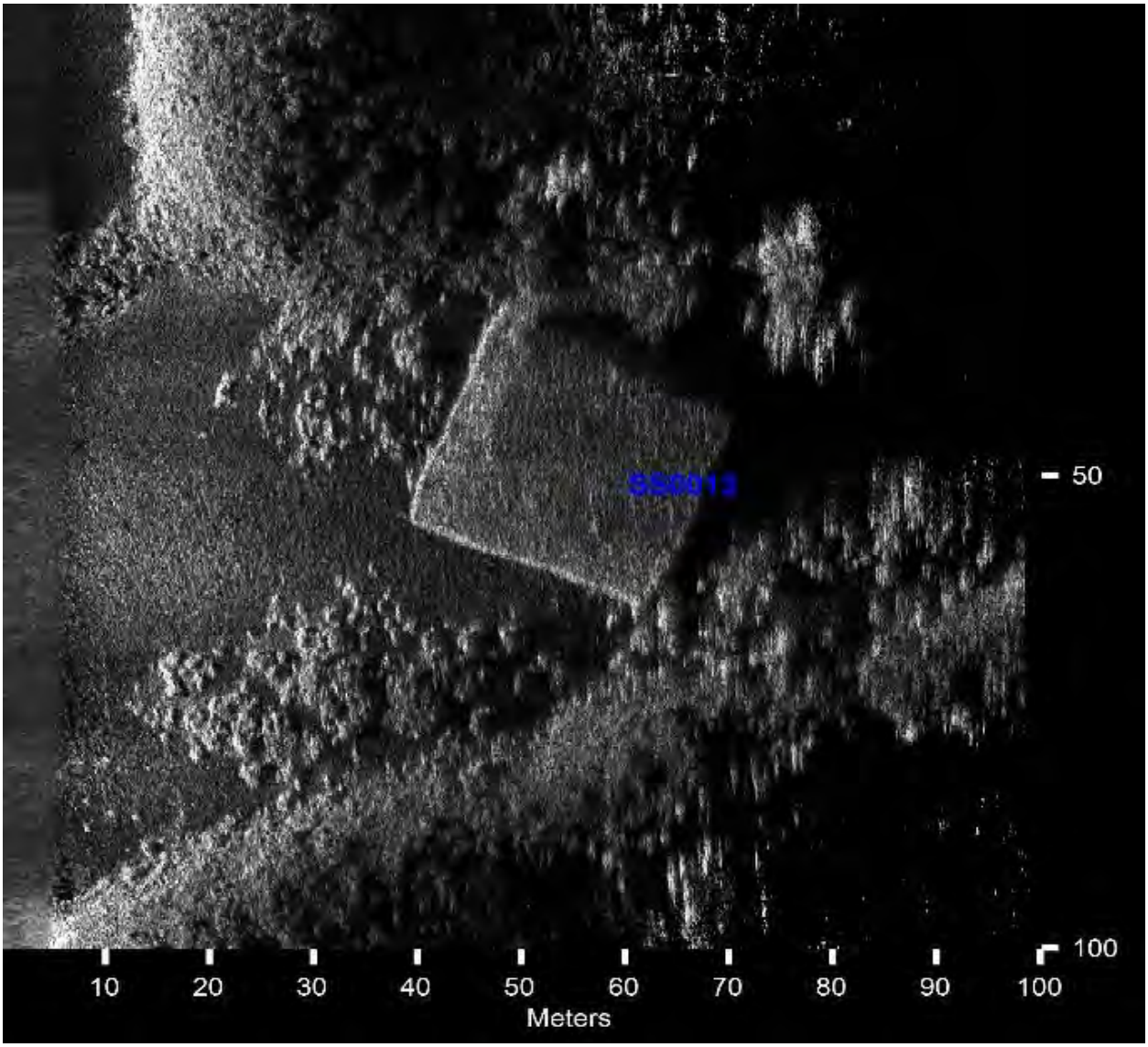


Figure 3-122 Target 08 (Acoustic Contact S013)

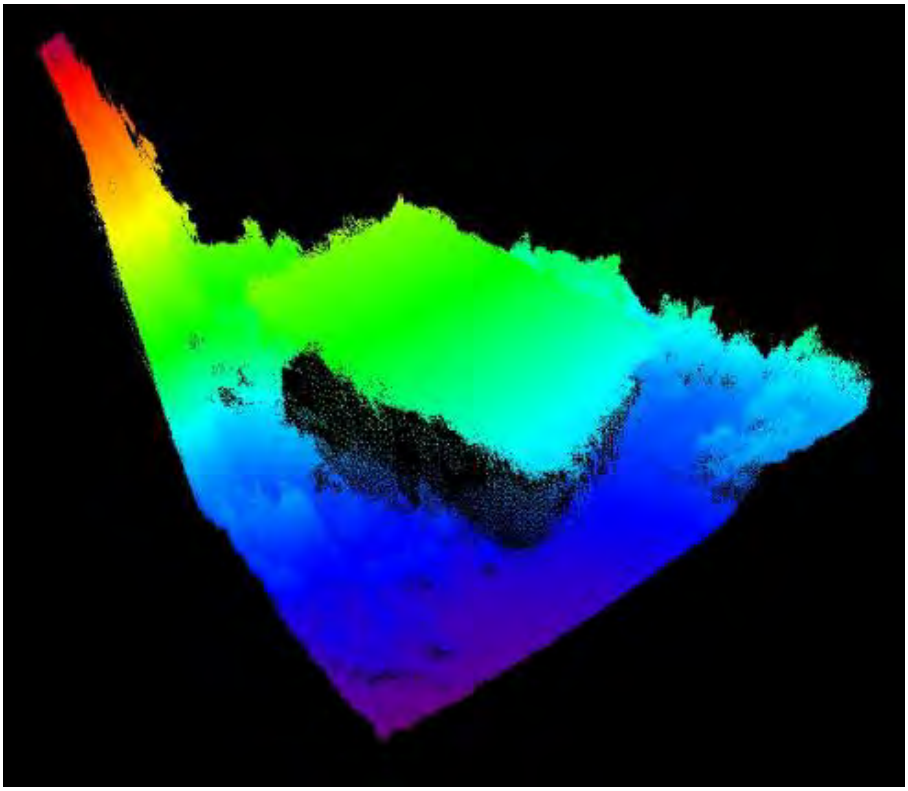


Figure 3-123 Target 08 (Navy Seabee MBES Imagery)

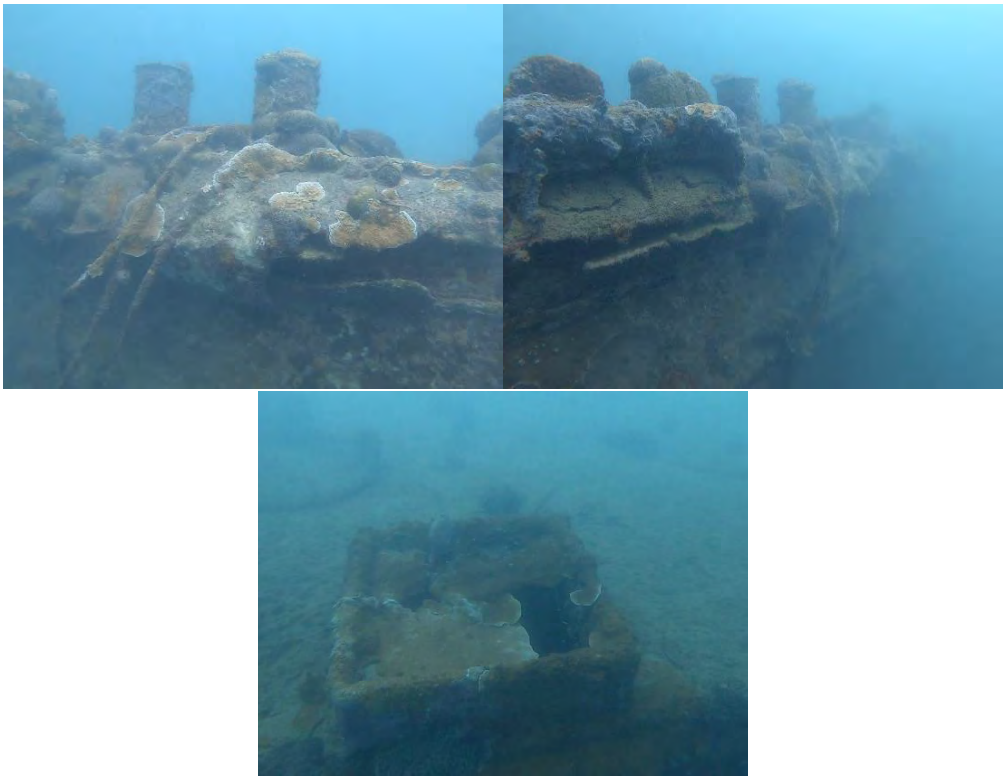


Figure 3-124 Mooring Bitts (Top Left), Rub Rails (Top Right), and an Open Hatch (Bottom) on Target 08 (Photos by AECOM)

Target 14

Target 14 consisted of Acoustic Contact S001 which was located in Yap Port–North (Survey Area 7) in approximately 47 feet (14 meters) of water (Figure 3-125). Target 14 is an unknown contact measuring 16 feet (5 meters) long and 16 feet (5 meters) wide. Divers spent 22 minutes investigating Target 14 and identified the source as a probable track crane or crawler crane (Figure 3-126). The track crane was rectangular and compact, which was consistent with recorded sonar imagery. Target 14 also consisted of tracks, a cabin, a boom and track controls/seat, and evidence of a removed boom (Figure 3-127). The source of Target 14 is a modern track crane; it is recommended as not eligible for listing in the NRHP.

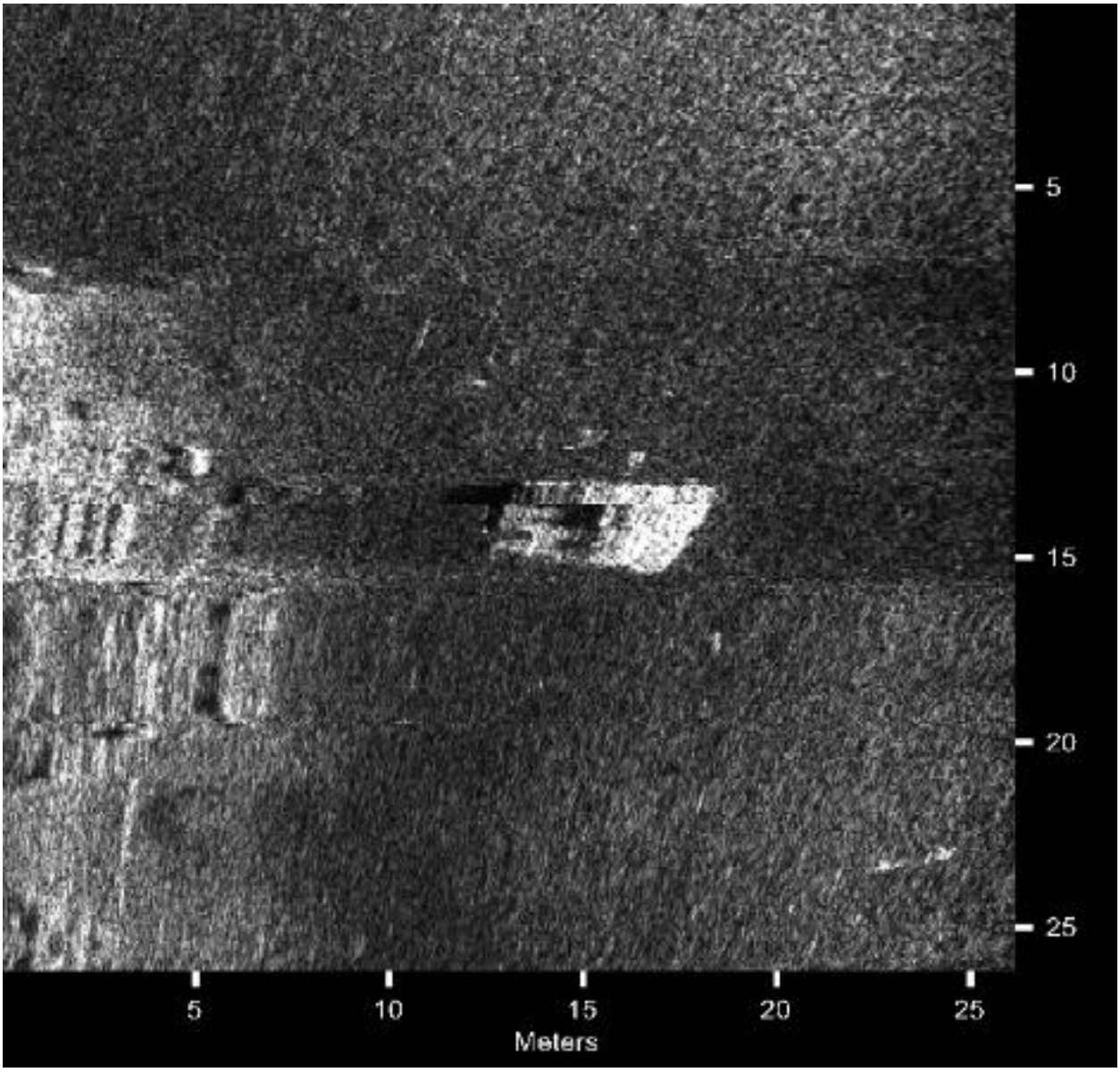


Figure 3-125 Target 14 (Acoustic Contact S001)



Figure 3-126 Target 14, Probably Track Crane (Photo by AECOM)



Figure 3-127 Tracks on Target 14 (Photo by AECOM)

Targets 28 and 29

Targets 28 and 29 were located in Survey Area 7. Initially documented as W89 and W49 by Bill Jeffery and William Pitmag in 2008 and 2009 for the YSHPO, Targets 28 and 29 were *aech,* or fish weirs (Jeffery and Pitmag 2010). *Aech* are Yapese fishing traps comprised of stone in the shape of an arrow or an arrowhead (Jeffery and Pitmag 2010, 1) (Figure 3-128). Archaeologists attempted to locate the targets via both kayak and snorkeling at low tide, but were unable to locate either *aech*. After conversing with local dive operators, archaeologists learned that Targets 28 and 29 were removed by individuals to support restoration of other *aech* and by storm action; thus, Targets 28 and 29 (W48 and W49) may no longer exist. Based on multiple attempts to relocate Targets 28 and 29, and discussion with local consultants, the sources of Targets 28 and 29 are a no longer extant. As the *aech* no longer exist and lack site integrity, they are recommended as not eligible for listing in the NRHP.



Figure 3-128 Example of an *Aech* (Jeffery and Pitmag 2010, 1)

3.3 Drop Camera

Over 35 gigabytes of drop camera footage taken at over 60 locations was reviewed, totaling nearly 1.5 hours of videography. Four locations were selected based on Navy Seabee MBES and their data, which was beyond approved dive limits (Table 3-4):

- Within MBES data, F-7_obstruction was listed as a submerged linear object. Drop camera footage revealed a large cylinder object, similar to an outflow pipe (Figure 3-129).
- Within MBES data, F-9_obstruction was also listed as a sunken buoy and anchor blocks. Drop camera footage revealed a cylindrical mooring block with an exposed eye bolt (Figure 3-130).
- Within MBES data, F-12_obstruction was also listed as a sunken buoy. Drop camera footage revealed an unknown anthropogenic object (Figure 3-131). Captured video depicts an angular piece of likely iron or steel, with a single linear protrusion. F-12_obstruction is likely a piece of anthropogenic debris.
- Drop camera footage depicts multiple pieces of shipwreck debris in the middle of the channel and is discussed in greater detail within Section 3.2.1.4, subsection Target 24 (Figure 3-42).

Table 3-4 Drop Camera Locations Selected by Archaeologists

Identification	Survey Area	Preliminary Identification
F-7_obstruction	Tamil Channel (East) (Survey Area 2)	Large cylinder
F-9_obstruction	Tamil Channel (East) (Survey Area 2)	Anchor block
F-12_obstruction	Yap Port (Survey Area 4)	Unknown debris
Target 24	Tamil Channel Entrance (East) (Survey Area 3)	Shipwreck

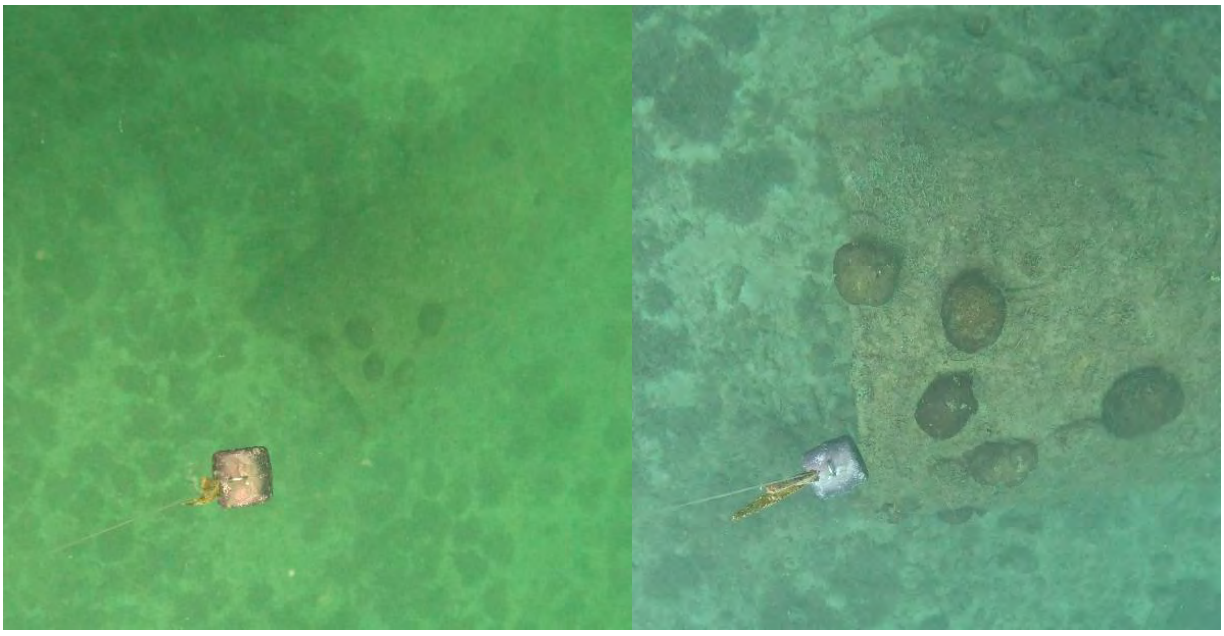


Figure 3-129 Drop Camera Footage of F-7_obstruction



Figure 3-130 Drop Camera Footage of F-9_obstruction

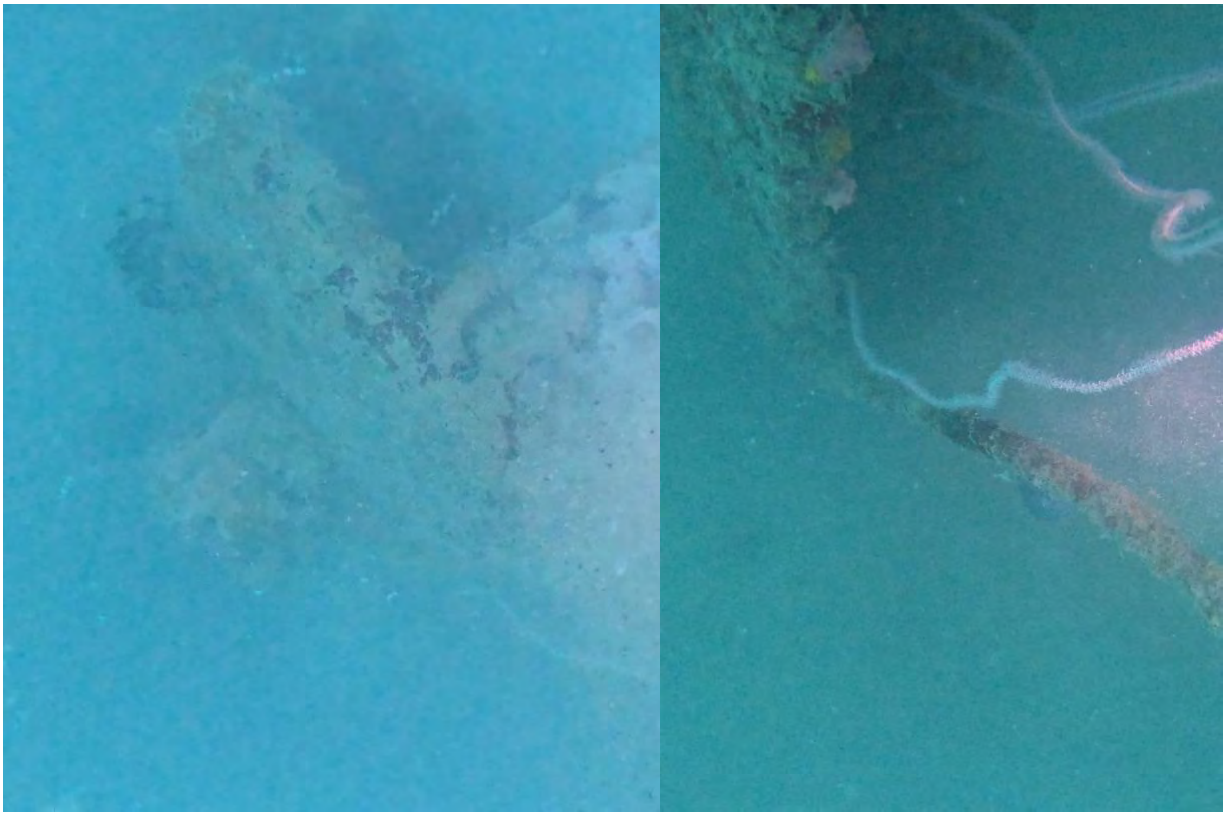


Figure 3-131 Drop Camera Footage of F-12_obstruction

3.4 Schedule Contingencies

Contingencies that could have affected the archaeological survey schedule included human health and safety, weather, and stop-work considerations. During the survey, divers recognized an exposed object as suspected munitions and explosives of concern in the vicinity of Target 11 within Tamil Channel (West) (Survey Area 2). Upon discussion with CAP JV munitions experts and the NAVFAC point of contact, an exclusion zone of 300 feet (100 meters) was established, and diving resumed outside of the exclusion zone. No other contingencies were encountered.

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4 Discussion

This section considers the terrestrial and marine cultural survey results as they pertain to substantive historical topics and offers recommendations of NRHP eligibility for the recorded cultural resources.

4.1 Terrestrial Cultural Survey

The terrestrial cultural survey results raise two topics regarding improvements to and development of the Yap Port area. These topics in turn have ramifications for possible historic preservation actions that future developments of Yap Port may require.

4.1.1 Substantive Historical Topics

4.1.1.1 A History of the Spanish Colony on Blelaach Island

The Spanish fort was only one component of Spain's colonial administrative complex on Blelaach Island. The fort, which was only referenced as such by Dr. John Rabe (Lévesque 2005a), an American dentist who visited Yap in 1890, but never by the Spanish or subsequent German administration, was simply a fortified compound for the military garrison. Although "fort" is an accurate term, it elides the fact that the Spanish Blelaach complex was primarily the colonial seat of government and trading. Further, the Spanish did construct and designate a fort atop K'abul, a peak about 1.2 miles (2 kilometers) from Blelaach toward the interior of Yap Island.

The Spanish fort was an early component of the nascent colony on Yap, which was legislated by the Royal Order of March 3, 1885, that established a political-military government in the Caroline Islands and Palau. Establishment of the colony began in 1886 with the purchase of Blelaach Island from Doña Bartola Garrido, a CHamoru from Guam (then a Spanish colony), for 400 pesos (Lévesque 2005b, 347–350). Other possible locations for the colony were either occupied and cultivated by Yapese or had been claimed by various trading companies or traders (Lévesque 2005b, 354–355). The colony on Blelaach had been preceded by the General Tobacco Company of the Philippines, which established a trade center (*factoria*) on the island in 1884 (Gualberto Gómez 1885; Miguel 1887). Tablaaw, the island adjacent (to the east) to Blelaach and eventually connected by a causeway, was owned by Doña Garrido and her American husband, Mr. Crayton Philo Holcomb. Together they ran their independent trading company, but also supported Spanish interests in Yap.

During the first months of the settlement in 1886, Don Manuel de Eliza y Vergara, the Political Governor of the Carolines and Palau, his secretary, a company of troops, and six Capuchin missionaries set up a cluster of tents encircling a Yapese burial ground on Blelaach Island (De Valencia 1902; Hezel 1995). The burial ground may be marked by a cross symbol on contemporaneous maps (Otal y Rautenstrauch 1885; 1887; Miguel 1887), though the symbol may alternatively mark the General Tobacco Company of the Philippines. Troops connected the main island of Yap with Blelaach and Tablaaw via causeways beginning in 1886.

In December 1888, when the colony was visited by the Commander of the Corps of the General Staff, Don Manuel Moriano y Vivo, for a political and military assessment, the colony comprised several buildings on Blelaach and the mainland (Moriano y Vivo 1888). Figure 4-1 is a composite of several mid-1880s Spanish maps illustrating in detail the development of the island. Figure 4-2 and Figure 4-3 are schematic illustrations of the layout of Blelaach and the adjoining portions of the main island based on Moriano y Vivo's description. The governor's house and administrative building was at the south end of the island, fronted by the main dock of the colony to the south. Spanish troops had leveled a hill at the

center of the island, creating the base for the future fortified compound (Spanish fort). Atop the mound was a pavilion (32 feet by 32 feet [10 meters by 10 meters]) for the captain of the infantry forces, the infantry quarters and jail (131 feet by 32 feet [40 meters by 10 meters]), the Spanish Board of Trade building (32 feet by 26 feet [10 meters by 8 meters]), and the headquarters of the forces of the Disciplinary Battalion (32 feet by 26 feet [18 meters by 9 meters]). The infantry quarters and jail, trade building, and headquarters were raised above the ground, presumably on *pilotes*. Along with these buildings, two sentry boxes (*garitas*) and an iron cistern were located at the southwest and northwest ends of the plateau. A third *garita* was next to the causeway that connected Tapalau and the mainland.

On Yap Island, the colony expanded on the hillsides of the village of Nimar, Weloy Municipality. This included houses for settlers, orchards, a canteen (*cantina*) owned by Mr. Robert Friedlander (the principal agent of the German trading company, Hernsheim & Co.), an infirmary with buildings in the shape of a cross, a well, and the church and school of the Capuchin fathers, as well as other minor buildings. The buildings had walls made mainly of wooden boards or zinc, “bonga” or zinc flooring, and coconut leaf roofs (Moriano y Vivo 1888). Approximately 1.2 miles (2 kilometers) inland, atop the highest peak in the area, K’abul, a fort was under construction. This fortification, also identified as a signal station, was square with each side 36 feet (11 meters) long. It was built on solid rock and was surrounded by a moat about 10 feet (3 meters) wide by 6.5 feet (2 meters) deep. A lamppost with a red light was inside the enclosure and was used to signal the colony in the event of emergencies. It was eventually fitted with a canon named “Reducto Alfonso XIII” (Lévesque 2005b, 487). Ambrosio de Valencia, a Capuchin priest who visited Yap 18 months prior to Moriano y Vivo, provides an account of the colony that aligns with Moriano y Vivo (De Valencia 1902), as does much of Rabe’s 1890 account.

Following Germany’s purchase of the Caroline Islands from Spain in 1899, the former Spanish colony, renamed “Kolonie S. Christina,” became a major German naval communications center for the region. A telegraph was installed on the main island, as indicated in a 1905 sketch (Reichskolonialamt 1913, 65). The Germans created reclaimed land between the mainland and Tapalau Island in 1906 and seem to have repurposed the existing Spanish buildings on the island as government facilities (Süsserott 1906). Additional buildings may have been built on Tapalau. At that time, Blelatsch/Blelatsh Island was used as a quarantine and medical island with another medical building at the former Spanish infirmary. It was located near a church, probably St. Mary’s (Ernit Siegfried Mitller und Gohn 1904).

During the Japanese administration (1914–1945), further land reclamation was undertaken between the mainland, Blelaach, and Tablaaw. A government building was constructed on reclaimed land between Blelaach and Tablaaw, and a hospital was built atop the earthen mound that defined the former fortified Spanish barracks area.

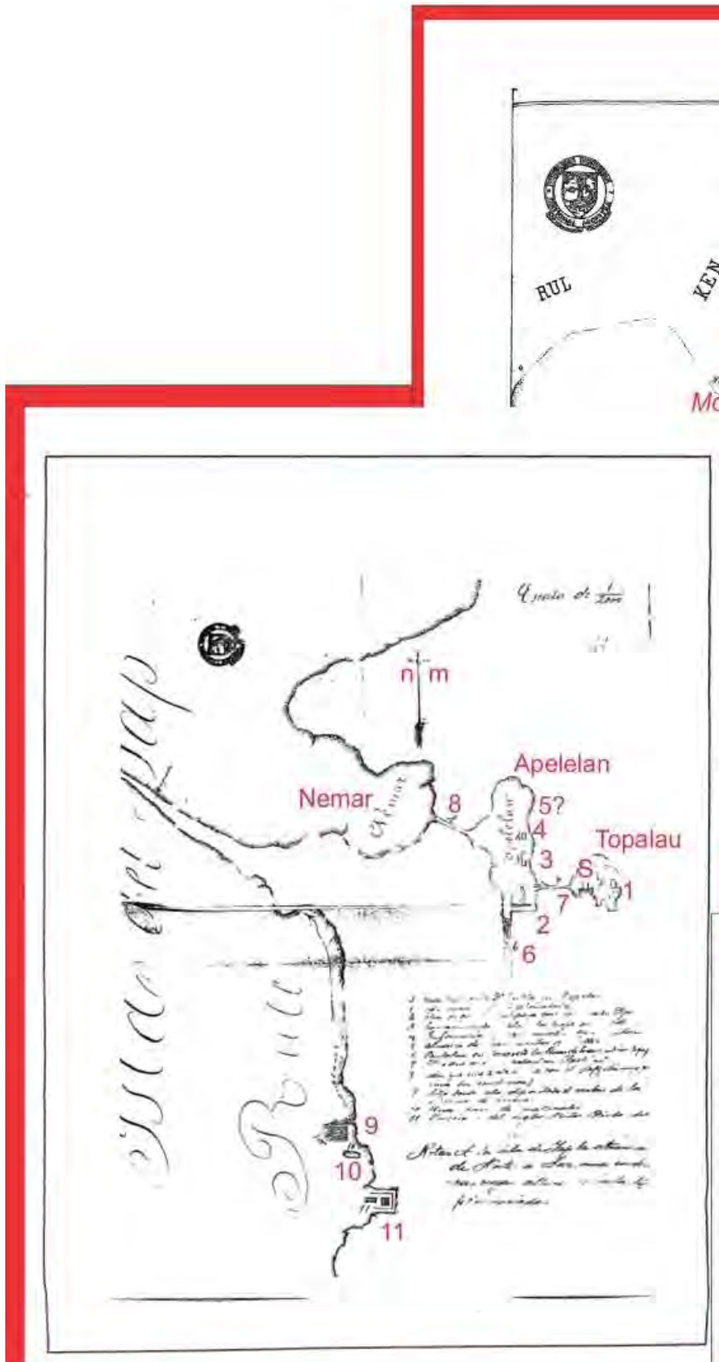
From an archaeological perspective, the only documentation of this colonial development is the NRHP nomination for the Spanish fort and this report. No subsurface testing has been conducted and essentially nothing is known about the day-to-day activities of the inhabitants of Blelaach Island. Though the historical documents provide a refined amount of detail on the initial layout of the development, it is unknown how the function of buildings and activity areas may have changed through time. Importantly, the Yapese people are minimally represented in the historical documents, and it is unknown how they and the Spaniards (and later German and Japanese colonial administrators) interacted on Blelaach.

4.1.1.2 History of Land Reclamation to Create the Yap Port Peninsula

Understanding the history of land reclamation that created the Yap Port peninsula is necessary for interpreting extant surface features and structures and evaluating the potential for buried cultural resources. Table 4-1 orders this development as documented by a series of historical and modern maps and orthoimagery prepared by Spain, Germany, Japan, Great Britain, and the United States, spanning 1876 to 2021. Figure 4-4 illustrates these developments.

Through the late 19th century, a peninsula did not exist. A trio of small islands extended from the shore in a roughly southeast-northwest orientation. Blelaach was the largest and was closest to the main island, being approximately 260 feet (80 meters) offshore. Tablaaw (often mistakenly identified as Blelatsch/Blelatsh) was approximately 66–98 feet (20–30 meters) east of Blelaach, and Nungoch (also identified as Engnoth and Donitsch) was roughly 755 feet (230 meters) east of Tablaaw. Between 1885 and 1887, a causeway was constructed between Blelaach and Tablaaw, and a pier was built extending from the north shore of Nungoch. By 1917 to 1921, a nascent peninsula was formed through land reclamation along the headland of the mainland facing the islands, expansion of Blelaach Island, and causeways connecting the headland with Blelaach and Tablaaw Islands. Multiple piers were constructed during that period as well. Through 1945, further expansion seems to have been minimal (slight differences depicted in Figure 4-4 likely reflect varying precision in cartography and slight georeferencing errors). By 1981, and possibly as early as 1969, the western two-thirds of the peninsula reached its current extents, or nearly so. During the next 15 years, the peninsula expanded to its current configuration with a minor exception at the southernmost area. The 2021 ESRI World Imagery orthophotography presents the modern extent of the port and surroundings, including the post-1981 development of the southernmost corner of the peninsula.

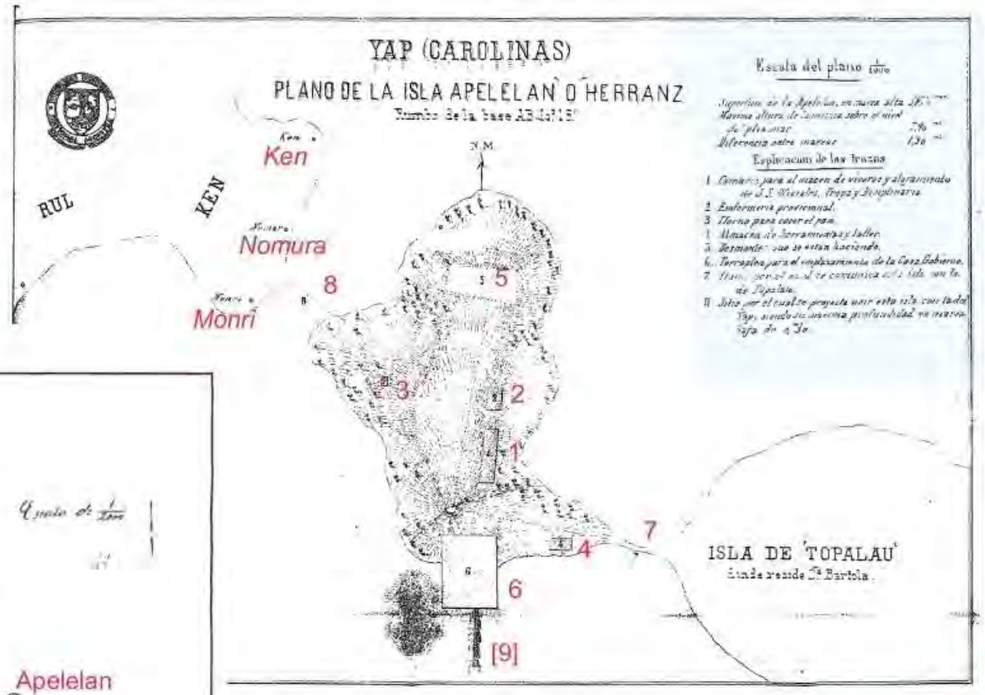
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[No title}
[Topalau]
s. Casa of *D*ª Bartola.
1. Casa of Governor.

[Apelelan]
2. Casa under construction for Governor.
3 Structure where troops are lodged.
4. Temporary infirmary.
5. Tool storage and workshop.
6. Pier under construction.
7. Isthmus between Topalau and Apelelan.
8. Isthmus joining Apelelan to [island of] Yap, (nearing completion).
9. Navy coaling site.
10. Native House.*
11. Properties of Englishman Friedlander.**

*RL Note: "The Bai...named Tomequelip."
**RL Note: Friedlander was "a German subject."



YAP (CAROLINAS)
Map of the island Apelelan or Herranz
Heading of baseline AB: 10° 15' [East of magnetic north]

Surface area of Apelelan at high tide: 5,876 sq m.
Maximum elevation above high water mark: 7.9 m.
Difference between tides: 1.3 m

Explanation of features
1. Structure for food storage, and lodging for His Majesty's officers, troops. and convict-troops.
2. Temporary infirmary.
3. Oven for baking bread.*
4. Tool shed and workshop.
5. Leveling, underway [for unspecified purpose].
6. Platform for the Governor's house.
7. Isthmus for communication between Apelelan and Topalau.
8. Site of project to connect Apelelan with that of Yap; deepest at low tide is 0.3 m
[9. from draft of this map, not shown: Pier under construction]

ISLAND OF TOPALAU
Where Doña Bartola resides.

*RL erroneously translates this as "Oven to bake building blocks"

TWO EARLY MAPS OF THE SPANISH ESTABLISHMENT OF THE *COLONIA* ON YAP

Untitled map to the left dates to early1886.
Map above is c. July, 1886.

The original source of the maps is the Philippine National Archives, reproduced in Lévesque: *History of Micronesia*, Volume 31 (2005:352 and 359). The red-letter text has been added to aid reference to the legends. The translation of the legends is from Lévesque (pp. 353 and 367), edited by DT.

Figure 4-1 **Maps From 1885 (Center) and 1886 (Left and Right) Illustrating the Development of Blelaach Island** Notes: Alternate and transposed island names are used in some graphics. West to east, the islands are: Blelaach (Herranz or Apepelan) and Tablaaw (Tapalau or Blelatsh). Translations from Spanish by Rodrique Lévesque (RL) and H. David Tuggle (DT).

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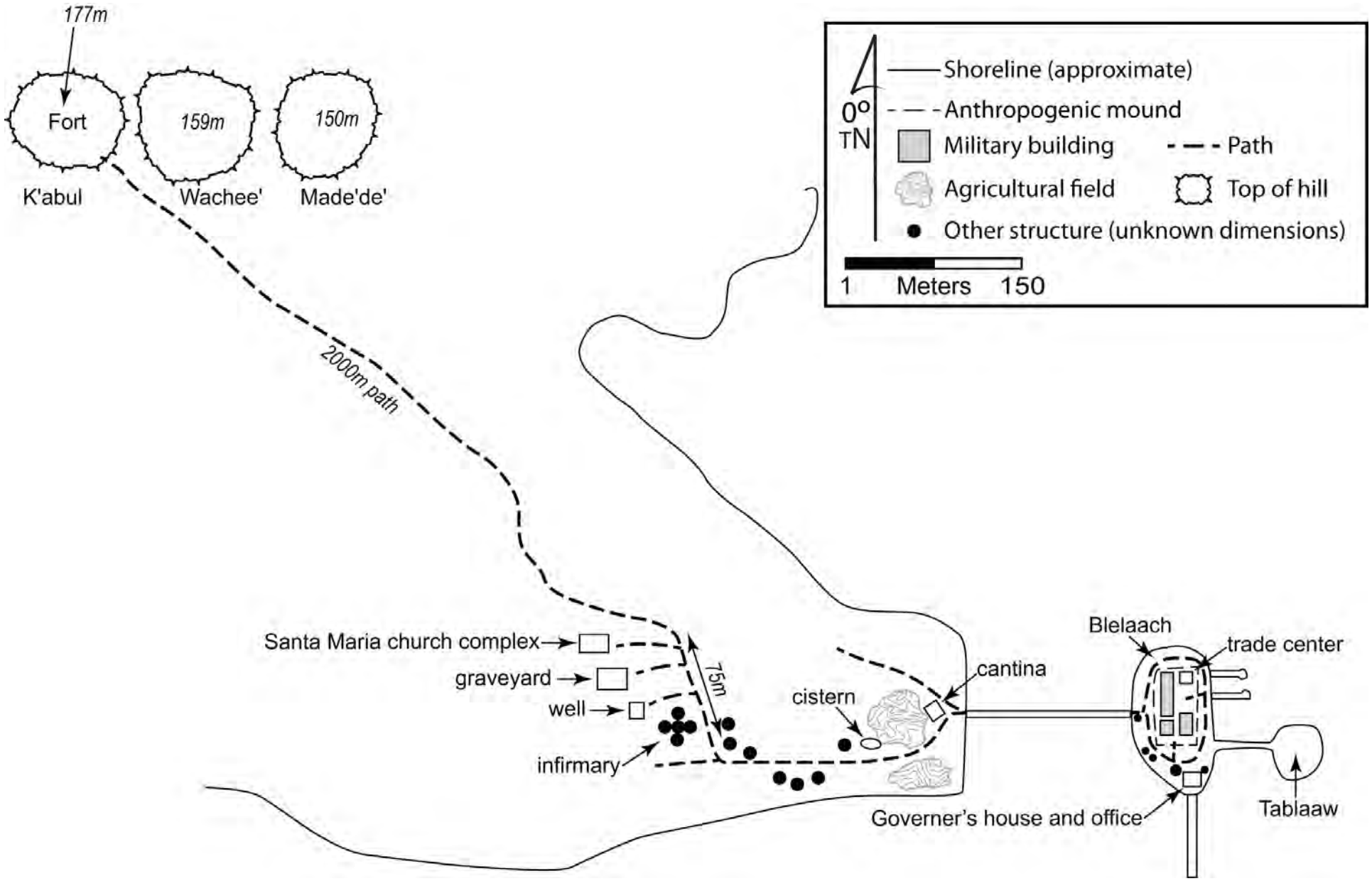


Figure 4-2 Schematic Plan View of the Spanish Colony in the Late 1880s Based on Moriano y Vivo's Description

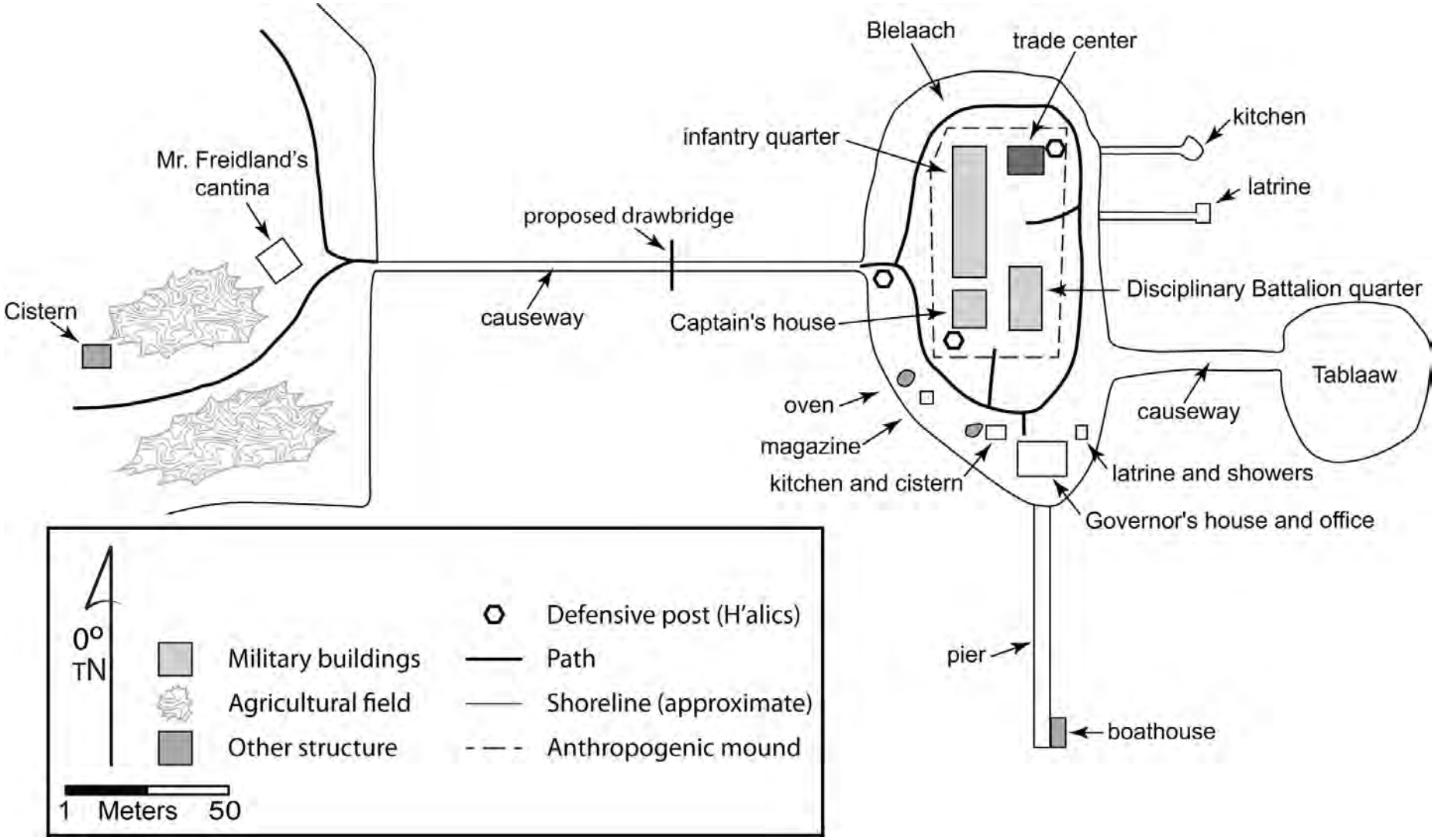


Figure 4-3 Schematic Plan View of the Spanish Administrative Complex on Blelaach Island in the Late 1880s Based on Moriano y Vivo's Description

Table 4-1 Chronological Development of the Yap Port Peninsula

Date	Description	Source
1871; published 1876	Three islands depicted; no development	Direccion de Hidrografia (1876); cartographer Blohm
1885	Three islands depicted; pier extending from Nungoch Island [cloth draft map]	Otal y Rautenstrauch (1885)
1885; published 1887	Three islands depicted; pier extending from Nungoch Island	Miguel (1887); cartographer, Olal [Otal] y Rautenstrauch
1887	Three islands depicted; pier extending from Nungoch Island, causeway connecting Blelaach and Tablaaw Islands [revised version of 1885 maps]	Direccion de Hidrografia (1887); cartographer, Otal y Rautenstrauch
1917–1921; published 1924	Development of main island headland; expansion of Blelaach Island; causeways connecting headland with Blelaach and Blelaach with Tablaaw; multiple piers; Nungoch Island remains separate	U.S. Navy Hydrographic Office (1924)
1917–1921, 1944; published 1944	Possible expansion of the headland and Blelaach and Tablaaw Islands from 1917–1921; Nungoch Island remains separate, its pier has been removed	U.S. Navy Hydrographic Office (1944)
1945	Possible expansion of the headland and Blelaach and Tablaaw Islands from 1917–1921; Nungoch Island remains separate	Naval Intelligence Division (1945)
1969, 1970, 1980; published 1981	Expanded land reclamation connecting the main island headland with Blelaach and Tablaaw Islands; causeway connecting the new peninsula with Nungoch Island; western two-thirds of the area approximates the current peninsula configuration	U.S. Geological Survey (1981)
1996	Land reclamation between former Tablaaw and Nungoch Islands; all but the southern portion of the peninsula match the current configuration	U.S. Geological Survey (1996)

Legend: U.S. = United States.

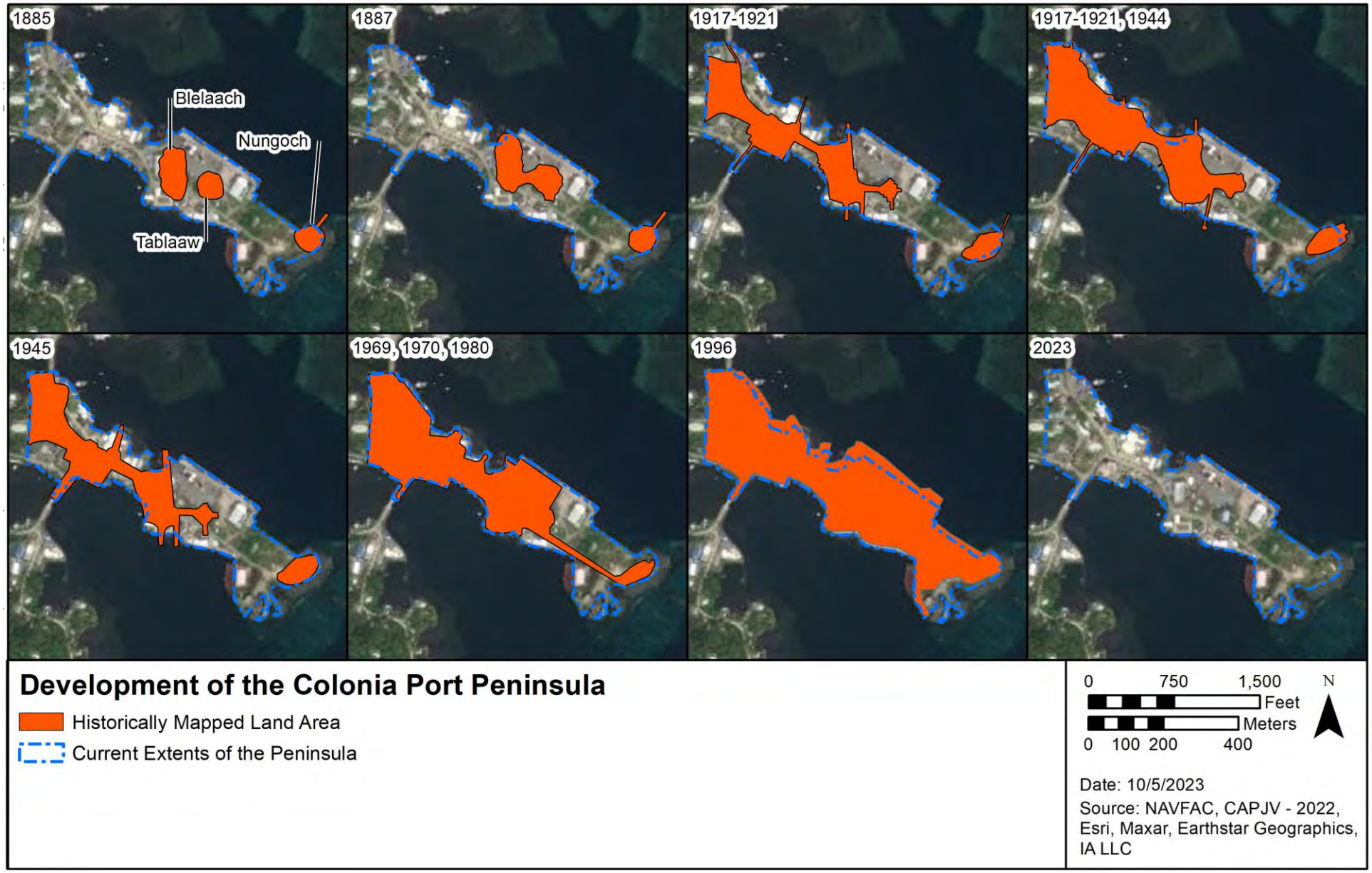


Figure 4-4 Chronological Sequence of the Development of the Yap Port Peninsula

4.1.2 Recommendations

The following recommendations are offered regarding the NRHP eligibility and significance of the documented terrestrial cultural resources, possible mitigation actions dependent on future construction/development, and broader avenues for research.

4.1.2.1 National Register of Historic Places Eligibility Recommendations

Table 4-2 lists NRHP eligibility and significance for each terrestrial cultural resource. As noted, the Spanish fort is a listed historic property. Though fieldwork and archival research highlighted significant gaps in an understanding of the site's history and function, its listing in the NRHP and significance for understanding Yap's colonial history remain unchanged.

Temporary Sites 01 and 02, both masonry and coral retaining walls adjoining the Chamorro Bay Linear Survey Area, are recommended as eligible for listing in the NRHP under Criterion D. Both sites retain integrity of location, design, setting, materials, workmanship, feeling, and association. They provide significant information about Yapese settlement patterns.

Temporary Site 03, a large earthen mound at the Yap Port peninsula, is recommended as ineligible for listing in the NRHP. Late-20th-century construction has resulted in a loss of integrity in design, setting, workmanship, feeling, and association.

Table 4-2 NRHP Eligibility of Recorded Terrestrial Cultural Resources

Site	NRHP Eligibility Criteria	Justification
Spanish fort	Listed (Reference number 76002215)	N/A
Temporary Site 01	D	Retains integrity of location, design, setting, materials, workmanship, feeling, and association; provides information about Yapese settlement patterns
Temporary Site 02	D	Retains integrity of location, design, setting, materials, workmanship, feeling, and association; provides information about Yapese settlement patterns
Temporary Site 03	None	Loss of integrity in design, setting, workmanship, feeling, and association

Legend: N/A = not applicable.

4.1.2.2 Possible Additional Historic Preservation Actions

Future historic preservation actions for known cultural resources and potential inadvertent discoveries are contingent upon and proposed construction/development plans. Generally, ground-disturbing activities have the greatest possibility of causing an adverse effect to known or undocumented cultural resources and may necessitate mitigation. Possible actions are considered for each documented terrestrial cultural resource and for the two terrestrial survey areas (Chamorro Bay Linear Survey Area and Yap Port Survey Area) more broadly.

Spanish Fort

Current documentation of the Spanish fort and associated archival research raises multiple questions about the history of this structure. A multipronged investigation is warranted to clarify its history and site formation processes, and the results of this investigation should be used to prepare a revised NRHP nomination:

1. Oral history interviews should be conducted with knowledgeable individuals to establish the popular Yapese identifications/understandings of the structure. The NRHP nomination (NPS 1976) relied largely, if not solely, on oral history.
2. Additional archival research should be undertaken that accesses Spanish, Japanese, and German repositories; relevant Spanish documents may be stored in the Philippines.
3. A Historic American Buildings Survey should be prepared to fully document the design, construction, and subsequent modifications of the structure, as well as its interpretation.
4. Subsurface testing within and around the structure aimed at identifying associated deposits can provide additional information for interpreting its function(s).

Temporary Site 01: Retaining Wall

If Temporary Site 01 cannot be avoided by future road modification or other construction activities, it should be documented with a detailed description, scaled map and profile, and photographed. Excavation of a test unit abutting the retaining wall could obtain suitable radiocarbon dating material from below the foundation, which would provide a *terminus post quem* (date after which) estimate for its construction. Based on those results, mitigation actions (e.g., data recovery or archaeological monitoring) may be warranted.

Temporary Site 02: Retaining Wall

If Temporary Site 02 cannot be avoided by future road modification or other construction activities, it should be documented with a detailed description, scaled map and profile, and photographed. Excavation of a test unit abutting the retaining wall could obtain suitable radiocarbon dating material from below the foundation, which would provide a *terminus post quem* (date after which) estimate for its construction. Based on those results, mitigation actions (e.g., data recovery or archaeological monitoring) may be warranted.

Temporary Site 03: Mound

Though Temporary Site 03 is recommended as not eligible for listing in the NRHP and future ground-disturbing construction activities affecting the site may be unlikely because the YSL building sits atop the mound, archaeological monitoring is recommended if they were to occur. Such ground-disturbing construction activities may expose stratigraphic details of the mound's formation, as well as reveal earlier strata/deposits that were capped by the mound. This information, in turn, may result in a revised evaluation of the site's NRHP eligibility.

Port Survey Area–General

Figure 4-5 presents an archaeological sensitivity map for the Yap Port designating areas of high, medium, and low sensitivity for cultural resources. The following variables were considered: (1) spatial coverage and intensities of previous investigations, (2) the distribution of known cultural resources, (3) classes of cultural resources (e.g., traditional cemetery, World War II concrete pad), (4) proximity to the coastline (for terrestrial and nearshore marine resources), and (5) soil and topographic attributes. This map was generated from fieldwork results, historical maps, and the land reclamation analysis displayed in Figure 4-4.

The three islets that were enveloped by land reclamation have the highest archaeological sensitivity. These locations may retain significant traditional Yapese deposits and deposits relating to the entire colonial sequence. At a minimum, archaeological monitoring is recommended should any ground-disturbing construction occur in these areas. Pre-construction testing may be warranted, and this should be determined based on specific construction plans.

Areas formed through late-19th- and early-20th-century land reclamation and Yap Port development are classified as medium-high archaeological sensitivity. These areas may retain deposits and features (e.g., pier remnants) relating to the initial development of Yap Port by colonial administrations. At a minimum, archaeological monitoring is recommended should ground-disturbing construction in these areas occur. Pre-construction testing may be warranted, and this should be determined based on specific construction plans.

Portions of the Yap Port peninsula area created between ca. 1945–1980 are classified as low-moderate archaeological sensitivity. Primary archaeological deposits are not anticipated but secondarily deposited artifacts and objects, for example Japanese or U.S. military equipment used as fill following World War II, may be present. Archaeological monitoring may be warranted should ground-disturbing construction occur.

Areas of the peninsula that formed since ca. 1980 are considered low sensitivity. No archaeological mitigation is recommended.

Port Survey Area–Specific

At least two intact Japanese-era buildings are present in the Yap Port area: the former hospital, now used as the Yap State Administrative building, and the former hospital morgue, currently housing the YSHPO building. Historical architectural analysis of both buildings is warranted.

Chamorro Bay Linear Survey Area

Archaeological monitoring is recommended should ground-disturbing construction occur within the Chamorro Bay Linear Survey Area right-of-way. The coastal location of the road raises the possibility for traditional Yapese archaeological deposits. Any development that expands the width or alignment of the road may warrant a pre-construction survey and subsurface testing.

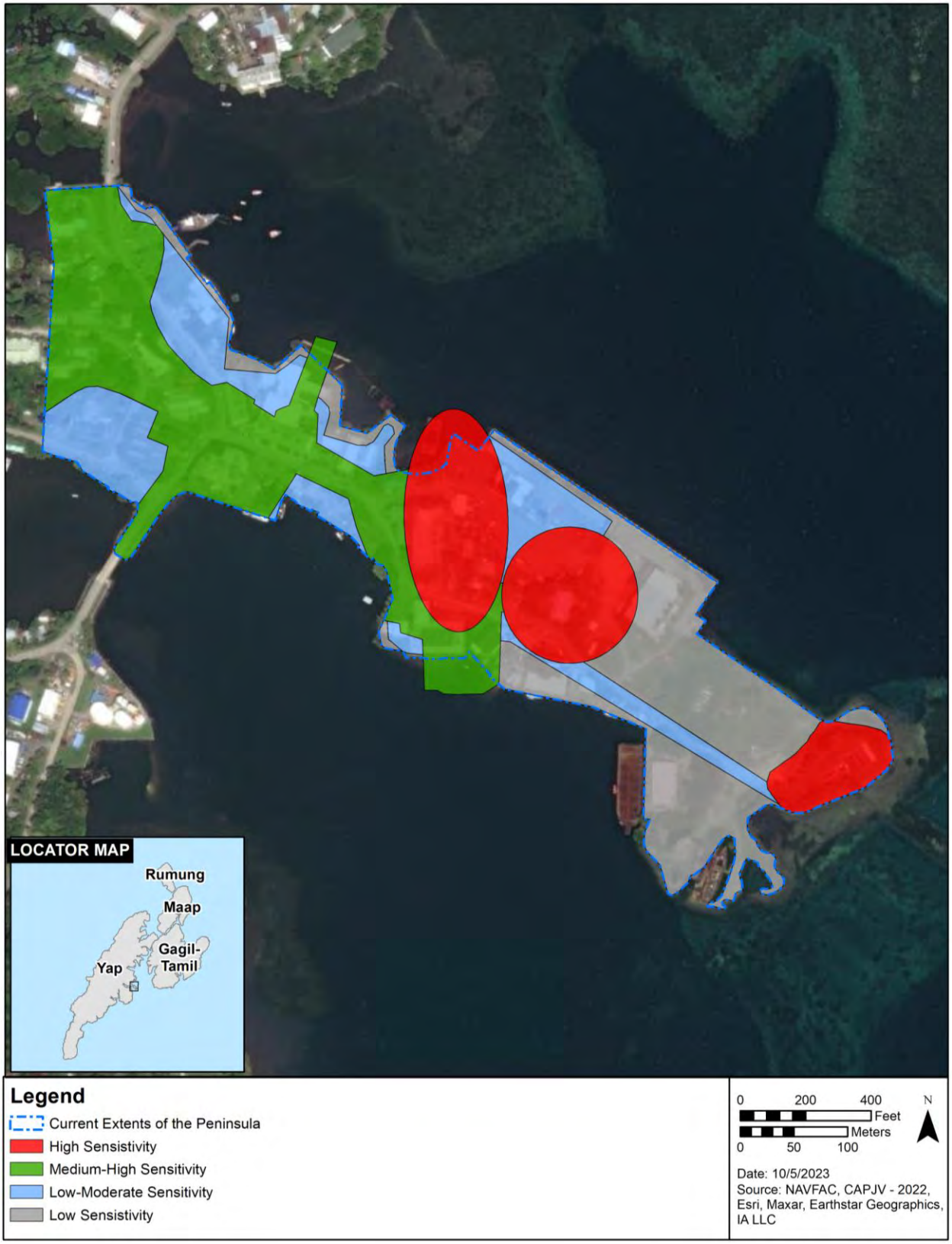


Figure 4-5 Archaeological Sensitivity Map for the Yap Port Peninsula

4.2 Marine Cultural Survey

The marine cultural survey results raise two research topics relating to traditional and historical use of Yap's nearshore waters around Yap Port. These topics have implications for possible historic preservation actions should future developments of Yap Port, Tamil Harbor, Tamil Channel, Tamil Channel Entrance, and nearshore areas occur.

4.2.1 Substantive Historical Topic

4.2.1.1 Yapese Fish Weirs

Stone fish weirs were an important food production system in Yap, providing a reliable supply of marine protein (Hunter-Anderson 1981, 89; Takeda 2001, 123). The antiquity of this technology in Yap is unknown—no absolute dating has occurred—and overall, these features have received relatively little attention with Hunter-Anderson (1981) and Jeffery and Pitmag (2010) being notable exceptions. Though no extant fish weirs were documented within the survey areas, their importance and commonness as components of the nearshore seascape (Christian 1899; Hunter-Anderson 1981; Jeffery and Pitmag 2010; Jeffery 2020) warrant further consideration. In practical terms, future developments along Yap's coastline may encounter these features.

Jeffery and Pitmag (Jeffery and Pitmag 2010, 208), citing Falanruw (1992), estimate that 700–800 stone fish weirs were present in the recent past. Their 2008–2009 survey documented 432, most of which are arrow-shaped with a linear stonewall as the "shaft" and chambers for catching the fish at the arrow's "head." The exceptions are multisided stone enclosures with large shoreward-facing openings. Jeffery and Pitmag's (2010) finds conform to the stone fish weir types Hunter-Anderson (1981) defined based on form and location: arrow traps (*aech*); V-shaped lagoon traps (*aech*); V-shaped reef crest traps (*aech*); piled-rock traps (*ulung*); and rectangular surround traps.

Stone fish weir within Tamil Harbor and the embayments to the north (the bodies of water enclosed by the shoreline extending from Fiteenidoeng at the southwest to Chagiy at the southeast) are of interest. Figure 4-6 illustrates the relatively dense distribution of fish weirs of variable sizes and forms within this area during the latter 19th century (Otal y Rautenstrauch 1887). Christian's (1899) account of his travels through Yap a few years after the preparation of this Spanish map provide a firsthand description of the fish weirs:

- "The ruins of ancient stone fish-weirs fill the lagoon between the reef and the shore, making navigation a most difficult matter…" (Christian 1899, 19).
- "We sweep along, tacking every now and then to avoid the numerous weirs of stone and canework (Thagal and Aech) with which Yap fisherman have industriously filled the shallow lagoon that girdles their coasts" (Christian 1899, 238).
- "We are now approaching one of the stone fish-dams or weirs used for entrapping the unwary finny tribes. Neatly and solidly built of coral blocks, they are generally covered about a foot deep at high tide, and prove the bane of those in charge of trading craft, who are for ever running on them unexpectedly. Some are of considerable antiquity" (Christian 1899, 243–244).

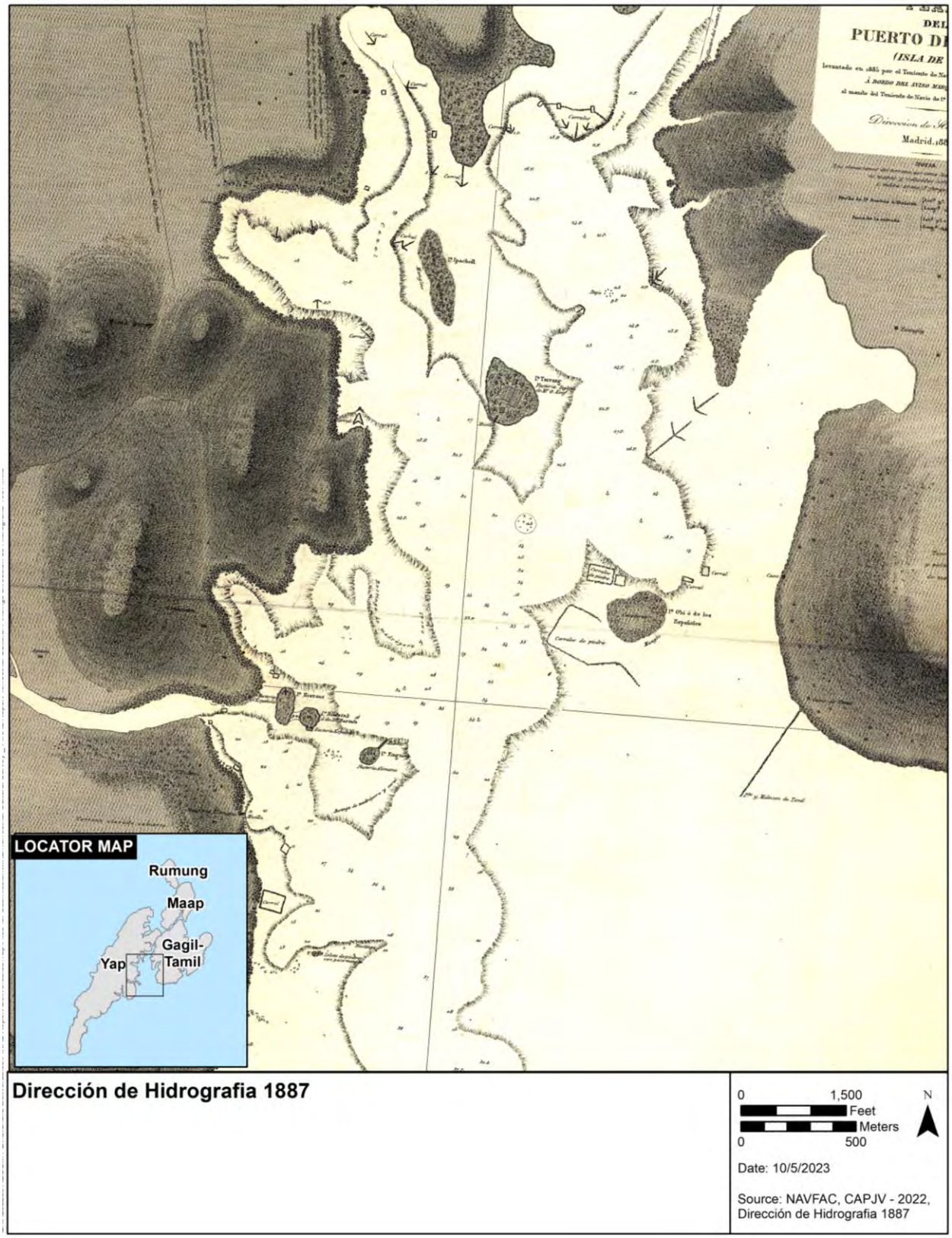


Figure 4-6 Direccion de Hidrografia (1887) Map of Tamil Harbor Illustrating 40 Stone Fish Weirs, Including Arrow-shaped and V-shaped *Aech* and Rectangular/Multi-sided Surround Traps/Enclosures

Figure 4-7 is a composite graphic plotting the fish weirs depicted in the two 1885 maps (Otal y Rautenstrauch 1885; Miguel 1887), the 1887 map (Otal y Rautenstrauch 1887), the 1945 map (Naval Intelligence Division 1945), and fish weir locations from Jeffery and Pitmag's (2010) 2008–2009 survey. The two 1885 maps and the 1887 map derive from Otal y Rautenstrauch's work, but have some differences in the number, locations, and forms of fish weirs. The source of this variation is unclear, but the converse—fidelity in the presentation of many of the fish weirs—attests to a high degree of historical accuracy. Of the 40 fish weirs depicted in the 1887 map, 36 are illustrated in one or both 1885 maps.

From the 1880s to early 2000s, map and survey data provide an ambiguous picture about the construction and preservation of fish weirs in and around the harbor. The 1945 map depicts 13 fish weirs, a decrease of 67.5 percent from 1887. However, this is likely an underrepresentation of extant weirs at that time because several of the same weirs were documented in the 1880s and in the early 2000s, though they are absent from the 1945 graphic. Oral history does attest to the destruction of fish weirs during the Japanese administration (Jeffery and Pitmag 2010), so a net decrease in the number of these structures likely occurred during the early 20th century. Jeffery and Pitmag (2010) recorded 35 fish weirs, a number commensurate with the late 1880s documentation. Of these, eight are confirmed or appear to correspond with late-1880s weirs, including Jeffery and Pitmag's (2010) W48 and W49 (Targets 28 and 29 during this investigation), and four additional weirs seem to correspond with structures presented on the 1945 map. At a minimum, this reveals an antiquity of approximately 60–120 years for these stone fish weirs. The remaining 23 fish weirs may be more recent constructions but representing a continuity in the anthropogenic nearshore seascape.

4.2.1.2 Yapese and Micronesian Shipping

Throughout history, Micronesians relied heavily on water travel, not only within the coastal and protected waters of the high islands and atolls, but also in deep sea island voyages (Foster and Hezel 2023). For example, the Yapese tradition of obtaining *rai* as a rite of passage; young men traveled by outrigger canoes over 300 miles to Palau to mine the limestone deposits and return to the island. This tradition slowly ended with the influence of European merchants, specifically the 19th century American merchant David O'keefe who began transporting the limestone on his vessel in exchange for copra and *bêche-de-mer* (Manta Ray Bay Resort 2023).

The first European contact with Micronesia came during Ferdinand Magellan's voyage across the Pacific in 1521, ending what Hezel considered the long age of relative isolation of the Pacific Islands (Hezel 1979, 1) (though archaeology throughout Oceania and Island Southeast Asia has demonstrated significant and consistent contacts throughout the history of the region). Throughout the 16th to 18th centuries, various European powers attempted to colonize the islands, while independent whalers and tradespeople established their trade in the region. It was not until the 19th century, however, when Spain established a colony in the Caroline Islands in 1886 that traditional life was affected in a sustained way. By 1899, the Caroline Islands were sold to Germany with Japan capturing the island at the outbreak of World War I and then obtaining a mandate for their administration from the League of Nations in 1920 (Foster and Hezel 2023). Japan established industries in the islands to benefit its need for resources in the home islands while also fostering emigration from the home islands, Okinawa, and Korea. It fortified many of the Micronesian islands leading up to World War II. By the end of World War II, the Caroline Islands, Marshall Islands, and Northern Mariana Islands became the United Nations Trust Territory of the Pacific Islands, which was dissolved in 1986 (Foster and Hezel 2023).

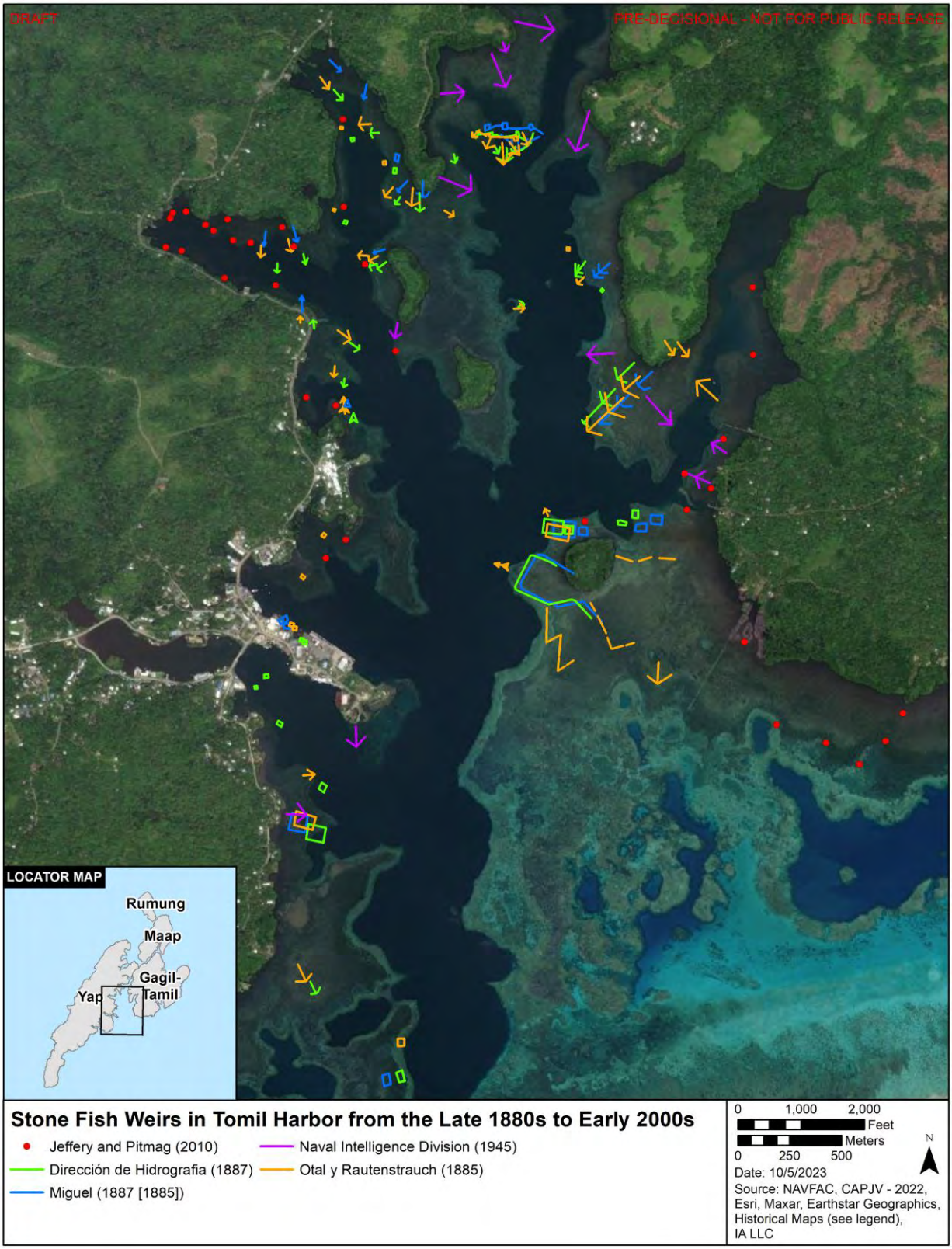


Figure 4-7 Composite Image Displaying Fish Weirs Illustrated in Maps from the Late 1880s and 1945 along with Fish Weir Locations Recorded by Jeffery and Pitmag (2010) During the Early 2000s

As Europeans began exploring, whaling, colonizing, and exploiting the Micronesian Islands, ships forged new lines of communication and industry to and from the islands on a global scale (Munro 1984, 61). While regional volumes of accumulated shipping lists/logs are available, such as *Sydney's Shipping Arrivals and Departures* from 1788 to 1844, few Pacific historians have attempted to record the vast history of shipping in Micronesia, specifically. Levesque's multi-volume *History of Micronesia: A Collection of Source Documents* provides a wealth of information from primary sources, but detailed shipping logs are not the primary emphasis. Francis X. Hezel's work *Foreign Ships in Micronesia* (1979) is another study that presents a compendium of ship contacts within the Caroline and Marshall Islands from 1521 to 1885. Hezel incorporated over 1,700 separate accounts including whaling logs, German ethnographies, journal and newspaper articles, scientific monographs, missionary reports, and an assortment of shipping accounts. The ship contacts are presented in chronological order and reveal not only the popular shipping routes for vessels but also the volume of shipping that took place over 300 years of European shipping in the Caroline and Marshall Islands (Munro 1984, 62). Western Pacific historians have attempted to provide a collection of shipping accounts in Micronesia; however, an overall understanding of Japanese, and later Chinese, shipping practices in the region is lacking.

The shipping history of Micronesia is extensive, encompassing nearly 500 years of European contact and thousands of years of precontact seafaring migration. The results of this marine archaeological survey affirm both density and variety of maritime industry-related material. Further research could provide a fuller picture of shipping practices in Yap and how the various contact relationships with other countries affected the local Yapese and the related home countries.

4.2.2 Recommendations

The following recommendations are offered regarding the NRHP eligibility, avoidance buffers, and significance of the documented marine cultural resources; possible mitigation actions dependent on future construction/development; and broader avenues for research.

The density of material associated with shipping was notably extensive and suggests a significant opportunity to examine Micronesian and Yapese shipping industries. NPS National Register Bulletin 20, *Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places*, provides additional considerations when assessing the NRHP eligibility of historic shipwrecks (DOI 1992), which has been taken into consideration. In the absence of additional research at this time, and to provide NAVFAC with a path forward, the CAP JV is taking a conservative approach by recommending that many of the identified targets be treated as eligible for listing in the NRHP under Criterion D but pending additional information.

Recommended avoidance buffers were tailored to targets based on individual target characteristics as observed within available data (both remote sensing and diver-collected) and environmental conditions. For instance, Target 16 is visible on aerial imagery and, at low tide, is visible on all sides via pedestrian survey and vessel; whereas Target 23 was not captured within remote sensing data, was observed through limited diver investigation, and is exposed on the outer reef in relatively shallow water within the dynamic surf zone and subject to periodic major storm events that can scatter objects.

Archaeologists investigated 30 targets within the survey areas. Of the 30 targets investigated, 19 targets were shipwrecks, five were other submerged cultural resources such as potential piers or a crane, four are natural (non-anthropogenic) objects, and two were previously identified *aech* recorded by Jeffery and Pitmag (2010).

4.2.2.1 National Register of Historic Places Eligibility

Based on observed characteristics and available data, Target 11 is recommended as eligible for listing in the NRHP under Criterion D for the significant information it may provide about World War II activities on

Yap. Additionally, four targets (Targets 16, 23, 24, and 26) are recommended for treating as eligible for listing in the NRHP as individual resources pending additional information to better understand the historical context and archaeological significance of identified targets. Target 16 may yield important information about World War II activities on Yap. Targets 23, 24, and 26 may yield important information about late-19th-century to mid-20th-century shipping. Further, based on observed characteristics and available data, it is recommended to treat the one eligible and four potentially eligible individual resources in conjunction with 12 other targets (Targets 06–09, 12–13, 15, 20–22, 25, and 27) representing shipwrecks, isolated machinery, or other submerged cultural resources such as possible piers, as being eligible in the NRHP as part of a multiple-property submission or as contributing resources within a historical and archaeological district pending additional information. Targets 06–09, 12–13, 15, 20–22, 25, and 27 may yield important information regarding maritime shipping and industry practices significant to Yap and the FSM's history.

Based on observed characteristics and available data, avoidance of Targets 06–09, 11–13, 15, 16, 21, 22, and 25 by a minimum distance of 164 feet (50 meters) from each target boundary is recommended, and Targets 23, 24, and 26 by a minimum distance of 328 feet (100 meters) from each target boundary. Targets 20 and 27 may be associated with other targets and are fully encompassed by recommended avoidance buffers for other targets; therefore, additional avoidance buffers are not currently recommended. If avoidance proves to be infeasible, development of a tailored plan to minimize or mitigate potential adverse effects to historic properties is recommended. Minimization and mitigation measures may consist of additional archaeological investigation to better characterize the resource, which may result in a revision to the recommended NRHP eligibility and/or recommended avoidance buffer.

Targets 10, 18, 19, and 30 are natural, non-anthropogenic features and are not historic properties. Target 14 is a portion of a modern track crane and is not a historic property. Targets 01–05 and 17 lack site integrity and, therefore, are recommended as not eligible for listing in the NRHP. The two previously identified *aech* (W48 [Target 28] and W49 [Target 29]) (Jeffery and Pitmag 2010) were not re-located and based on local consultants, removed in the 1990s. As Targets 28 and 29 are no longer extant and lack integrity, they are recommended as not eligible for listing in the NRHP. No further archaeological work is recommended for Targets 01–05, 10, 14, 17–19, and 28–30.

4.2.2.2 Possible Additional Historic Preservation Actions

Future cultural investigations should develop a research design to investigate each site's historic significance, historic context, and integrity to review and refine each site's NRHP eligibility and recommended avoidance buffer are contingent upon and proposed construction/development plans. The design should include a series of research questions focused on individual resources or toward investigating potential shared themes, trends, and/or patterns of history, especially as it relates to historic significance and context. If future cultural investigation is prompted by proposed bottom impacts with potential adverse effects to historic properties, the design should consider avoidance and effects minimization, foremost, and mitigation measures, secondarily. These actions should fully address the nature, scope, size, and magnitude of potential adverse effects. Some preliminary questions may include the following:

- Did the resource(s) contribute to broad patterns of history during its career as a steam yacht, commercial fishing vessel, cargo ship, and/or barge?
- Few late-19th-century to early-20th-century steam vessels exist today. Did Targets 24 or 26 incorporate distinctive architectural and/or engineering components that could supplement our current knowledge of the design, and can this be answered only through archaeological investigation?

- The wrecking event for Target 26 created a large gouge within the reef. What other evidence of the wrecking event exists within the site, and how did that traumatic event influence the site's current state? Similarly, what information regarding the wrecking events and site formations processes can be gleaned from an investigation of Targets 23 and 24?
- Can identifying markers be located on Targets 11 and 16 that place them in association with important events during World War II?
- If Target 24 is the SMS *Planet* (the SMS *Planet* is part of a two-ship class and one of four ships involved in German survey efforts during the early 20th century), does the site retain evidence of these voyages (or voyages undertaken by the *Kokura Maru*)? Are there other examples of early-20th-century German vessels still afloat or in other archaeological settings?
- If Target 24 is the SMS *Planet*, which was a survey ship, but archival research indicates it was outfitted with weaponry. Was her construction influenced by naval design of the time?
- The identified shipwrecks span broad timeframes. What information regarding shipping patterns and Micronesia can be gleaned from the sites?
- Do the sites contain evidence for local Yapese or Micronesian ship building or ship retrofitting techniques?

With a list of research questions, appropriate methodologies should be assessed to investigate these questions as well as refine each site's assessment of integrity. If such an investigation is intended to fulfill mitigation measures, the planned bottom-disturbance activity or activities should be taken into consideration when determining the appropriate methodologies.

4.3 Challenges Encountered

The terrestrial cultural survey team did not encounter problems while in the field. SEI encountered rough weather during the remote sensing survey, which affected access. During the marine cultural survey, divers recognized an exposed object as suspected munitions and explosives of concern in the vicinity of Target 11 within Tamil Channel (West) (Survey Area 2). Upon discussion with CAP JV munitions experts and the NAVFAC point of contact, an exclusion zone of 300 feet (100 meters) was established, and diving resumed outside of the exclusion zone.

4.4 Recommended Improvement of Methodology

No improvements of methodology are recommended for the terrestrial or marine cultural survey at this time.

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Appendix A
Remote Marine Sensing Survey Report

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Remote Marine Sensing Survey Report

Yap, Federated States of Micronesia

June 2023



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1. INTRODUCTION

Yap Port is located on the southeast coast of Yap Island along the north side of a largely developed peninsula and services international and domestic maritime traffic. Yap Port is being evaluated for potential improvements. Sea Engineering, Inc. (SEI) was subcontracted by AECOM on this Naval Facilities Engineering Systems Command (NAVFAC), Pacific project to conduct remote marine sensing surveys in support of these proposed improvements. The project scope of work included multibeam sonar, side scan sonar, magnetometer, and drop camera surveys of the project areas. Survey operations were conducted in April and May 2023. These remote marine sensing surveys were conducted in support of both the cultural and marine surveys. The project location and survey areas are shown in Figure 1-1.



Figure 1-1. Regional project map with survey areas outlined in yellow

2. METHODOLOGY

2.1 Survey Schedule

SEI conducted the survey fieldwork between April 26, 2023, and May 12, 2023, Yap time zone. The beginning of the survey period was marked by large ocean swell creating hazardous sea conditions at and outside the channel entrance.

2.2 Units and Coordinate System

The survey data was collected in the Universal Transverse Mercator (UTM) Zone 54 North (54N) for horizontal positioning and referenced to Benchmark BM-2 in the Fisheries Pier, established by the Naval Oceanographic Office (NOO) and cited in Tidal Processing Report, FST Archive No. 19FSM02, Yap Island, September 3-October 10, 2019 (NOO, 2019). Benchmark BM-2 location is within the Yap Fisheries Pier, on the southwest of the Yap town peninsula, shown in Figure 2-1. Within the pier, the benchmark is approximately 15 meters north of the pier wall and consists of a silver bolt with a pin-sized indentation in the middle, shown in Figure 2-2. The elevation of the project vertical benchmark references the vertical control network established by the University of Hawaii Sea Level Center (UHSLC), including benchmarks UH 3, UH 4, UH5A, USGS2 and USGS3. The listed elevation of BM-2 is relative to mean sea level (MSL) for the 1983-2001 tidal epoch. Project benchmarks are listed in Table 2-1. The elevation of BM-2 referenced to UHSLC MSL is 1.67, compared to 1.57 reported by NOO in 2019 (NOO, 2019).

Table 2-1: Project Control

Benchmark	Northing (m)	Easting (m)	MSL elevation (m)
BM-2	1,053,027.61	184,299.14	1.67
UH 3	N/A	N/A	2.07
UH 4	N/A	N/A	1.72
UH 5A	N/A	N/A	1.66
USGS2	N/A	N/A	3.10
USGS3	N/A	N/A	3.56



Figure 2-1. Benchmark BM-2 (YAP 2) location marked in red, with respect to the harbor survey areas outlined in yellow



Figure 2-2. Benchmark BM-2 (YAP 2) outlined in red

2.3 Survey Vessel

One survey vessel was used to conduct all remote marine sensing surveys throughout the project. An 8.5-meter twin outboard engine operated by Ruuemau Import and Export was used for all survey operations. The survey vessel is shown in Figure 2-3. and Figure 2-4.



Figure 2-3. Survey vessel used for side-scan, magnetometer, multibeam sonar, and drop camera surveys



Figure 2-4. Survey vessel used for side-scan, magnetometer, multibeam sonar, and drop camera surveys

2.4 Navigation and Positioning

A Leica GS-16 GPS base station system was used for horizontal positioning for the multibeam survey. The Real Time Kinematic (RTK) corrections were transmitted to the rover (vessel) via radio and stored internally for post processing Kinetics (PPK). RTK and PPK are standard signal processing protocols to correct for errors in satellite positioning and allows for centimeter accuracy in position and elevation. The radio and base station were positioned on a tripod at a secure location inside of Chamorro Bay, near the Yap Port survey areas (Figure 2-5). RTK corrections were received via an Intuicom RTK Bridge-X transceiver on the survey vessel for calibrations. Position and heading during the survey were acquired using a dual-antenna global navigation satellite system (GNSS) receiver with Marinestar DGPS corrections providing decimeter-level accuracy.

A Trimble SPS 461 with Marinestar DGPS corrections providing decimeter-level accuracy was used for the magnetometer and side-scan surveys.

Horizontal control was established using Benchmark BM-2 described previously. The project control is listed in Table 2-1 and is also shown on the survey drawings.

HYPACK survey software was used to integrate the Global Positioning System (GPS) positions with the remote marine sensing survey data. Static offsets (i.e., “layback”) for the magnetometer and side scan sonar towfish were used during post-processing to generate corrected track lines.



Figure 2-5. Leica GS-16 GPS base station

2.5 Multibeam Sonar Survey Methods

2.5.1 Multibeam Sonar Survey Methods

The multibeam sonar survey area consisted of an approximately 4000-meter long by 1500-meter wide area offshore of the reef southeast of the Tamil Channel (Figure 2-6). This area is a possible location for offshore mooring buoys. The multibeam sonar survey was conducted between May 4 and May 12, 2023. Ocean conditions were variable throughout the survey period, with wave heights ranging between 0 to 0.25 meters in Yap Port, 0 to 0.5 meters in Tamil Channel, 0.25 to 1 meters at the mouth of Tamil Channel, and up to 1.5 meters at the offshore survey area.

The multibeam sonar system collected bathymetric data and used an R2 Sonic 2020 which generates a swath of 256 beams with a user variable swath width from 10° to 130°. The operating frequency is selectable from 200 to 400 kilohertz (kHz) with a beam width of 2° x 2°. The 200 kHz frequency was used for this survey. The multibeam sonar survey required rigid mounting of the R2 Sonic 2020 sonar head off the side of the boat. This was accomplished using a specialized universal sonar mount system that clamped onto the starboard boat gunnel. The boat gunnel required reinforcing with a wooden 2 x 12 foot wooden beam spanning the width of the boat, secured atop a 2 x 10 foot aluminum beam. The final sonar mount system setup is shown in Figure 2-7.

Bathymetry data were collected from approximately 5 meter water depth to a depth of 290 meter which is the maximum range of the multibeam sonar system. Breaking waves and shallow hazards prevented data collection inshore of approximately 5-meter depth.

Standard hydrographic surveying methodology was followed during the remote marine survey, as provided in the U.S. Army Corps of Engineers EM 1110-2-1003, dated November 30, 2013 (manual). Quality control procedures for multibeam sonar survey systems are detailed in Chapter 6 Section IV of the manual and include:

- Survey documentation
- Multibeam patch tests
- Vertical position check at project vertical benchmarks, tide level check, and RTK tide data collection
- Horizontal position check at project benchmarks
- Velocity cast measurements

Patch testing is a critical procedure used to calibrate the multibeam sonar installation for angular misalignment between the sonar head and the inertial navigation system and heading sensor. The patch test was performed by surveying a shoal area near the Yap Port prior to commencing the survey to reveal residual biases after the mobilization of the survey vessel, including pitch, roll, latency, and azimuthal offsets. The patch testing procedure consisted of data collection along several coincident or parallel survey lines at different speeds and directions, where the results were then numerically evaluated for offsets, calibrated, and corrected using post processing software designed for multibeam sonar surveying.

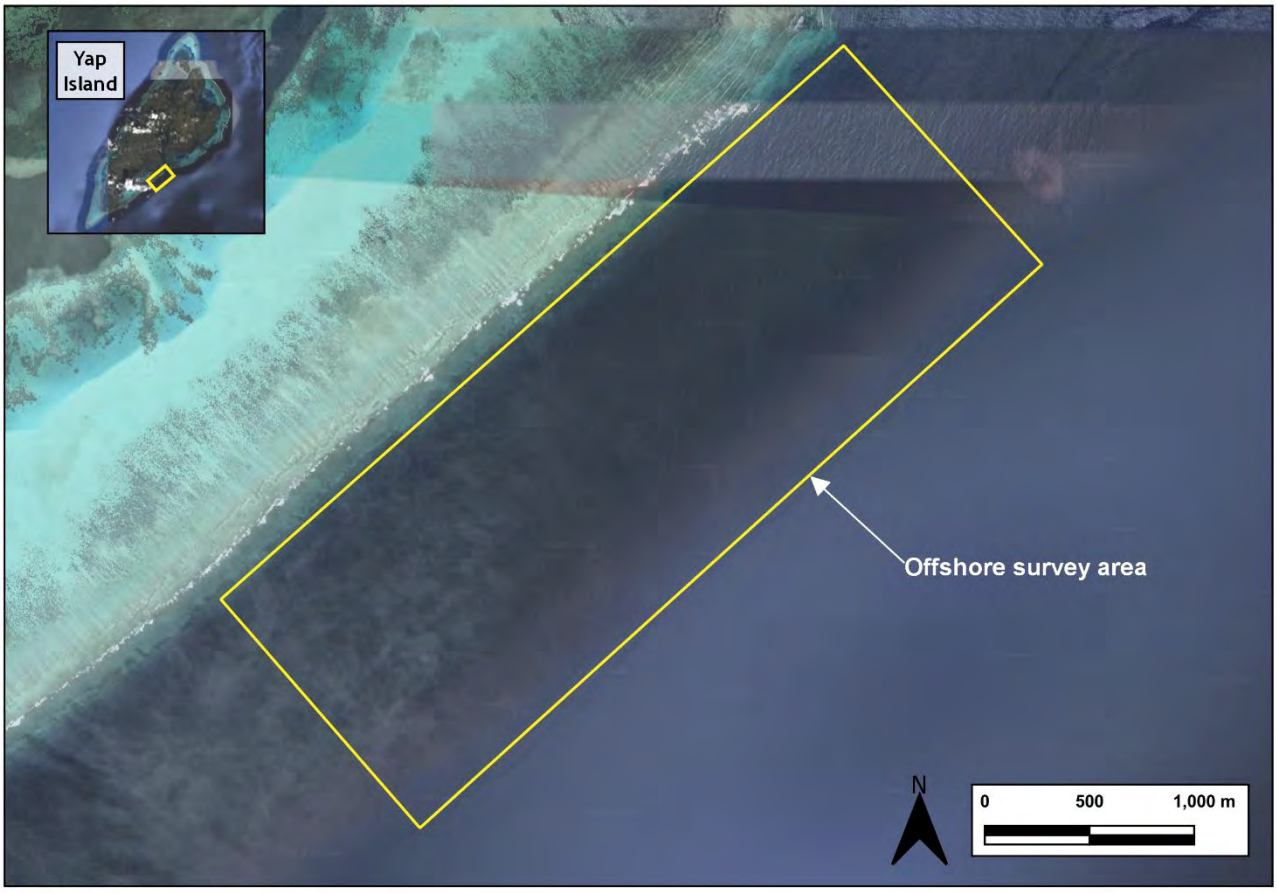


Figure 2-6. Offshore area where multibeam sonar and drop camera surveys were conducted



Figure 2-7. Final multibeam sonar system setup on the survey vessel

2.5.2 Inertial Measurement Unit

The inertial navigation system or inertial measurement unit is a critical element of multibeam surveying, which supplies the data acquisition system with highly accurate vessel motions such as heave, roll, pitch, and yaw displacements in real time. This survey utilized the SBG Ekinox-E inertial measurement unit. The SBG Ekinox-E achieves 0.02-degree pitch and roll accuracy, and 5 centimeter real time heave accuracy with 2.5 centimeter delayed heave accuracy.

2.5.3 Vessel Heading

Vessel heading was measured using a dual GPS antenna connected to the SBG Ekinox-E with an accuracy of 0.05 degrees.

2.5.4 Sound Velocity Measurement

Acoustic depth measurements in the water column are dependent on the speed of sound for that particular water column, which is primarily a function of salinity and temperature. To accurately account for the variability of the speed of sound in the survey area, a sound velocity (SV) profiler was deployed prior to and immediately following each day of surveying to correct for local water conditions. Speed of sound measurements were recorded using an Odom Digibar Pro SV probe. Two casts were made with the SV probe each day (at the start and finish of surveying) to determine the sound velocity profile (SVP) for multibeam acquisition and to generate SVPs for use in post-processing efforts where needed. Once collected, the profile information was entered into the data acquisition system. In addition to the SV profiler, a separate and continuously operating sound velocity probe was

mounted to the sonar head and was used to pass instantaneous SV data to the sonar receiver. This real-time SV data was used by the sonar control system to continuously optimize signal processing and beam forming to adjust for changing water conditions in order to yield the most accurate slant range measurements. Examples of an SVP from May 8, 9, 20, and 11, 2023 are presented in Figure 2-8. The profiles indicate a well-mixed water column with variation in sound velocity of only 0.1%.

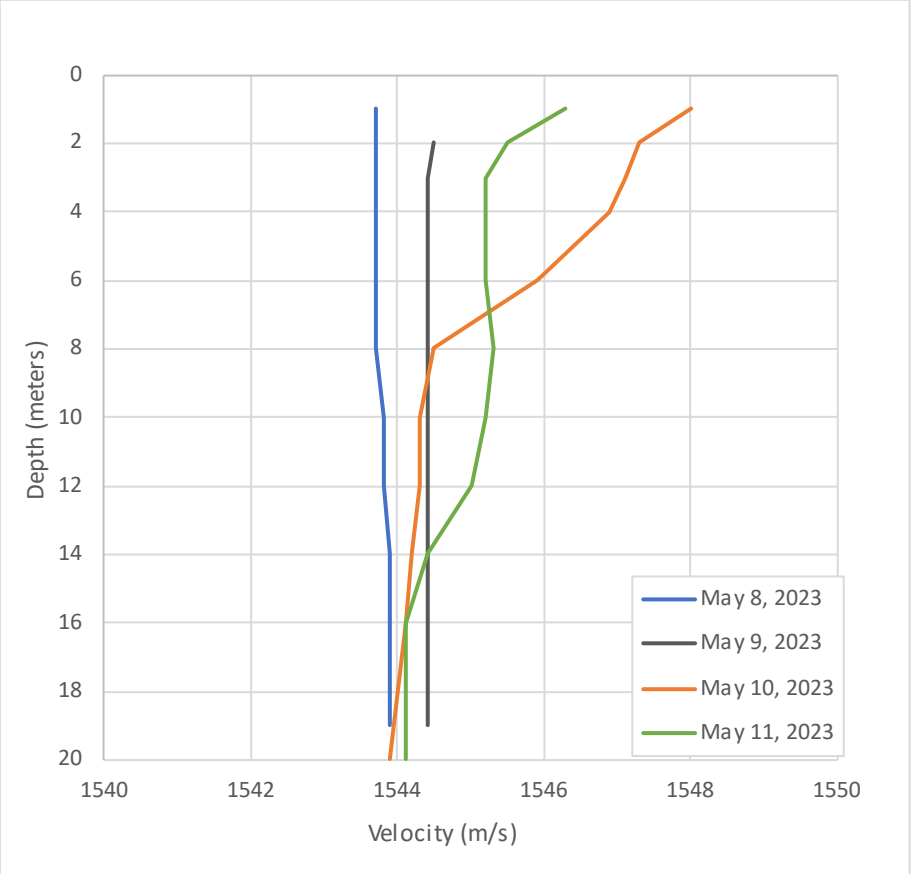


Figure 2-8. Water column sound velocity, May 2023

2.5.5 Tide Corrections

Tidal variations in Yap are typically 1.1 meter and can reach as high as 1.9 meter based on the tidal datums provided by the UHSLC. Bathymetry data collected from a survey vessel must be corrected for the tide level to the reference vertical datum of MSL. Tide levels during the survey were measured using three methods: the vessel mounted RTK GPS system; a tide gauge pressure sensor deployed at BM-2, and manual measurements. The tide gauge was an RBR Solo water level logger with an accuracy of 0.1% of water depth. The tide gauge recorded tidal levels every second for the duration of the multibeam sonar survey. Tidal levels were measured manually by using a survey tape to measure the distance from water level to the elevation of BM-2. Manual measurements were typically conducted at the beginning and end of each multibeam sonar survey day. Graphs of measured tides at BM-2 during the multibeam sonar surveys and RTK measured tides from the survey vessel are presented in Figure 2-9. The graphs show close agreement between the manual and tide gauge readings.

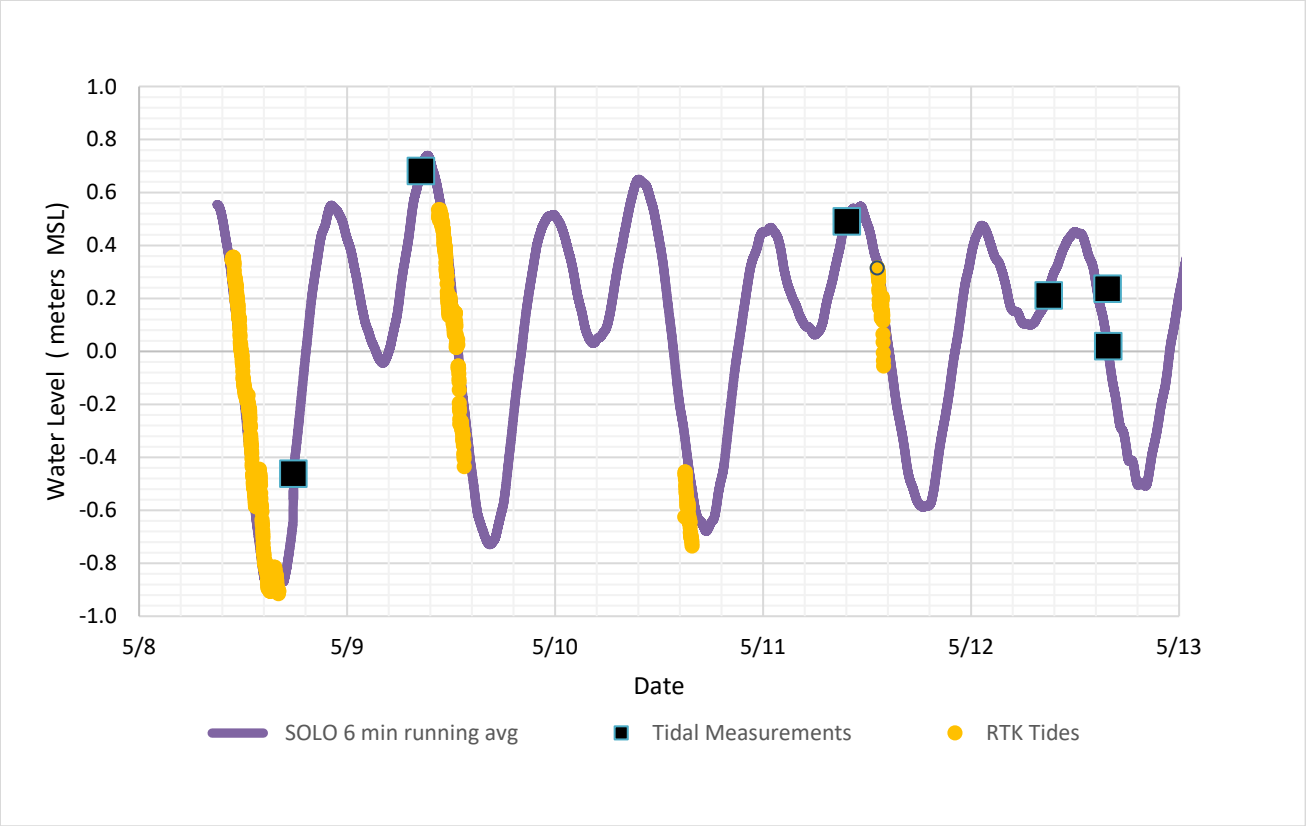


Figure 2-9. Tidal measurements at BM 2 (in meters) and survey vessel-measured RTK Tides May 8 through May 12

2.5.6 Data Acquisition

Xylem's HYPACK/HYSWEEP 2023 navigation and data collection software was used for the collection of multibeam sonar data and all other device data, and for integration of the data with vessel position, heave, pitch, and roll motion. HYPACK/HYSWEEP 2023 was also used for survey data post-processing. A basic description of the complete data acquisition system used for this survey consists of the following elements:

- An inertial measurement unit rigidly installed near the survey vessel's center of gravity and cabled directly to the SBG control box in the main cabin;
- Twin heading antennas mounted directly to the sonar pole;
- R2Sonic 2020 sonar head, side mounted and directly cabled to the R2Sonic SIM (control) box in the main cabin;
- Data acquisition computer, connected to both the SBG control box and the R2Sonic SIM box via network cable connections.

2.5.7 System Offsets

Multibeam system offsets were measured from the center of the boat (horizontal) and the waterline (vertical). These offsets were inputted into HYPACK/HYSWEEP.

Table 2-2. Multibeam sonar system offsets from center of boat for the survey period

	SBG	R2 Sonic head
Port-starboard	1.53 m	1.93 m
Fore-aft	-1.07 m	-1.53 m
Vertical (measured from waterline)	-1.34 m	0.43 m

2.5.8 Quality Control Procedures

Rigorous quality control procedures are required to ensure successful completion of a multibeam survey. These include the patch test, GPS position checks, draft/bar checks, beam angle check, and performance check.

2.5.8.1 Patch Test

A patch test was performed to quantify residual biases from the alignment between the motion reference unit and the multibeam sonar (yaw, pitch, and roll). The patch test also calculated the latency of the GPS system which is the difference in time between when positioning data was received and the when the computed position was logged by the acquisition system. The SBG and R2Sonic 2020 both utilize a 1 pulse per second timing signal that minimizes the problems of GPS latency and was verified in the patch test.

The patch test was conducted using parallel control lines across a subsea ridge located near the survey area. Data processing was completed using HYPACK/HYSWEEP 2023, and patch test corrections were calculated within HYSWEEP using the patch test calibration program and applied prior to the start of the survey. The calculated patch test values were found to be as follows:

- Static Roll 1.25°
- Static Pitch 3.86°
- Patch Test Corrected
    - Roll 1.35°
    - Pitch 4.36°
    - Yaw -0.5°
    - Latency 0.00 second

2.5.8.2 Bar Check

The system draft (the transducer depth) was measured using the bar check technique, which consists of lowering a calibration plate a measured distance below the transducer head and comparing that distance to the sonar readings. The bar check was done at the beginning and end of the survey day. Bar check results are included in Appendix A.

2.5.8.3 Horizontal Position Check

GPS system position checks were conducted daily at BM-2. The position checks revealed no variation from the BM-2 coordinates.

2.5.8.4 Cross Line Beam Angle Check

Several 'cross lines' were run perpendicular to the primary survey line direction to check for roll offsets, timing delays, or offsets due to tidal fluctuations. The cross-line data were compared with the primary survey data using HYPACK/HYSWEEP 2023. The HYPACK/HYSWEEP data processing software allows the user to calculate the difference in measurements for various beam angles compared to the primary survey data. Beam angle checks were performed up to a swath width of 110 degrees, and was compared with data collected at 90 degrees. Results are presented in Figure 2-10. Cross line beam angle check show good agreement throughout the range of angles.

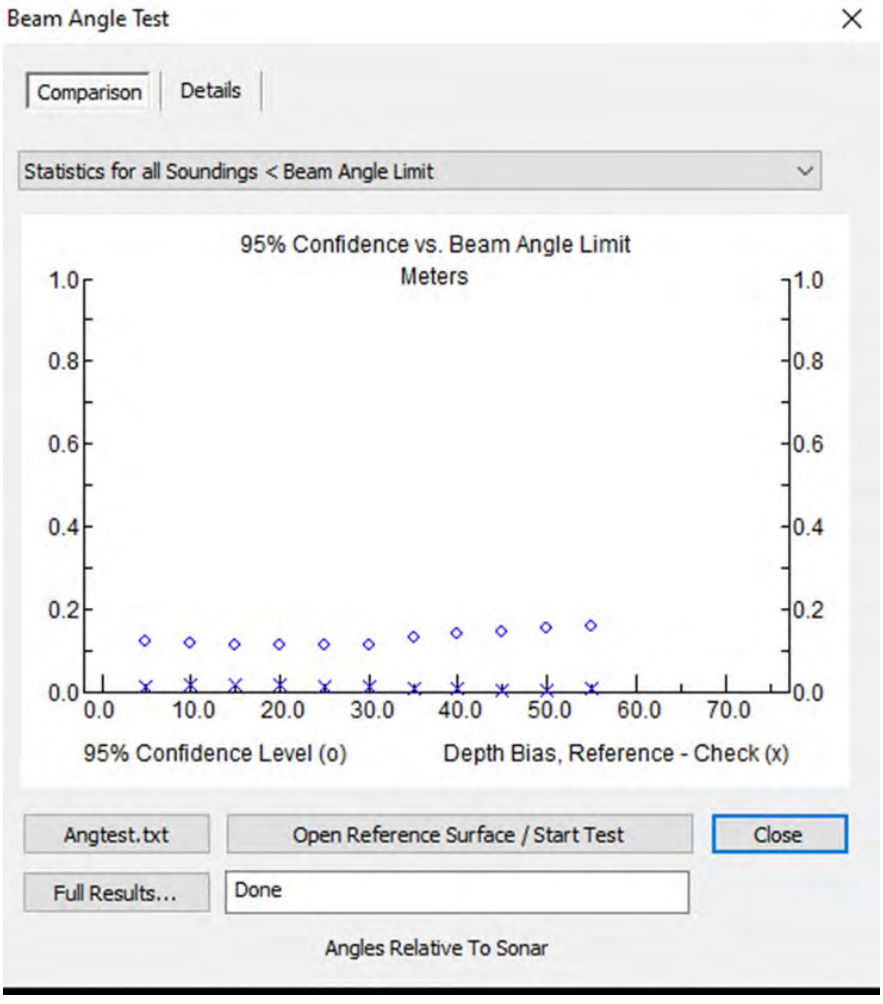


Figure 2-10. Cross line beam angle check

2.5.8.5 Performance Test

A performance test comparing depth measurements made in the same area by two or more independent measurement systems in the primary method recommended by the U.S. Army Corps of Engineers EM

1110-2-1003 manual for assessing the quality of a hydrographic survey. Independent measurement systems were not available for this remote survey. The performance test was conducted by comparing depths measured by the survey systems on survey days at the start and end of the survey, one week apart. A mean bias of -0.04 and standard deviation (95%) of 0.1 indicates excellent agreement between the two surveys days.

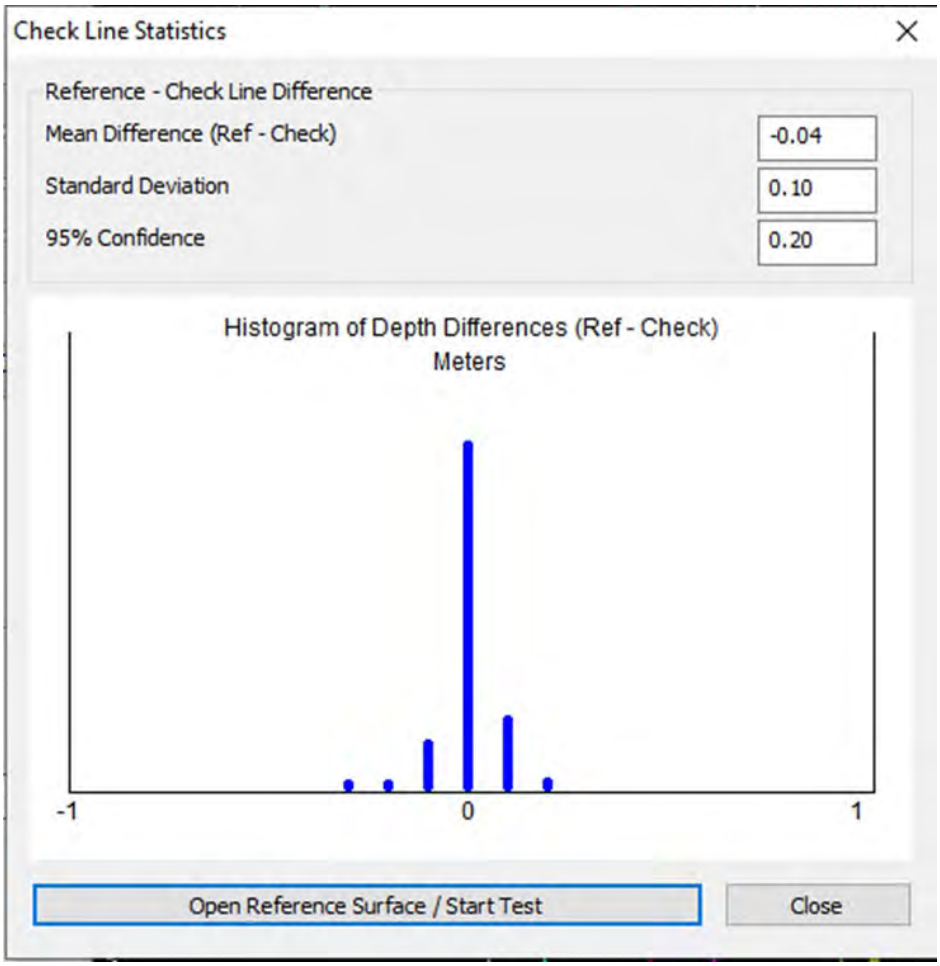


Figure 2-11. HYSWEEP comparison of patch test results from May 8 and May 15, 2023

2.6 Side Scan Sonar Methods

A side-scan sonar transmits acoustic signals with wide vertical beam widths out to either side of the sonar towfish. A receiver records the signals that are reflected from the seafloor to the towfish. Hard bottom areas and features produce more intense reflections than sediments. The result is a plan view acoustic image of seafloor characteristics. The side scan imagery allows identification of objects with high relief that are potential navigation hazards.

The side scan survey was performed from April 26 to May 3, 2023. The side scan survey consisted of areas where depths were generally shallower than 15 meters (50 feet) in the regions shown in Figure 2-12. These areas consist of the eastern channel wall at the mouth of the Tamil Channel Entrance, Yap Port, and the areas north, southeast, and southwest of the Yap Port peninsula. Ocean conditions were

variable throughout the survey period, with wave heights ranging between 0 to 0.25 m in Yap Port, 0 to 0.5 meters in Tamil Channel, and 0.25 to 1 meters at the Tamil Channel Entrance.

An EdgeTech 4125 Side Scan Sonar System was used for the survey (shown in Figure 2-13). The system contains dual frequency 400 and 900 kHz transducers. Both transducers were used throughout the side-scan survey to produce base and high-resolution imagery. The sonar range was adjusted during the survey between 50, 75, and 100 meters per side to ensure the towfish altitude was within 10-15% of the range. Survey lines were conducted in 30-meter spaced parallel lines where possible, and along the steep edge of the reef in the Tamil Channel.

Due to variable and steep bathymetry in the survey areas, the towed systems were kept shallow to avoid collision with the seafloor and impact to sensitive bottom substrate. Poor weather conditions during the survey window limited the survey over several days particularly at the east side of the Tamil Channel Entrance which is exposed to open ocean swells.

The side scan towfish was deployed in three (3) configurations including off the starboard stern, starboard midship, and forward bow of the survey vessel. Offsets of the three configurations relative to the GPS position are summarized in Table 2-3 below. The side scan location was then determined in HYPACK (layback) based on the cable out from the towfish location. The cable out varied throughout the survey.

Table 2-3. Towfish offsets relative to GPS

Configuration	Starboard Offset (m)	Forward Offset (m)
Starboard Stern	+1.676	-3.627
Starboard Midship	+1.676	-0.914
Forward Bow	+0.37	+4.97

Side scan data were reviewed on-site using HYPACK 2023 software and post processed into a GeoTiff mosaic imagery using HYPACK. It should be noted that the version of HYPACK used throughout the survey contains a system bug where the 900 kHz frequency collected by the side scan is flagged as being 264 kHz. HYPACK support confirmed that the 264 kHz identification is a typo within the software and that the data is 900 kHz as collected by the side scan. Appendix E shows email communication with HYPACK support regarding this system bug.

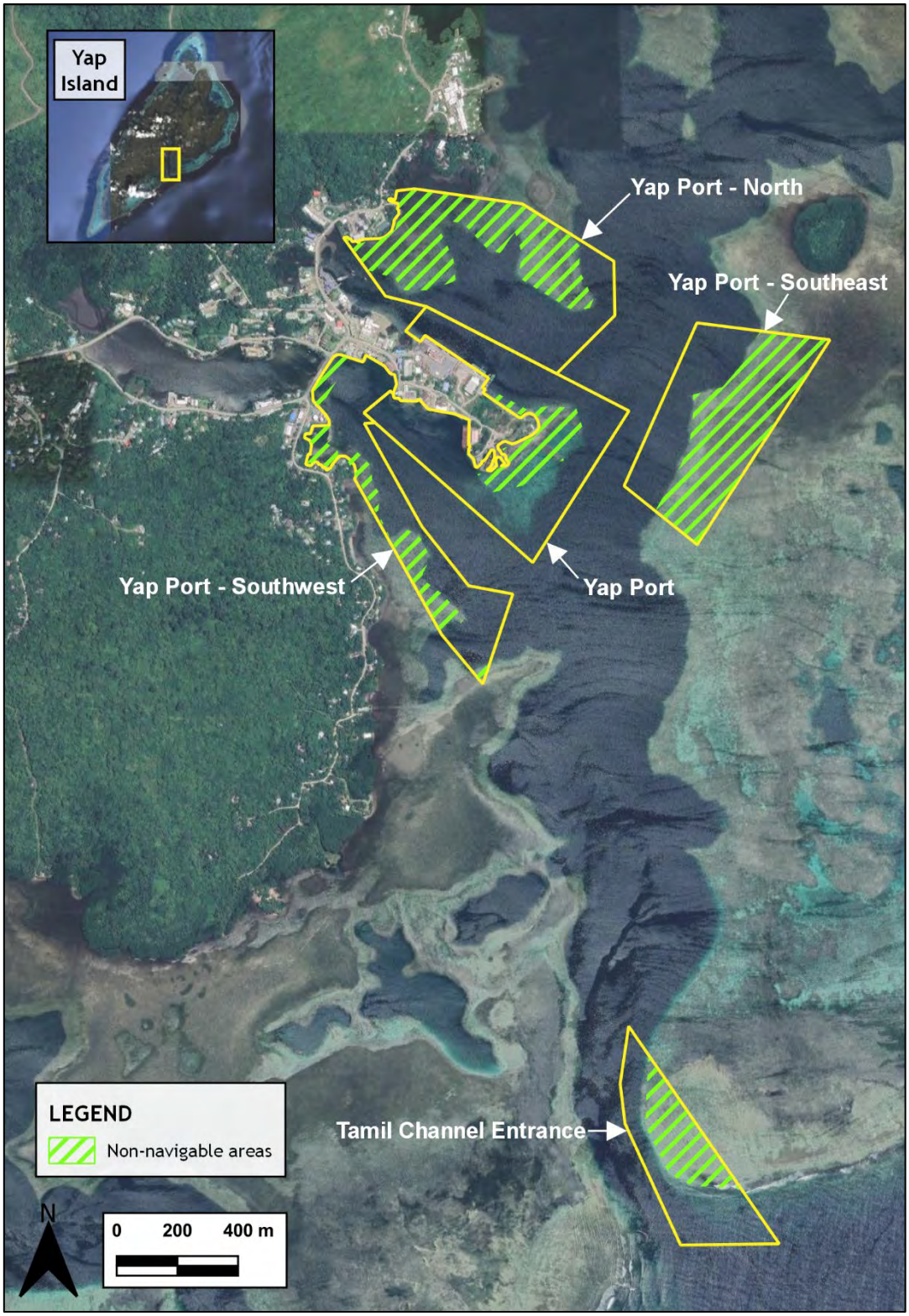


Figure 2-12. Yap Port and Tamil Channel Entrance areas investigated during side-scan and magnetometer surveys outlined in yellow Non-navigable survey areas are shown in green



Figure 2-13. EdgeTech 4125 Side-Scan towfish used during the survey period

2.7 Magnetometer Methods

The magnetometer survey was performed between April 27 and May 3, 2023. The survey areas for the magnetometer are shown in Figure 2-12 and were also focused on depths shallower than 15 meters. These areas consist of the eastern channel wall at the mouth of the Tamil Channel Entrance, Yap Port, and the areas north, southeast, and southwest of the Yap Port peninsula. Ocean conditions were variable throughout the survey period, with wave heights ranging between 0 to 0.25 meters in Yap Port, 0 to 0.5 meters in Tamil Channel, and 0.25 to 1 meters at the mouth of Tamil Channel.

A Geometrics G-882 Marine Magnetometer was used to collect magnetic field values in the project areas (shown in Figure 2-14). Survey lines were run at 30-meter spacing; due to variable and steep bathymetry in the survey areas, the towed systems were kept shallow to avoid collision with the seafloor and impact to sensitive bottom substrate. A constant altitude was difficult to achieve due to the survey area's variable bottom relief.

The magnetometer towfish was deployed in three (3) configurations including off the starboard stern, starboard midship, and forward bow of the survey vessel. Offsets of the three configurations relative to the GPS position are summarized in Table 2-3 in the previous section. The magnetometer location was then determined in HYPACK (layback) based on the cable out from the towfish location. The cable out varied throughout the survey.

The magnetometer measures the local magnetic field. Ferrous or field-inducing objects will create aberrations, or anomalies, in the local field values. Due to the weak background magnetic field in Yap, magnetometer survey lines could only be oriented east-west and vary up to +/- 25 degrees from the east-west alignment. Outside of this range the magnetic signal was too weak to observe any magnetic

anomalies (see Figure 2-15). The cesium sensor on the magnetometer was rotated 45 degrees to account for the weak background magnetic field. Poor weather conditions during the survey window limited the survey over several days particularly at the east side of the Tamil Channel Entrance which is exposed to open ocean swells.

Magnetometer data were processed using HYPACK 2023 software to correlate position and field values. The presence of steel piles, steel sheet piles, and reinforcing steel in concrete structures will cause large variations in the magnetic field that can mask smaller anomaly values. Therefore, data was processed by correcting the background magnetic signal to a zero-baseline to show the smaller magnetic anomalies of interest.

Magnetometer data were reviewed on-site using HYPACK 2023 software and post-processed into color-coded track lines using HYPACK, for better visual representation of magnetic anomalies.



Figure 2-14. Geometrics G-882 Marine Magnetometer used to collect magnetic field values during the survey period

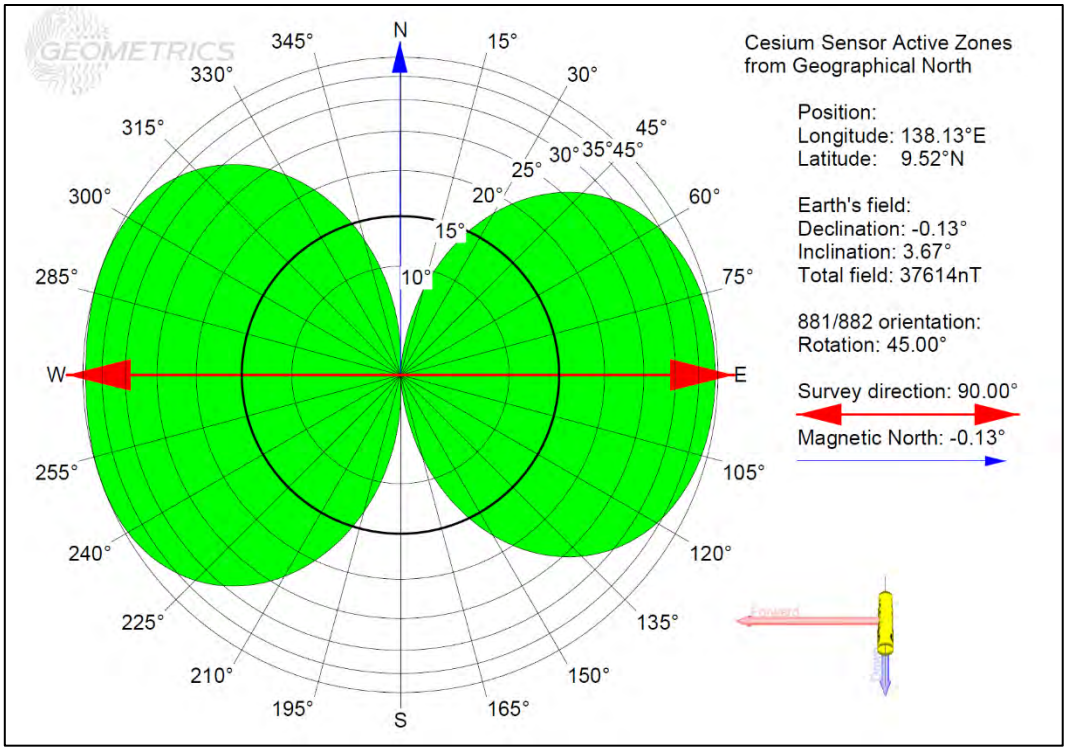


Figure 2-15. Cesium Sensor Active Zones (CSAZ) output for Yap

2.8 Drop Camera Methods

Drop camera surveys were completed in support of both the cultural marine surveys. The areas targeted for drop camera investigations were Tamil Channel and the offshore survey area (Figure 1-1). Photographs and videos of the navigation aids in Tamil Channel were collected at 18 locations. Depths of the drop camera data collected in the channel range from 0 meters to 6 meters.

For the navigation aids within Tamil Channel, a SideWinder 360 underwater camera tethered to 60 meters of cable was used (shown in Figure 2-16). The SideWinder consists of one camera pointing straight down to the seafloor and another that pans 360° horizontally. The operator may view live video feed, switch between the two cameras, and manually pan the horizontal camera.

The deepwater drop camera survey was completed at 60 locations within the offshore multibeam survey area, along 11 inshore-offshore transects approximately 400 meters long and 400 meters apart. Depths of drop camera data collected in this area range from 10 to 185 meters. For the deepwater drop camera survey, a GoPro 11 cased in a deepwater housing with an LED light was used to capture imagery. The housing unit was secured to a line, which was spooled onto an electric fishing reel. A heavy-duty fishing pole was used to facilitate the lowering and raising of the system. An example of a field engineer utilizing this system is shown in Figure 2-17.

Drop camera imagery was reviewed and still images of the navigation aids were captured. For the deepwater drop camera survey, still images of the seafloor were extracted from the videos. Approximate coral cover was estimated for the deepwater drop camera survey points.



Figure 2-16. SideWinder 360 camera used to investigate channel markers and other areas of interest in Tamil Channel (Splashcam, 2018)



Figure 2-17. Field engineer operating the deepwater drop camera system at the offshore survey area

3. SURVEY RESULTS

3.1 Bathymetry

Bathymetry data plot has a scale of 1:7500. Contours drawn every 20 meters were generated from merged data set using the following sounding grid averages:

- 1 meter cell average grid for depths 0-30 meters,
- 5 meter cell average for grid depths 30-100 meters
- 10 meter cell averaged grid for depths greater than 100 meters

The resolution of the sonar data is much higher in shallow water than deep water. Using a variable grid cell averaging maintains the high-resolution integrity of the shallow water data, while allowing for the larger beam footprints and data noise in the deeper water. The plot has been reproduced in a reduced size in Figure 3-1, which shows the bathymetry contour plot and shaded relief image, respectively. Based on the high relief of the color contour, the irregular sea floor extends down to a depth of approximately 40 meters. Beyond that, the sea floor slopes steeply at approximately 30 degrees to the range limit of the sonar system at approximately 280 meters.

3.2 Side Scan Sonar

Side scan survey targets are listed in Table 3-1 and results are shown in Figure 3-2 through Figure 3-5, along with the location of survey targets. Figure 3-2 and Figure 3-3 show the processed side scan mosaics for the 400 kHz frequency while Figure 3-4 and Figure 3-5 show the processed mosaics for the 900 kHz frequency. The 900 kHz data provides higher detail in the processed imagery compared to the 400 kHz data; however, the signal is more attenuated with distance away from the transducer. These areas of weak signal returns show up as whiter colors in the mosaics and typically occur outside of the focused survey areas. Collection of full side scan imagery was difficult because of the very steep reef walls that comprised much of the survey area. This type of morphology typically produces high intensity backscatter rather than contrasting intensities resulting from flatter morphologies. However, the side scan sonar results correlated with the multibeam sonar survey results, showing numerous coral heads and bottom features, including the steep dredge cuts along the Tamil Channel. The channel walls are clearly visible, indicated by the stark color gradient along the drop off. The survey area also has some high-relief areas due to rock fragments and coral heads.

Side scan targets of interest were chosen based on those identified in the 2019 Naval Oceanographic Office survey (NOO, 2019). Additional targets were chosen for analysis because of their backscatter intensity, angular geometry, peculiar shape suggesting a human origin, or because of their association with magnetometer targets. Some side scan target items also correlated with magnetic anomalies from the magnetometer survey.

Eleven (11) targets were identified from the side scan data. Seven (7) of these targets were previously identified by the 2019 NOO multibeam survey (NOO, 2019).

Table 3-1 lists the targets identified in the side scan and magnetometer surveys. The HYPACK survey reports for these targets are presented in Appendix B. A representative target report of target F-10 is shown Figure 3-6. This target was thought to be a shipwreck.

3.3 Magnetometer

The magnetometer survey results are shown in Figure 3-7 and Figure 3-8. The color scale indicates total anomaly values after processing. The processing corrected the background anomalies to a zero-baseline value, which enables magnetic dipole anomalies to be more easily observed. The color contours range from > 1000 to < -1000 nanoteslas (nT). The nT unit and the "gamma" unit are identical and are measures of magnetic flux density.

Magnetometer surveying was also challenging due to the steep slopes of the dredge cuts along the Tamil Channel, which prevented towing the magnetometer close to the seafloor, and due to the weak magnetic field, restricted surveying to east-west survey lines. At various points in Yap Port and Tamil Channel, magnetic fields from large field anomalies overshadowed any smaller magnetic anomalies that may have been in the vicinity. A decommissioned barge was moored at the southeast corner of y the peninsula, causing any smaller anomalies to be masked. Along the northeast shoreline of the peninsula, large vessels were docked throughout the survey period, causing potential smaller anomalies to be masked. These large ferrous entities caused relatively large spikes in the magnetometer survey data, hence the wide range of nT values between > 1000 and < -1000 nT. No targets were observed at the eastern channel wall at the mouth of the Tamil Channel Entrance. Due to the weak background magnetic field in Yap and resulting survey constraints, the magnetometer survey results were limited.

Eleven (11) targets were identified from the side scan data. Seven (7) of these targets were previously identified by the 2019 NAVFAC multibeam survey. Three (3) of these targets were verified by the magnetometer, and three (3) additional targets were identified that were not previously found in the 2019 NAVFAC or side scan surveys.

Table 3-1 lists the targets identified in the magnetometer surveys. The HYPACK survey report for these targets can be found in Appendix B. A representative target report of target F-10 is shown in Figure 3-6. This target was thought to be a shipwreck.

3.4 Drop Camera

The drop camera survey results for both the channel navigation aids and the offshore survey region are shown in Figure 3-9 through Figure 3-15. The navigation aids within Tamil Channel were located on shallow reef flats (0 – 1 meter), while the aids at the channel mouth were in deeper water (4.5 – 6 meter). All markers were surrounded by coral heads. An example of a typical channel marker inside Tamil Channel is shown in Figure 3-10. An example of a channel marker at the Tamil Channel entrance is shown in Figure 3-11.

In the deepwater drop camera survey region, drop camera points extend about 375 meters offshore from the inshore boundary of the survey boundary. Due to the deep bathymetry of the offshore survey area, the drop camera survey was limited to depths less than 200 meters. Three (3) different general bottom types were observed in the offshore area: coral, sand, and mixed sparse coral/rock/sand/algae. An example of each bottom type is shown in Figure 3-13. Sandy and mixed bottom types were generally observed at survey points offshore, while the inshore-most drop camera points consisted of coral-covered seafloor. Approximate coral cover was estimated based on the deepwater drop camera imagery, ranging from 0% to 75%-100% coral cover. Examples of each gradation are shown in Figure 3-14. The spatial distribution of the results is shown in Figure 3-15. Coral cover decreases

with increasing depth, although coral was observed at some mid-depth range survey points. Imagery and details for all 60 drop camera points are presented in Appendix D.

In addition to the drop camera surveys, the Cultural Resource Team required assistance identifying potential items of interest on the seafloor. The SideWinder and deepwater drop camera setup were both used to investigate four (4) sites of interest, shown in Figure 3-16. The imagery from these investigations is shown in Figure 3-17 through Figure 3-20.

Target 1 for the focused cultural survey is shown in Figure 3-17. This target was thought to be remnants from a German vessel, dated from World War I era. The wreckage was in approximately 35 meters of water depth. Target F-7 is shown in Figure 3-18, and appeared to be a metal barrel/drum-like object. Target F-9 is shown in Figure 3-19, and was thought to be a mooring anchor. Target F-12 imagery is shown in Figure 3-20 and its object type is unknown.

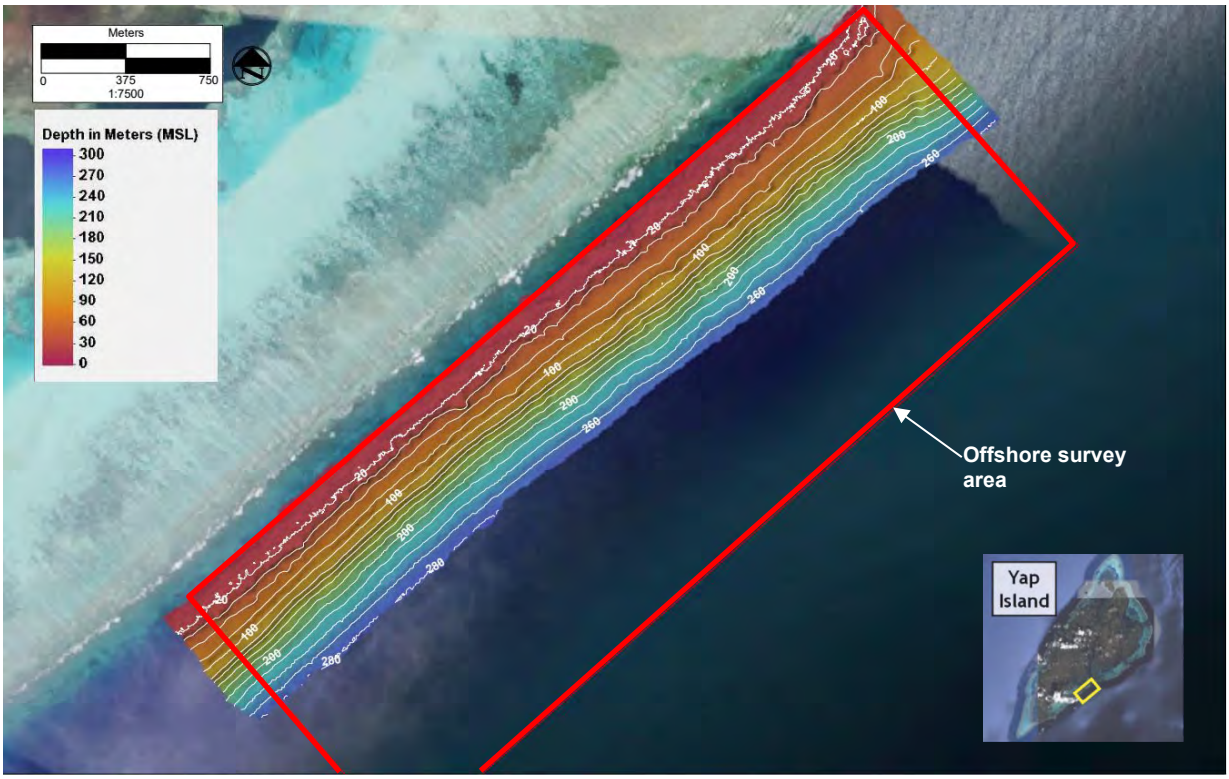


Figure 3-1. Yap multibeam sonar survey bathymetry results at the offshore survey area (May 4-May 12, 2023)

Table 3-1. Identified targets from side-scan and magnetometer surveys, conducted between April 26 and May 3, 2023

Name	Date Acquired (YAPT)	Latitude (dd mm ss)	Longitude (dd mm ss)	X (UTM Z54N, m)	Y (UTM Z54N, m)	Approx. Depth (m)	Side-scan (Y/N)	Mag. (Y/N)
F-6_wreck	4/29/2023 10:09	09 30 59.9417 N	138 07 25.9302 E	184208.100	1053283.700	20	Y	N
F-15_wreck	4/28/2023 14:29	09 30 2.2235 N	138 07 43.2252 E	184721.300	1051504.600	20	Y	N
F-4_wreck	5/2/2023 13:55	09 29 50.4962 N	138 07 44.8561 E	184768.100	1051143.600	10	Y	N
F-16_wreck	5/2/2023 14:04	09 30 8.9633 N	138 07 41 E	184654.800	1051712.400	20	Y	N
F-13_wreck	5/1/2023 14:13	09 30 55.8059 N	138 07 21.7092 E	184078.200	1053157.600	10	Y	Y
F-10_wreck	5/1/2023 13:56	09 30 49.9522 N	138 07 27.2751 E	184246.600	1052976.200	13	Y	Y
Barge	5/1/2023 13:56	09 30 51.2774 N	138 07 27.0609 E	184240.400	1053017.000	5	Y	Y
Potential Wreck 1	5/6/2023 16:37	09 30 46.4001 N	138 07 17.6056 E	183950.540	1052869.430	5	Y	N
Potential Wreck 2	5/6/2023 16:37	09 30 47.209 N	138 07 19.7502 E	184016.210	1052893.760	5	Y	N
F-5_wreck	4/29/2023 12:36	09 31 7.6231 N	138 07 36.9263 E	184545.700	1053517.100	12	Y	N
Potential Plane	4/29/2023 11:05	09 30 40.6918 N	138 07 34.619 E	184468.400	1052689.600	10	Y	N
MAGNET TARGET 1	5/2/2023 10:08	09 30 45.2855 N	138 07 42.9106 E	184722.666	1052828.749	5	N	Y
MAGNET TARGET 2	5/2/2023 10:36	09 30 40.2154 N	138 07 32.7763 E	184412.034	1052675.419	5	N	Y
MAGNET TARGET 3	5/2/2023 10:42	09 30 38.3106 N	138 07 39.5572 E	184618.530	1052615.134	5	N	Y

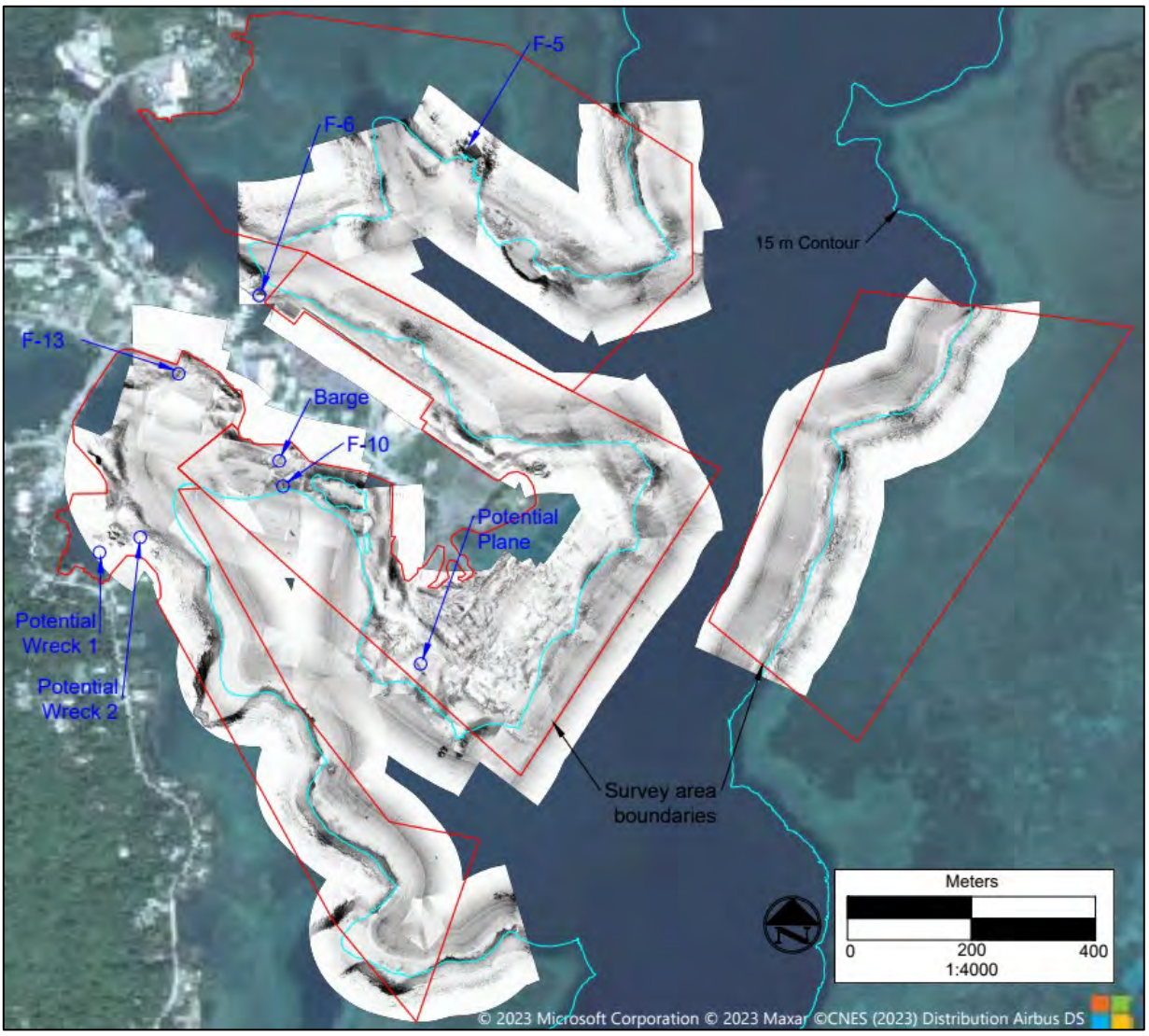


Figure 3-2. Yap side-scan survey results for 400 kHz sonar return at Yap Port and the surrounding area (April 26-May 3, 2023)

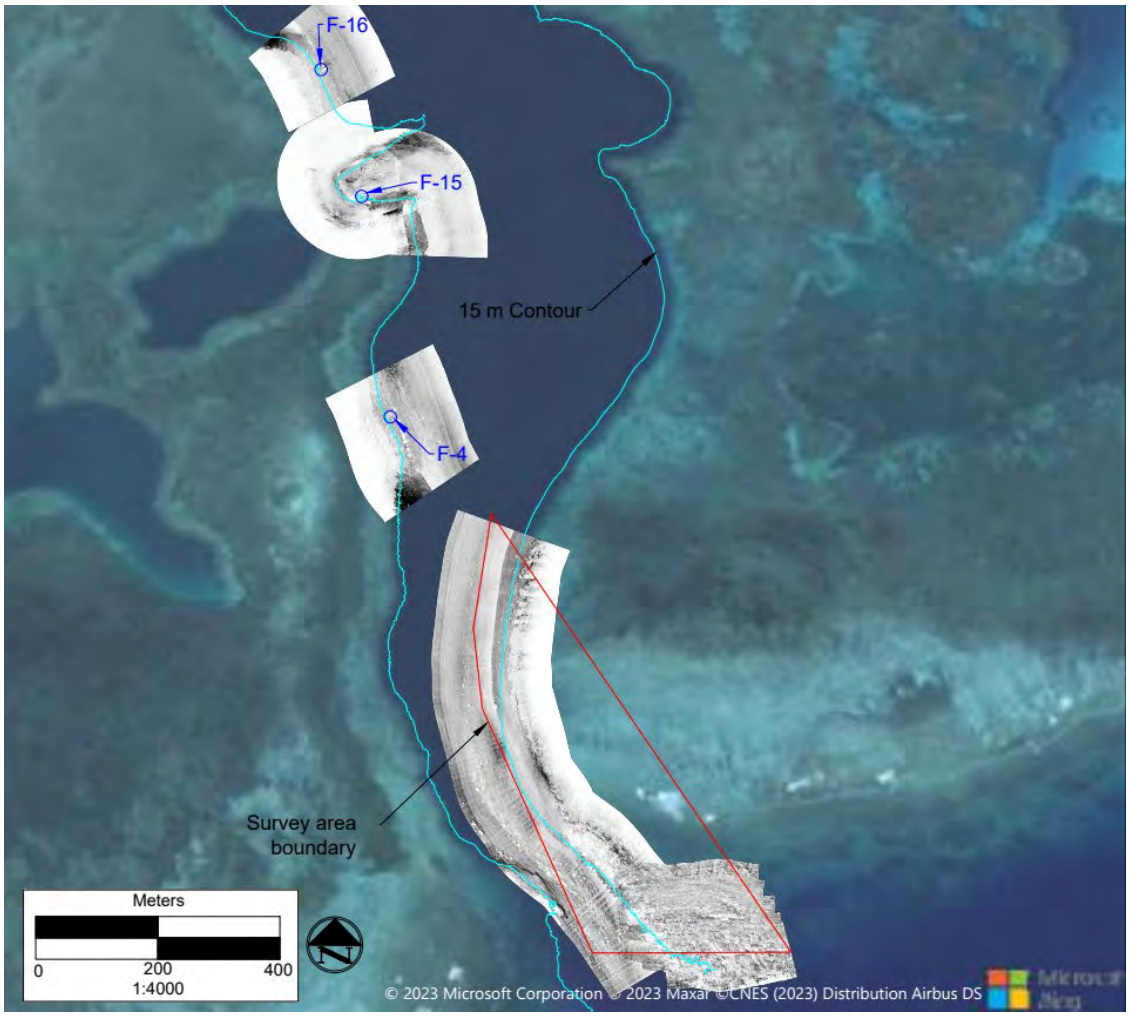


Figure 3-3. Yap side-scan survey results for 400 kHz sonar return in Tamil Channel (April 26- May 3, 2023)

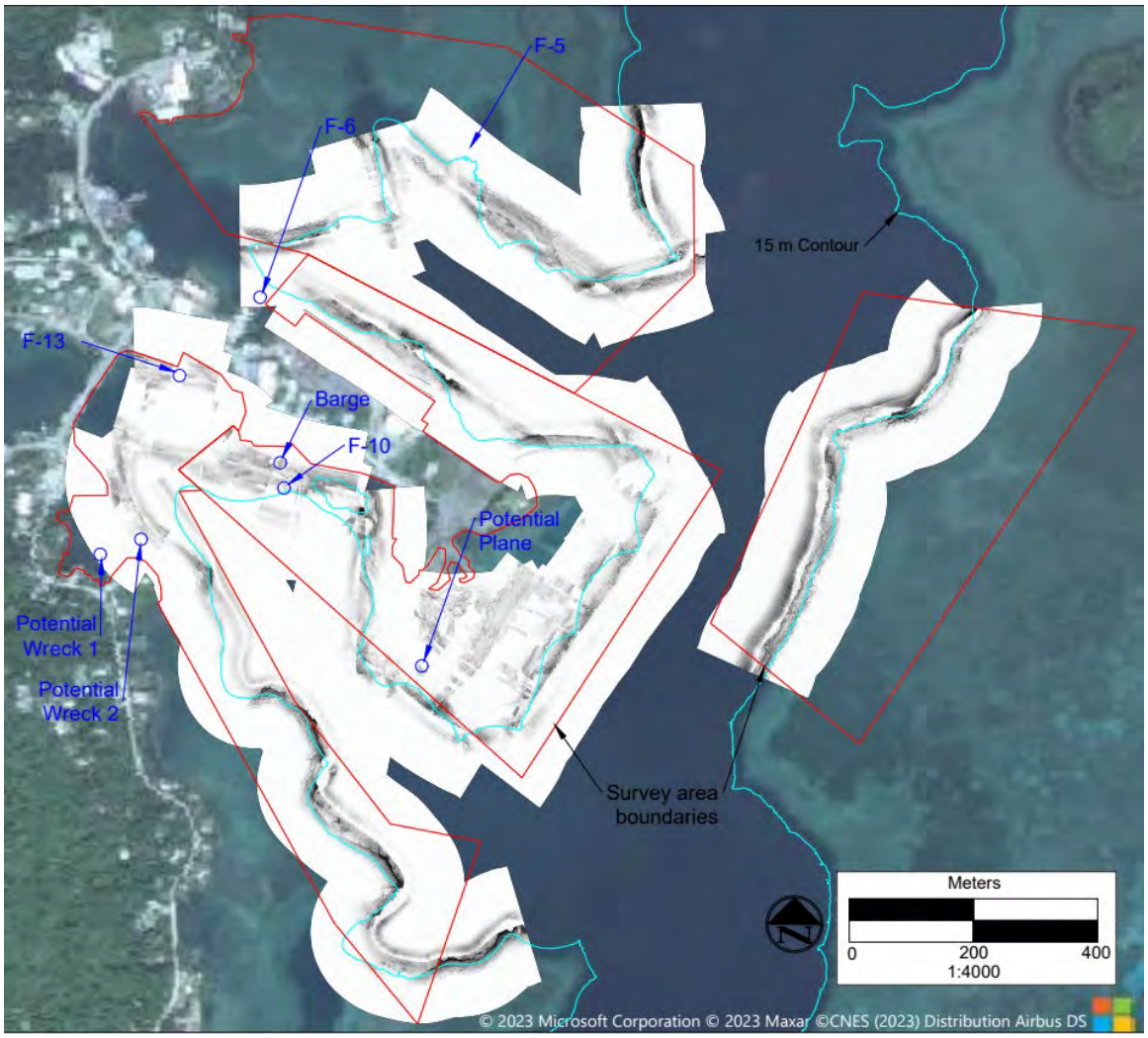


Figure 3-4. Yap side-scan survey results for 900 kHz sonar return at Yap Port and the surrounding area (April 26-May 3, 2023)

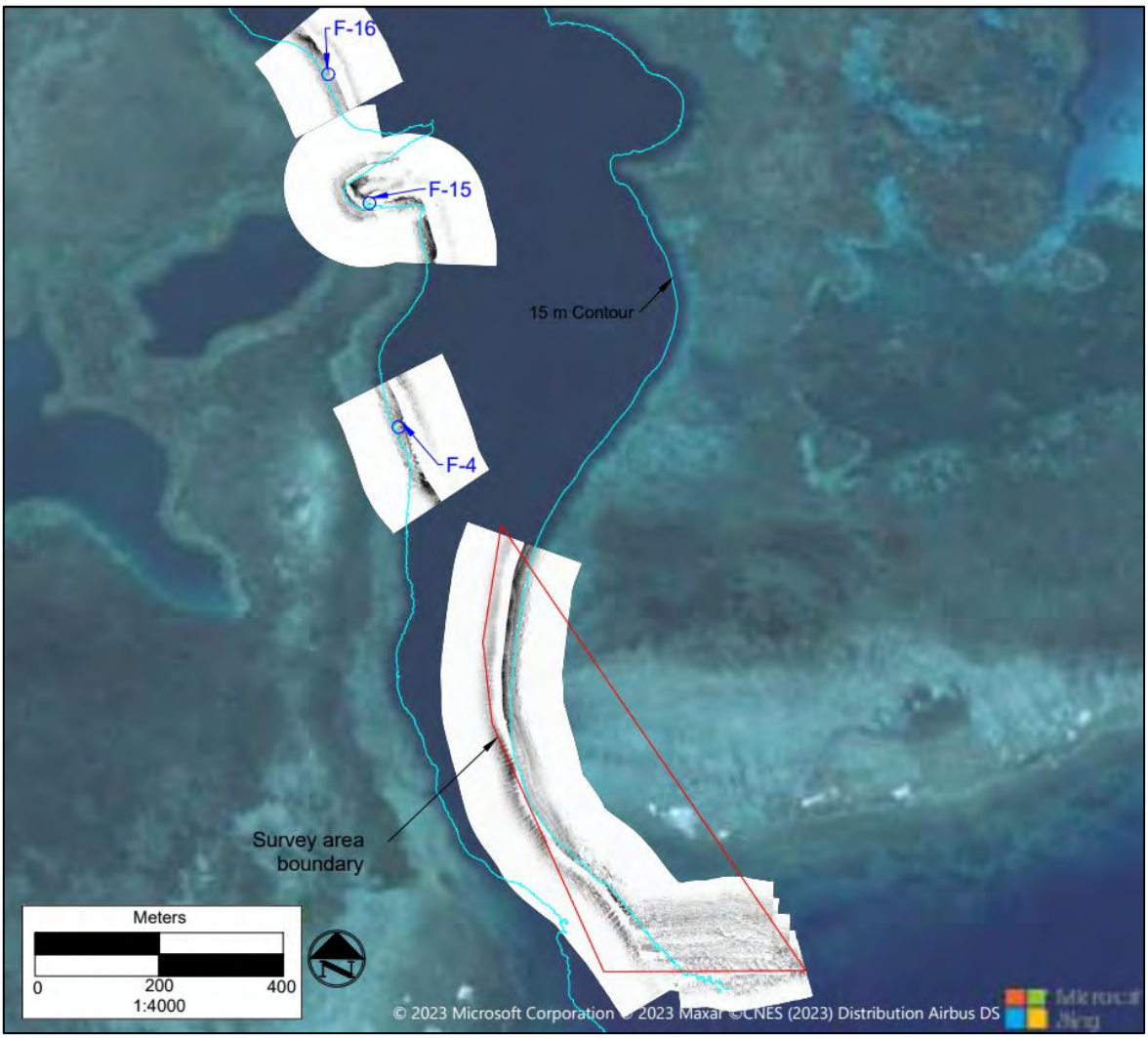
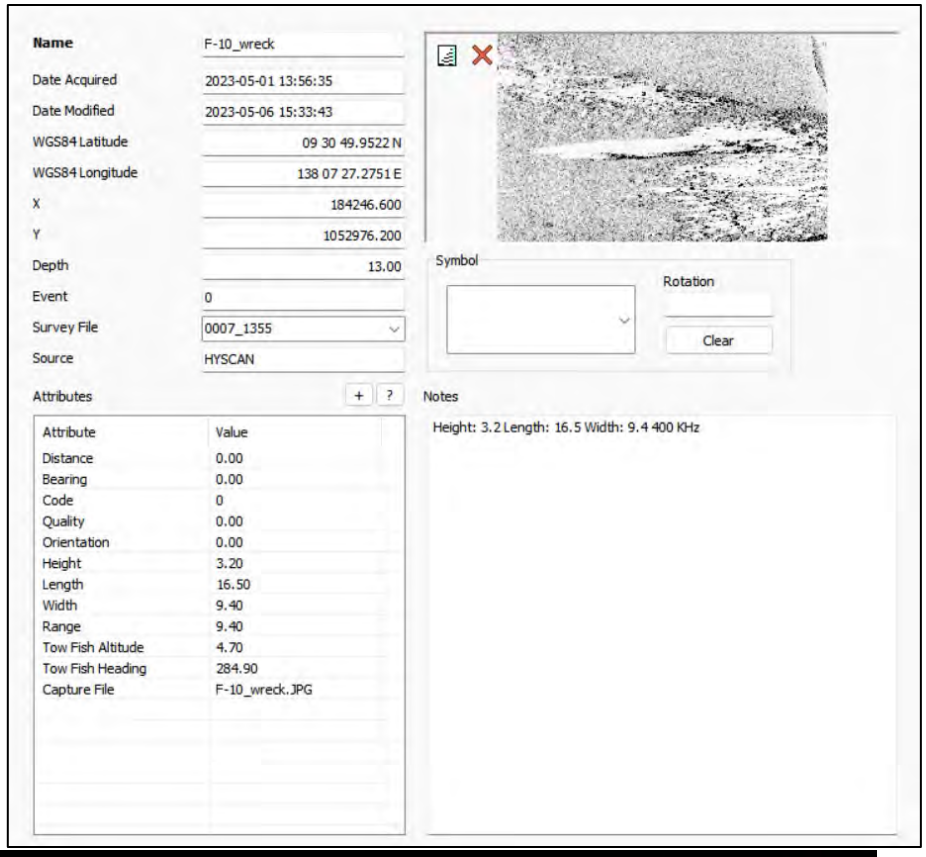


Figure 3-5. Yap side-scan survey results for 900 kHz sonar return in Tamil Channel (April 26-May 3, 2023)

Target Name: F-10_wreck
Navy Multibeam: Yes
Magnetometer Hit: Yes
HYPACK Report (Distance/Bearing/Code/ Quality/Orientation not defined):



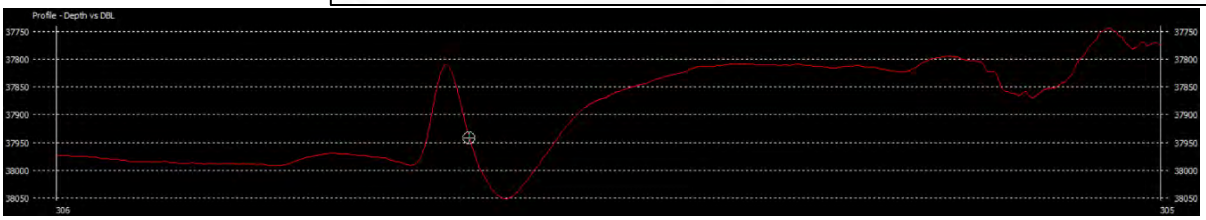


Figure 3-6. HYPACK report (top) and raw gamma profile (bottom) for target F-10, thought to be a shipwreck

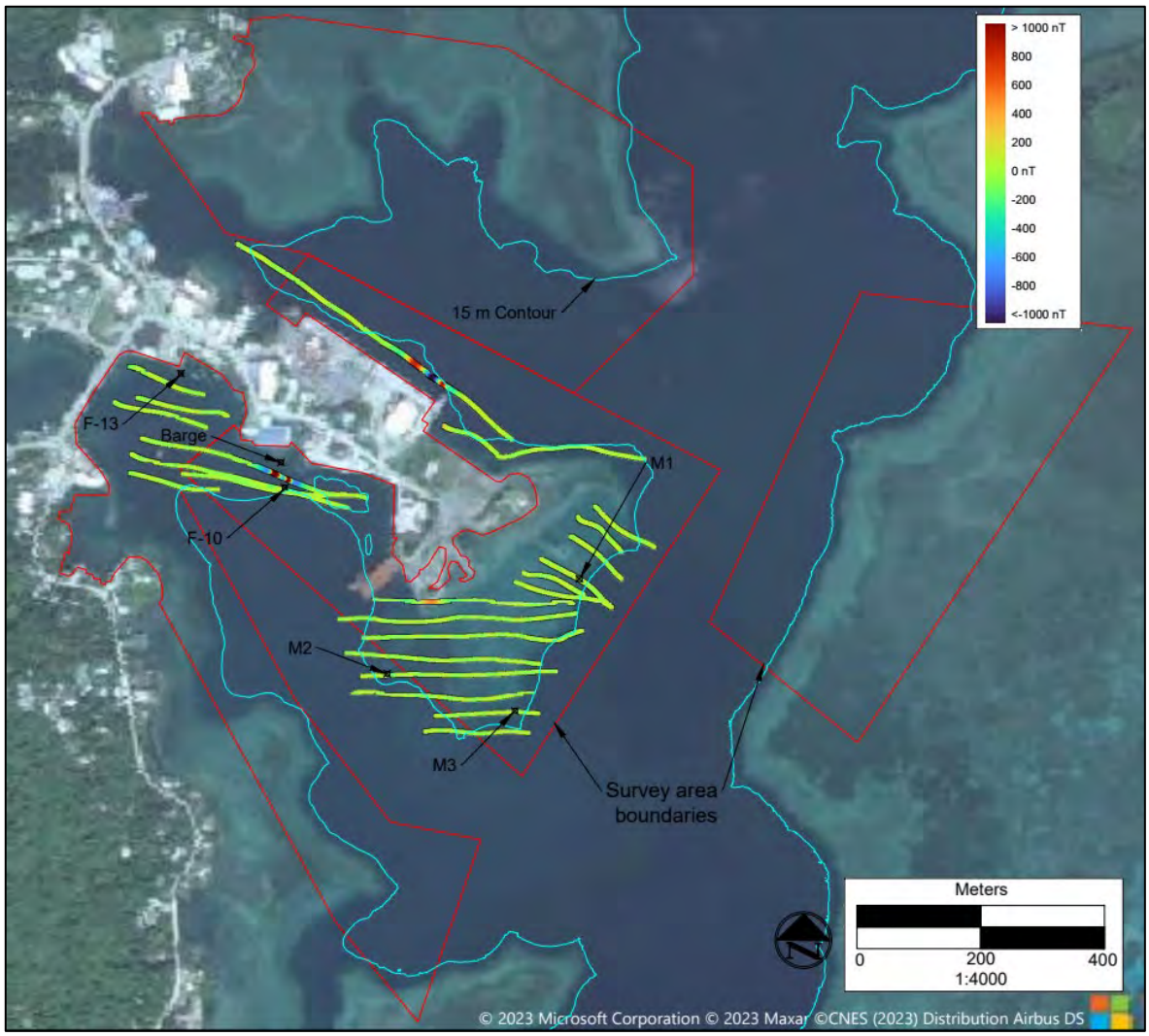


Figure 3-7. Yap magnetometer survey results at Yap Port and the surrounding area (April 26-May 3, 2023)

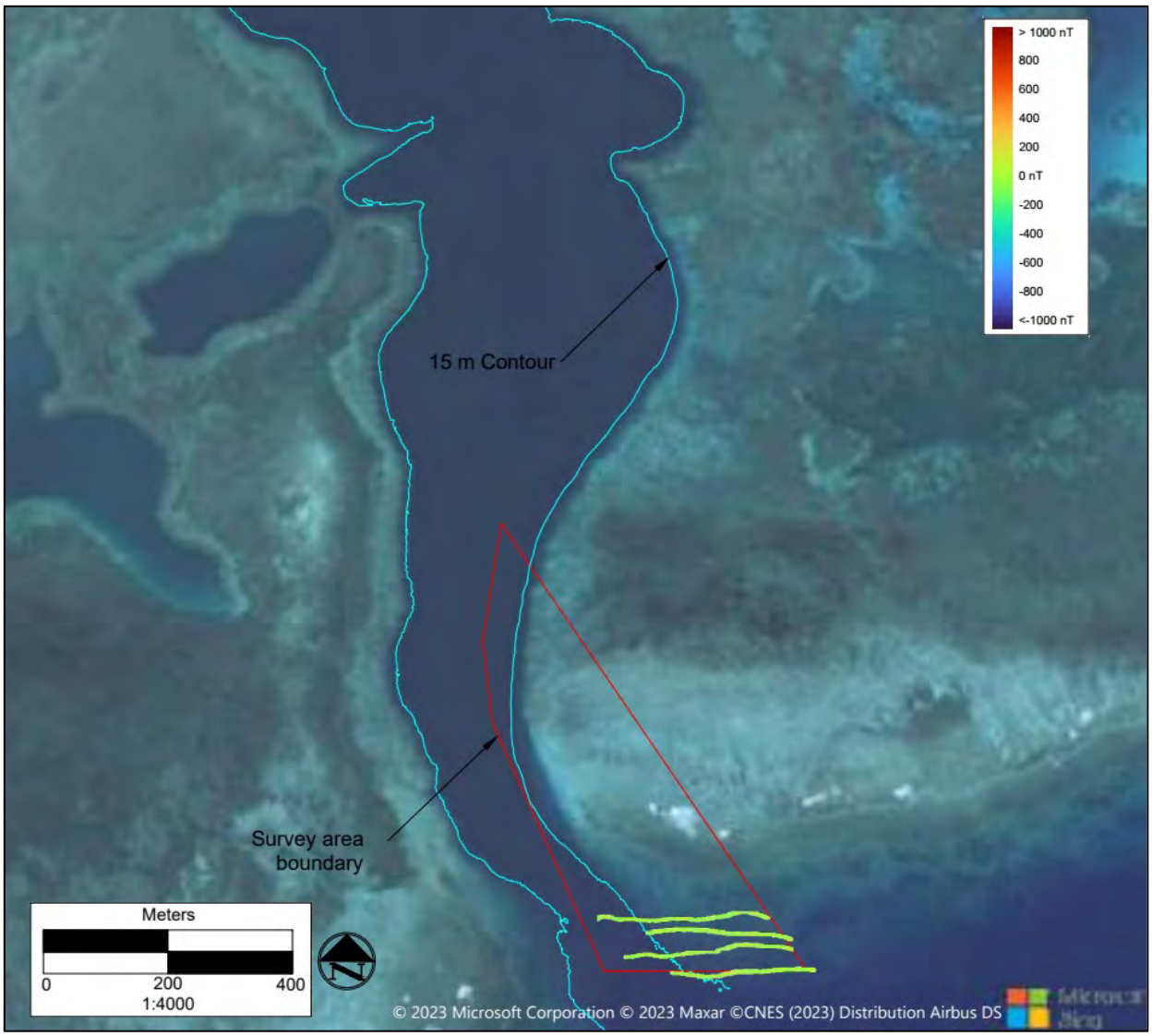


Figure 3-8. Yap magnetometer survey results in Tamil Channel (April 26-May 3, 2023)

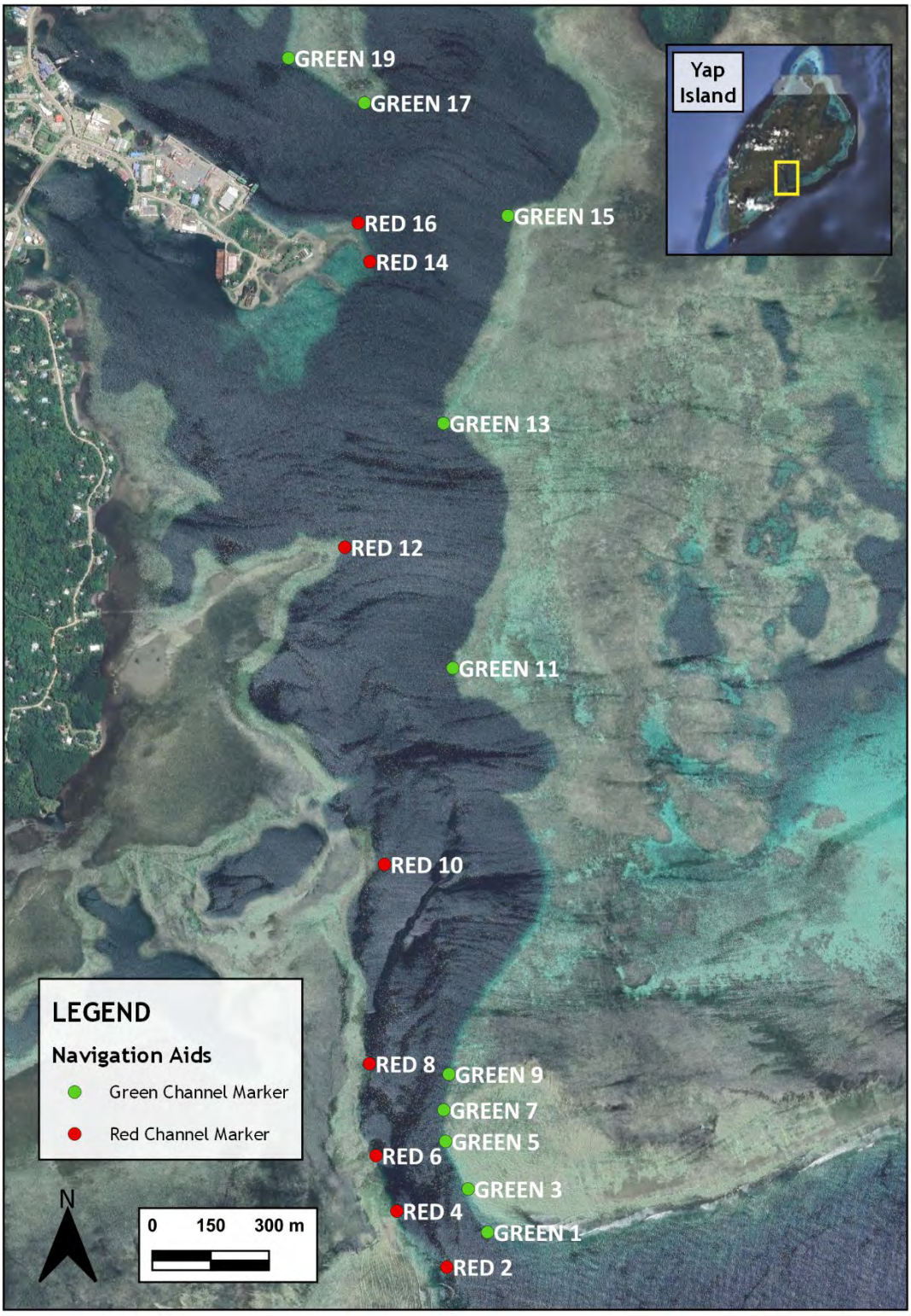


Figure 3-9. Navigation aids in Yap Port and Tamil Channel where drop camera surveys were conducted

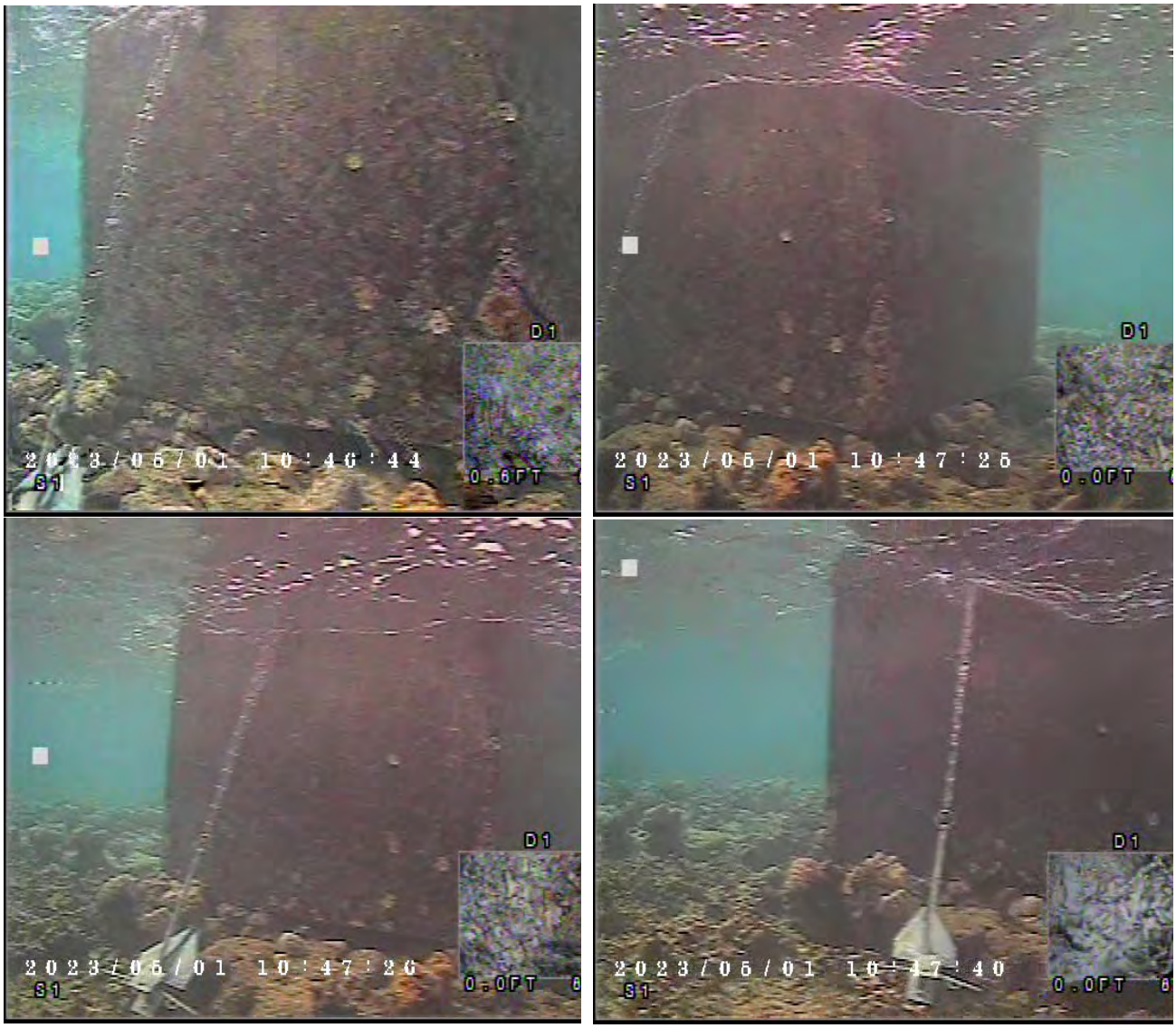


Figure 3-10. Typical environment for navigation aids in Tamil Channel. Still images of Channel Marker GREEN 11, facing northeast (May 1, 2023)



Figure 3-11. Typical environment for navigation aids at the Tamil Channel Entrance. Still images of Channel Marker RED 2, facing southwest (May 2, 2023)

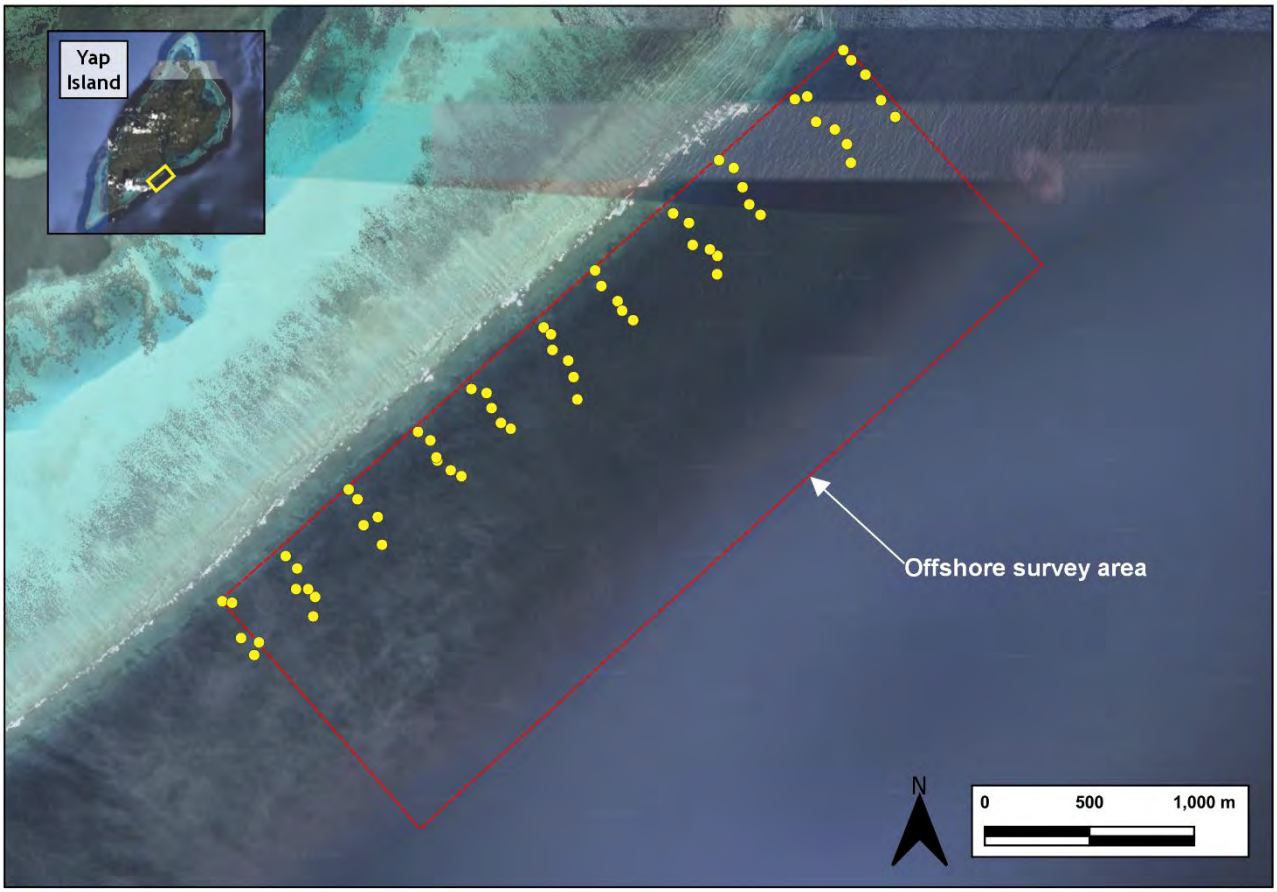
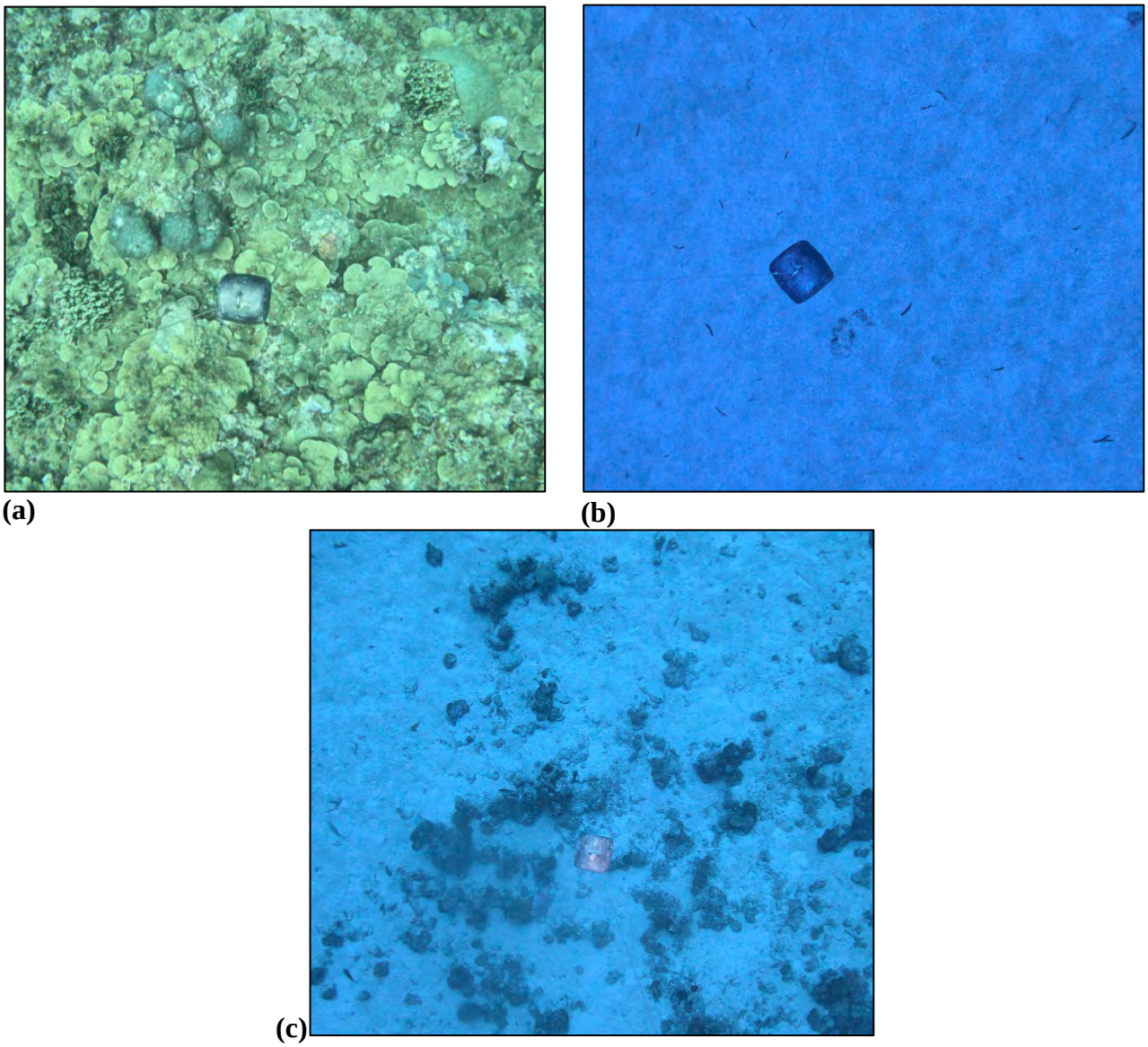
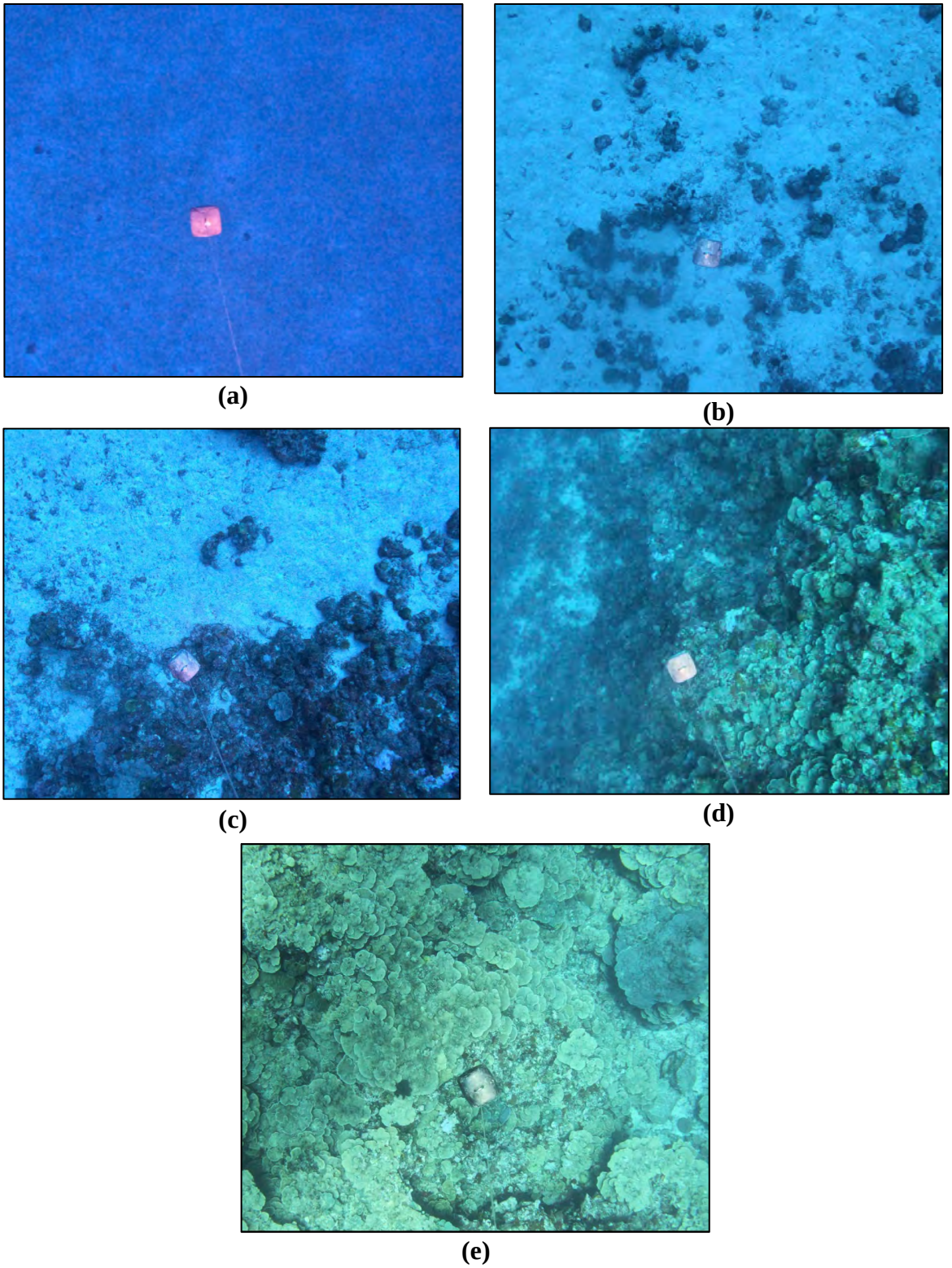


Figure 3-12 Deepwater drop camera survey points and survey area boundary



(a) **(b)** **(c)**

Figure 3-13. Different bottom types observed in the deepwater drop camera survey: (a) typical coral covered seafloor; (b) typical sandy bottom; (c) typical sparse coral/rock/sand seafloor



(a) **(b)** **(c)** **(d)** **(e)**

Figure 3-14. Examples of coral gradation used to determine spatial distribution of coral cover in the offshore survey area

(a) 0% (b) < 25% (c) 25%-50% (d) 50%-75% (e) 75%-100%

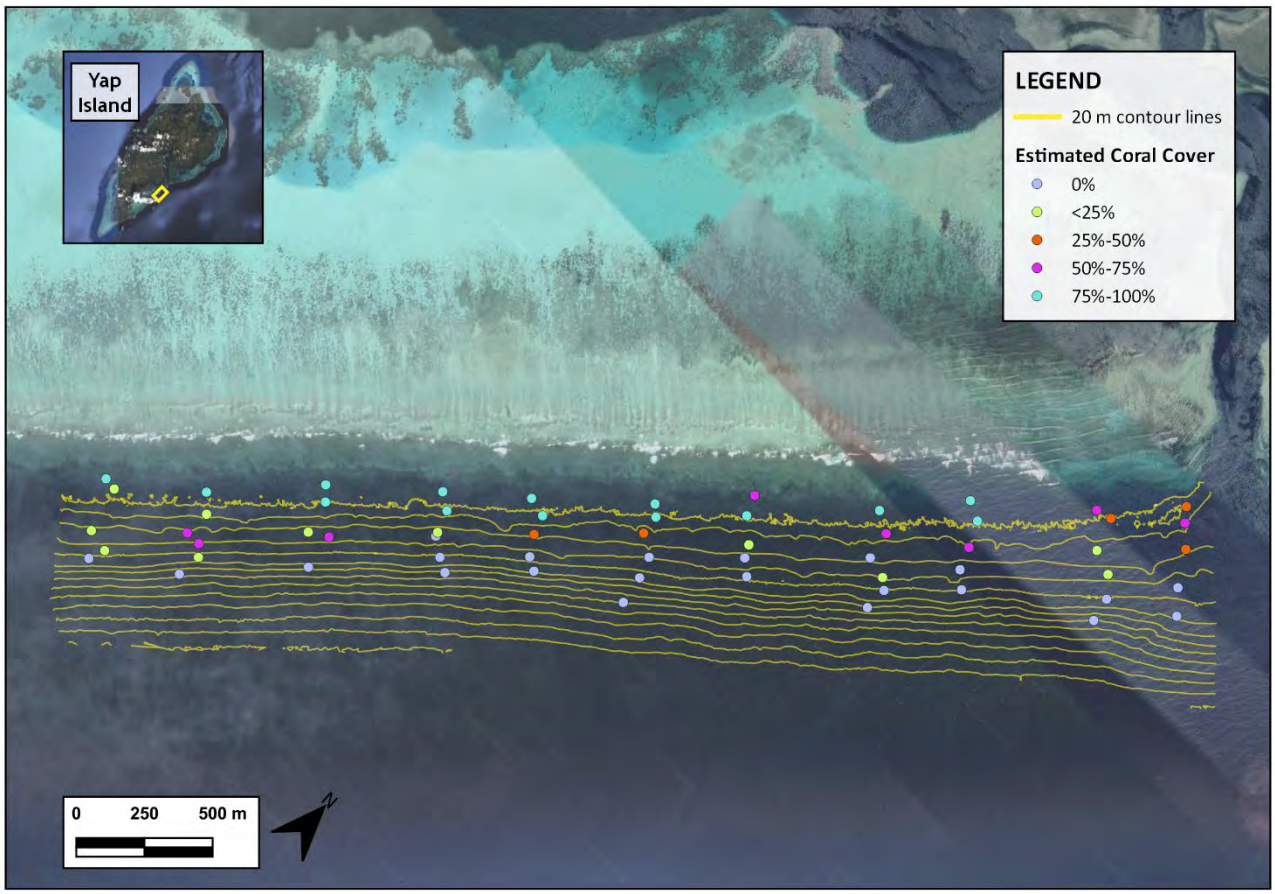


Figure 3-15. Estimated approximate coral cover at the deepwater drop camera survey locations. Contours are at 20-meter intervals

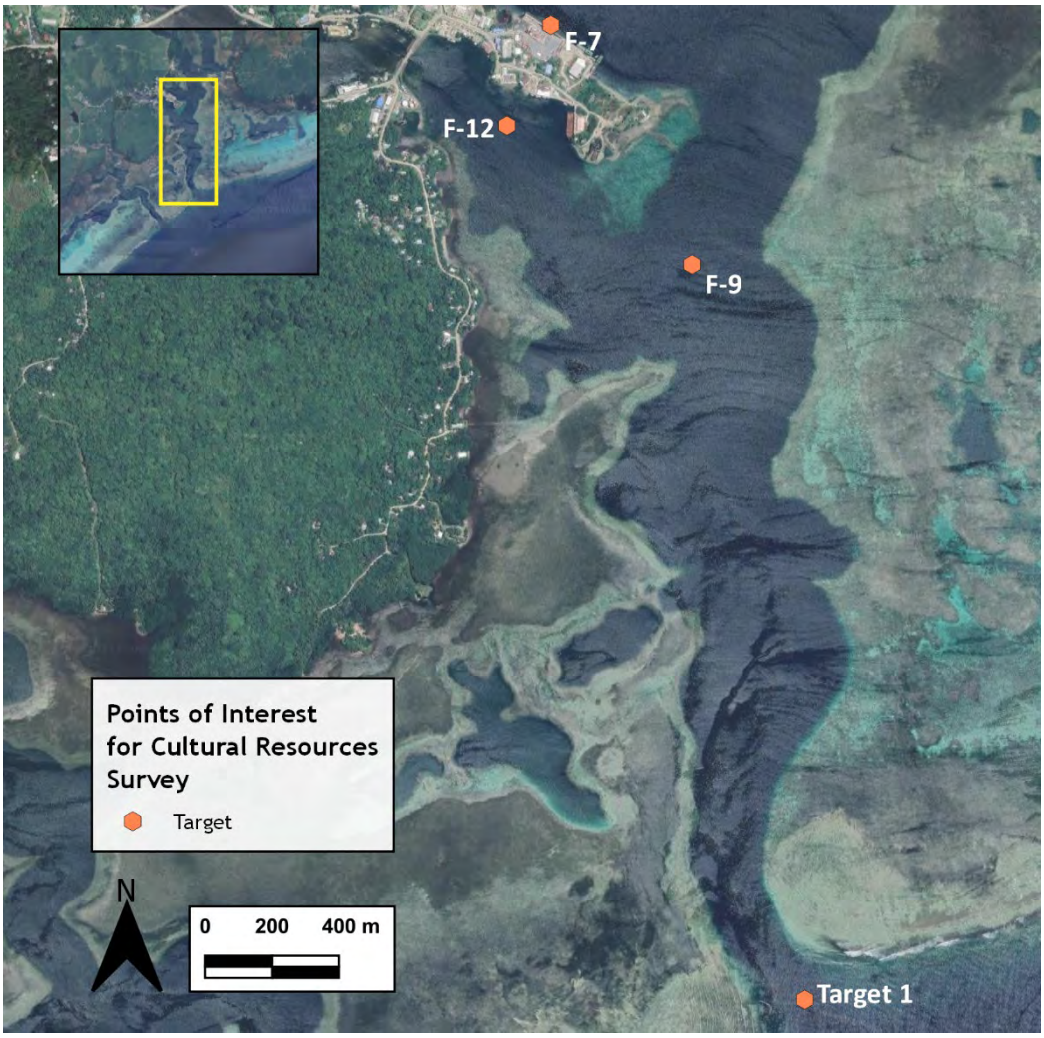


Figure 3-16. Targets investigated for the Cultural Resources Team in Yap Harbor and at the Tamil Channel Entrance

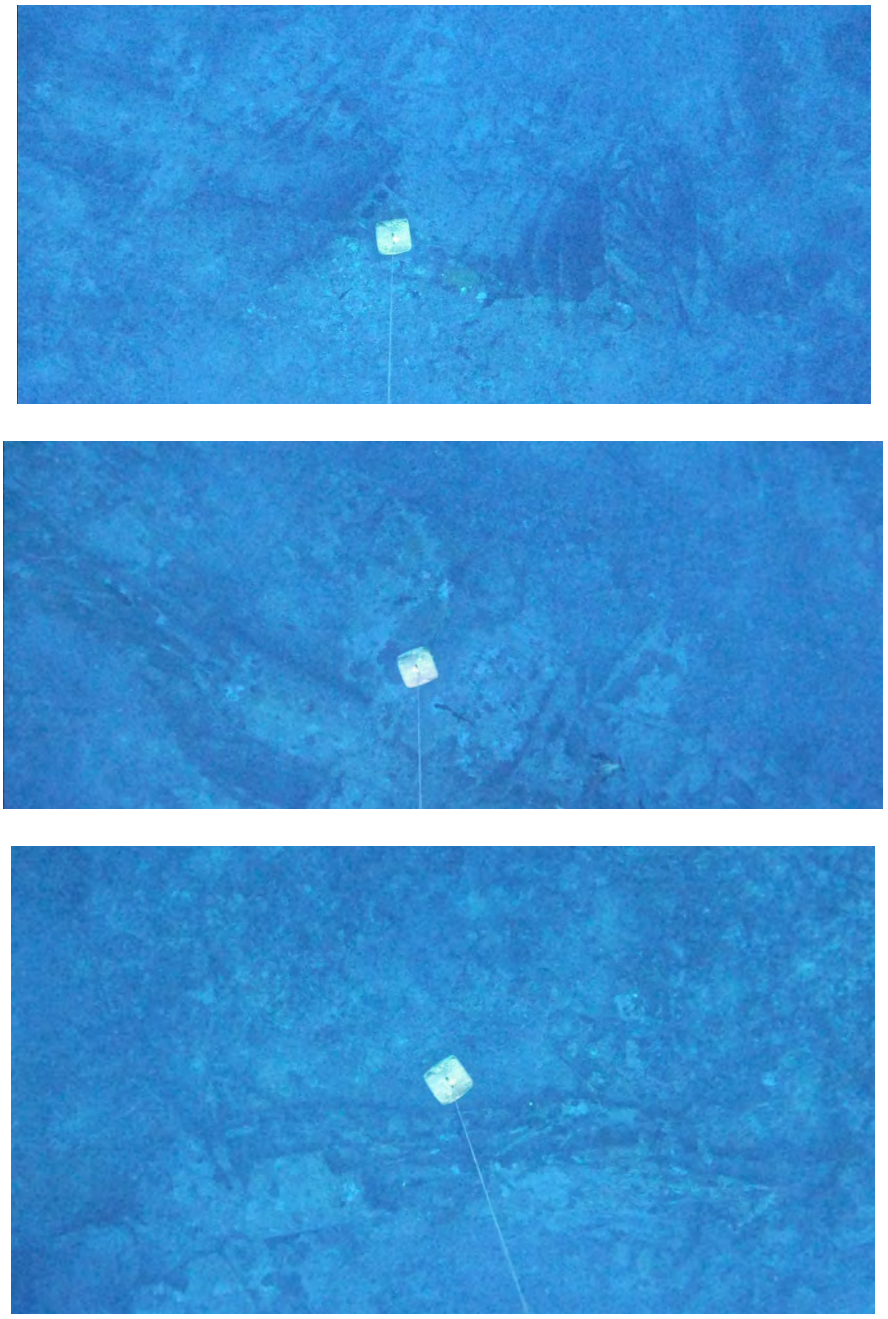
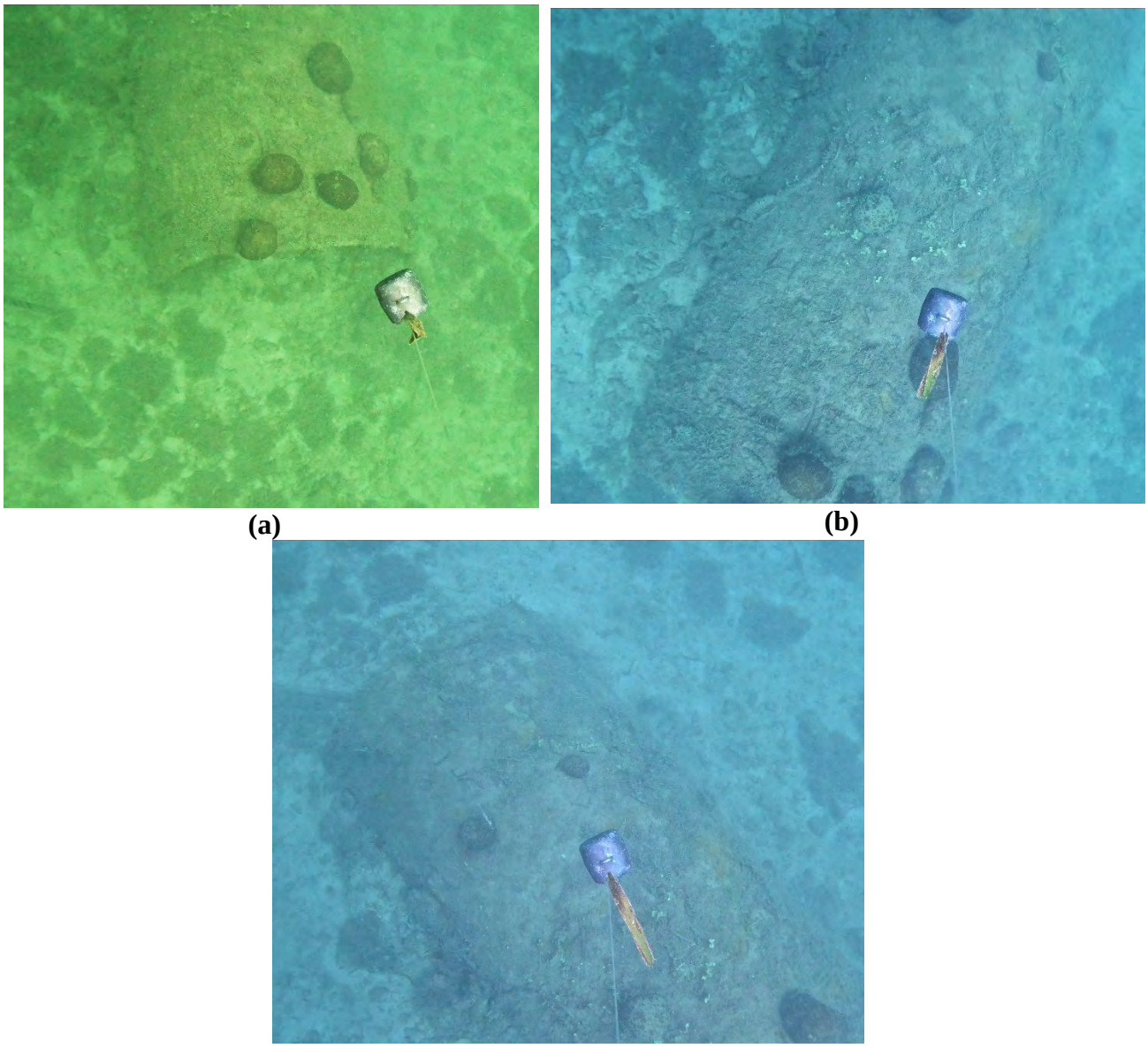


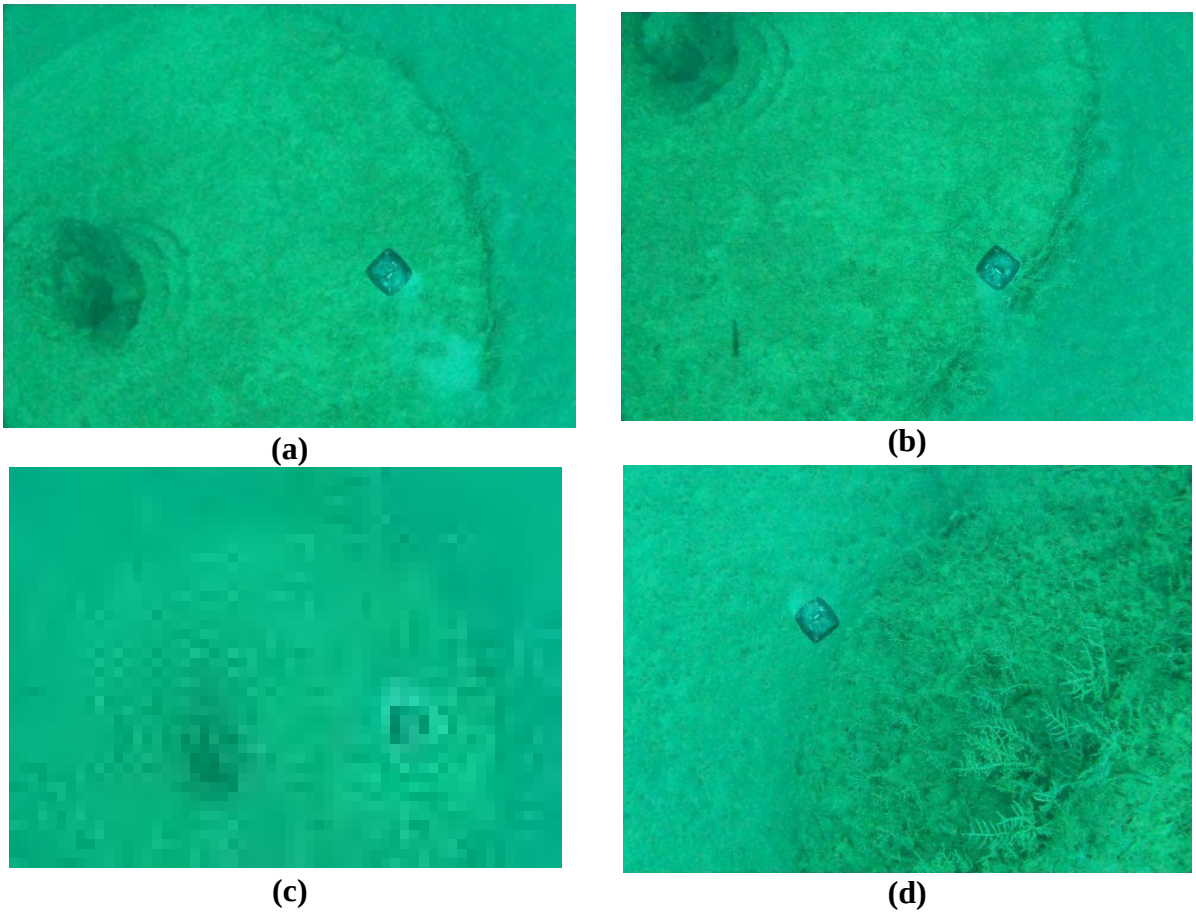
Figure 3-17. Target 1 of interest identified by the Cultural Resources Team, investigated with the deepwater drop camera setup on May 9, 2023.
This target is thought to be remnants of a German vessel from World War I era



(a) **(b)**

(c)

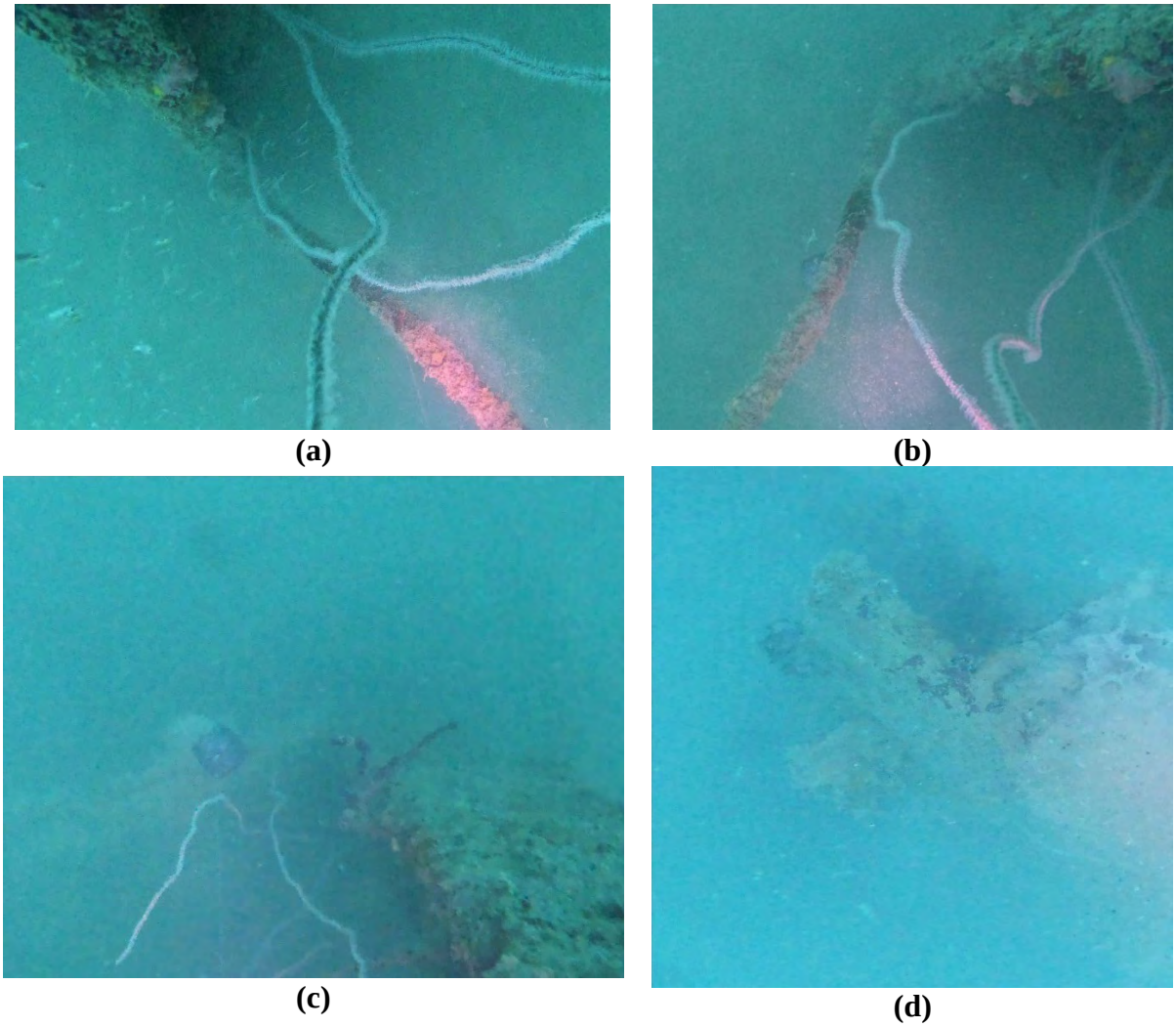
Figure 3-18. Target 2 of interest identified by the Cultural Resources Team investigated with the deepwater drop camera setup on May 10, 2023



(a) **(b)**

(c) **(d)**

Figure 3-19. Target 3 of interest identified by the Cultural Resources Team investigated with the deepwater drop camera setup on May 10, 2023



(a) **(b)**

(c) **(d)**

Figure 3-20. Target 4 of interest identified by the Cultural Resources Team investigated with the deepwater drop camera setup on May 10, 2023

4. REFERENCES

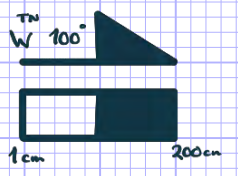
Naval Oceanographic Office, (2019). Tidal Data Processing Report FST Archive No. 19FSM02, Yap Island, Federated States of Micronesia

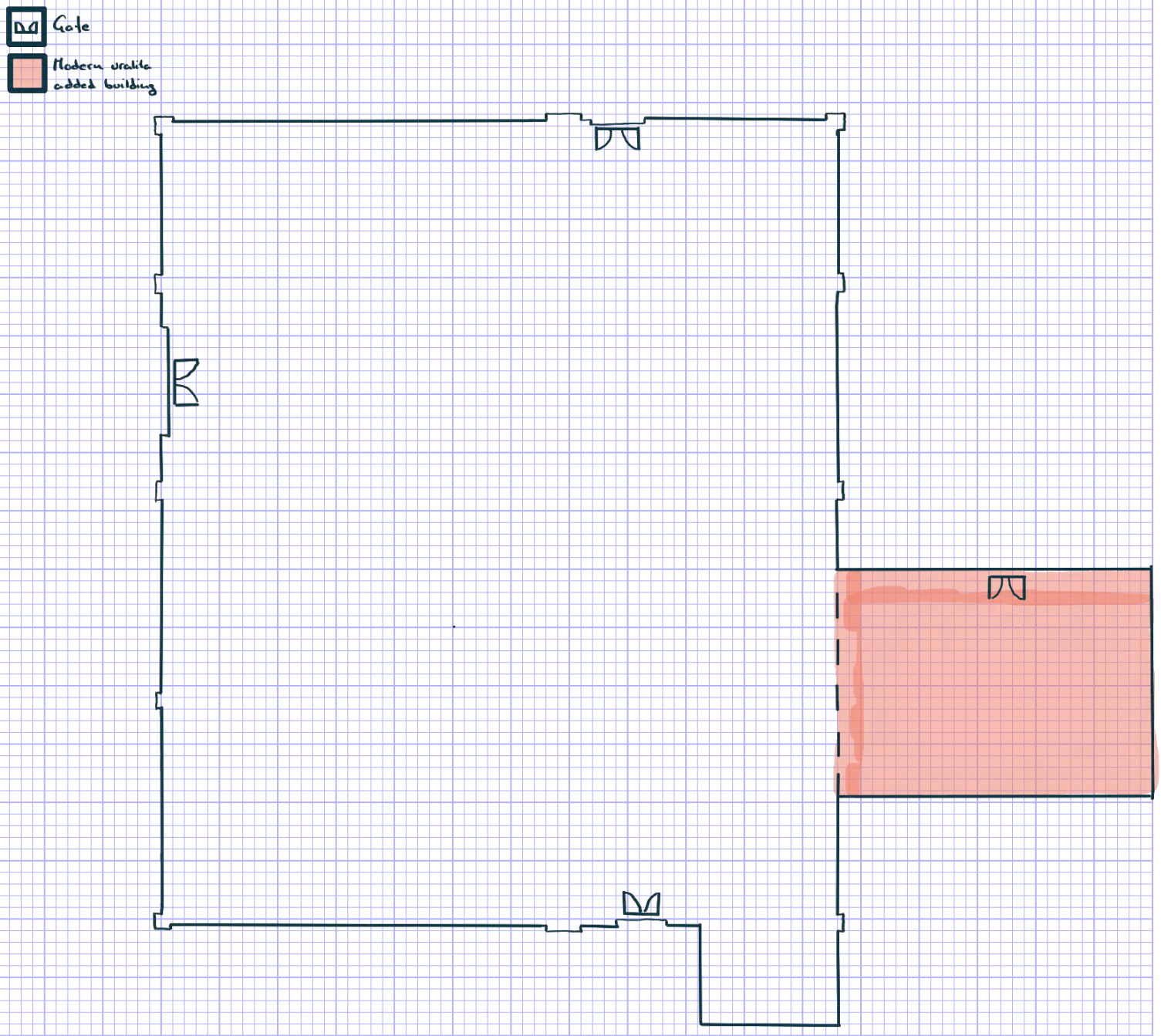
Appendix B
Remote Sensing Results (Not for Public Disclosure)

Appendix C
Field Forms

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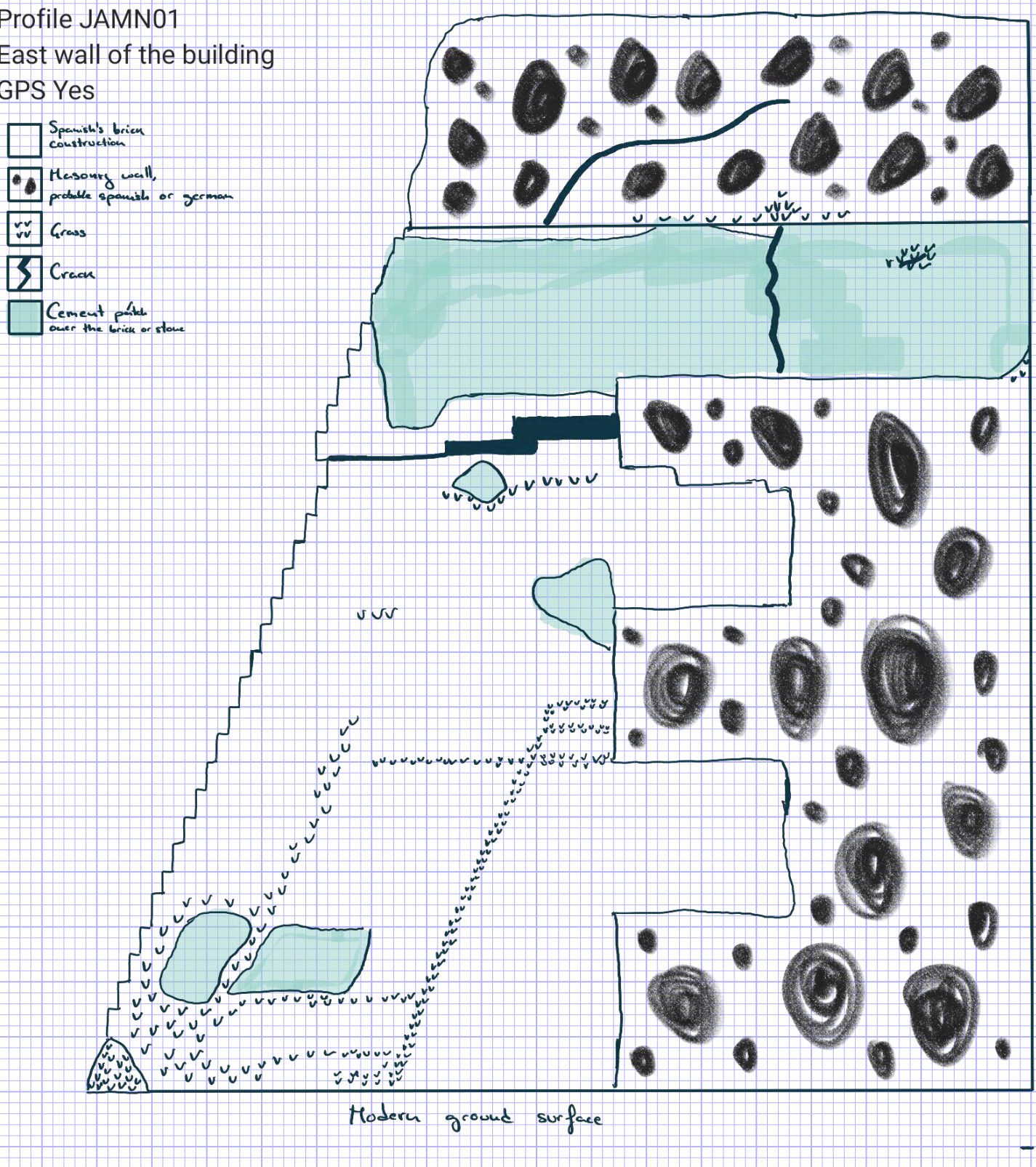
BSV, MFN, JAMN
April 30, 2023
IA202233
INDOPACOM Posture Project
Spanish fort/Japanese hospital complex
Plainview Feature 06
Japanese's building, probable morgue
GPS Yes





Free Multi-Width Graph Paper from http://incompetech.com/graphpaper/multiwidth/

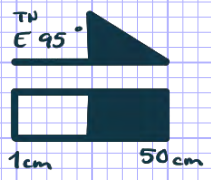
BSV, MFN, JAMN
April 30, 2023
IA202233
INDOPACOM Posture Project
Spanish fort/Japanese hospital complex
SE corner
Profile JAMN01
East wall of the building
GPS Yes

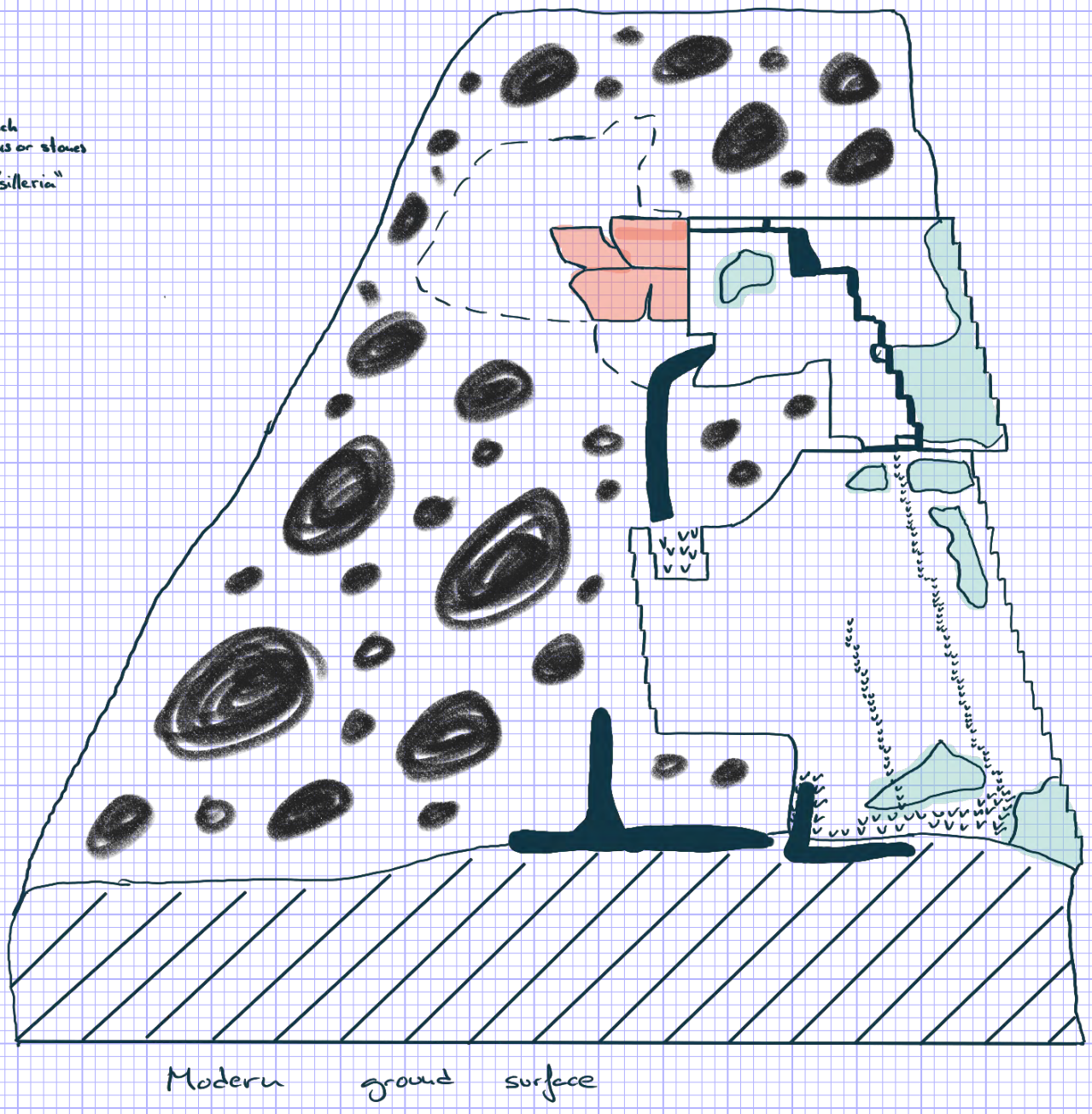


Free Multi-Width Graph Paper from http://incompetech.com/graphpaper/multiwidth/

BSV, MFN, JAMN
April 30, 2023
IA202233
INDOPACOM Posture Project
Spanish fort/Japanese hospital complex
SE corner
Profile JAMN02
South wall of the building
GPS Yes

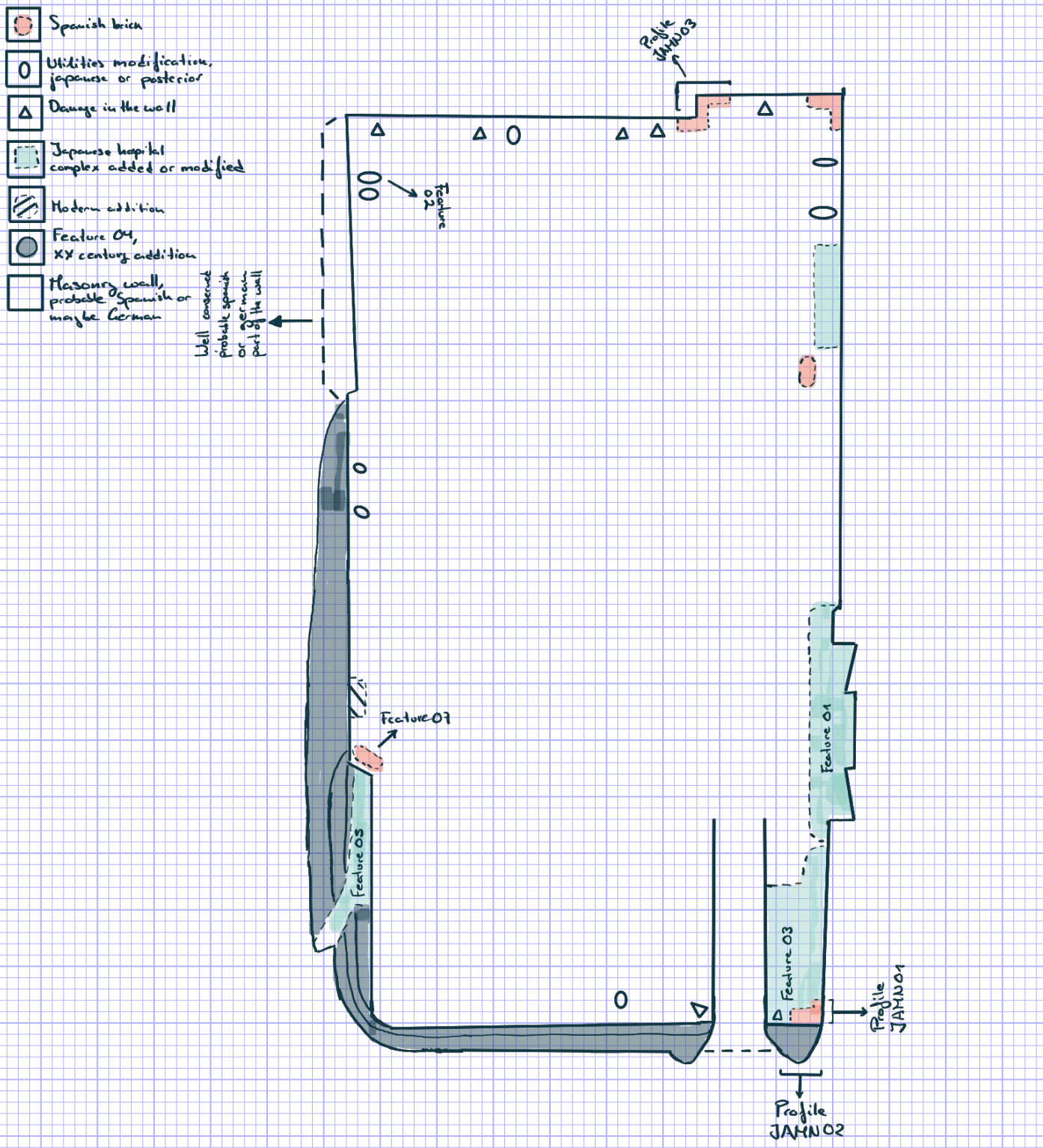






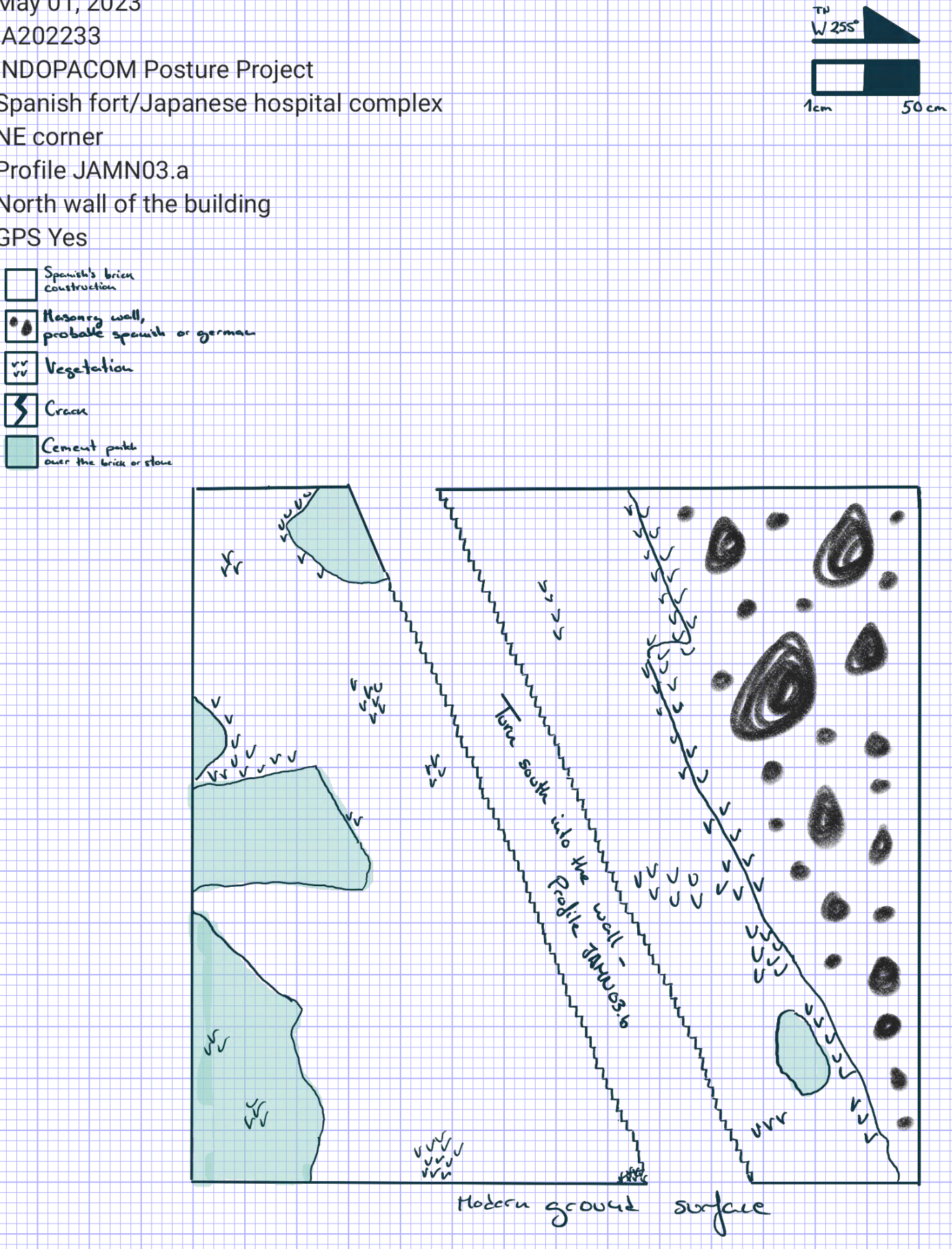
Free Multi-Width Graph Paper from http://incompetech.com/graphpaper/multiwidth/

BSV, MFN, JAMN
May 01, 2023
IA202233
INDOPACOM Posture Project
Spanish fort/Japanese hospital complex
Plainview Spanish Fort walls
GPS yes



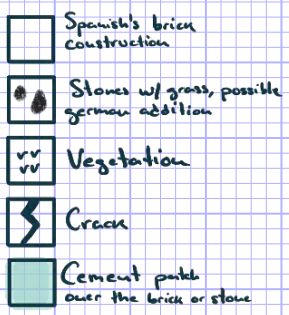
Free Multi-Width Graph Paper from http://incompetech.com/graphpaper/multiwidth/

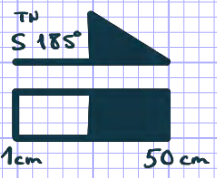
BSV, MFN, JAMN
May 01, 2023
IA202233
INDOPACOM Posture Project
Spanish fort/Japanese hospital complex
NE corner
Profile JAMN03.a
North wall of the building
GPS Yes

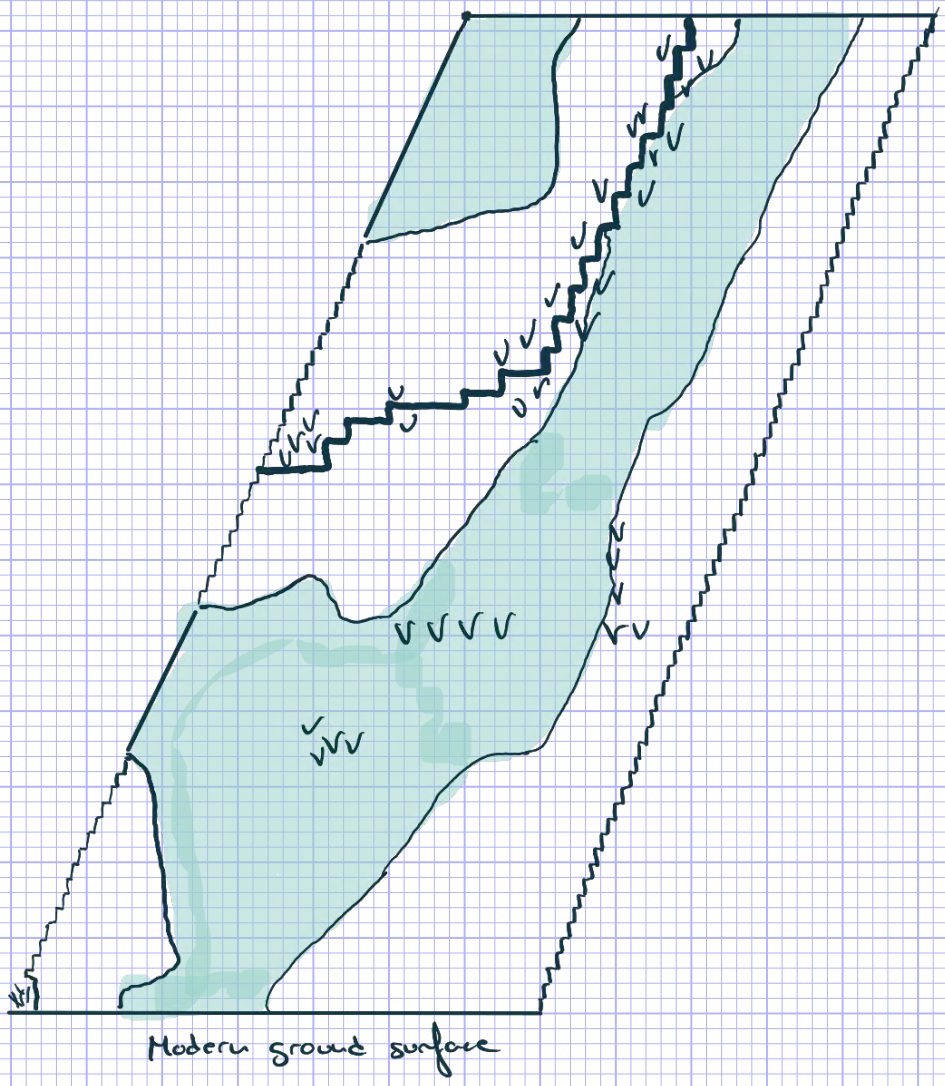


Free Multi-Width Graph Paper from http://incompetech.com/graphpaper/multiwidth/

BSV, MFN, JAMN
May 01, 2023
IA202233
INDOPACOM Posture Project
Spanish fort/Japanese hospital complex
NE corner
Profile JAMN03.b
Wast wall of the building corner
GPS Yes

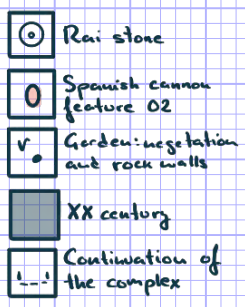


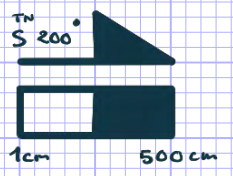


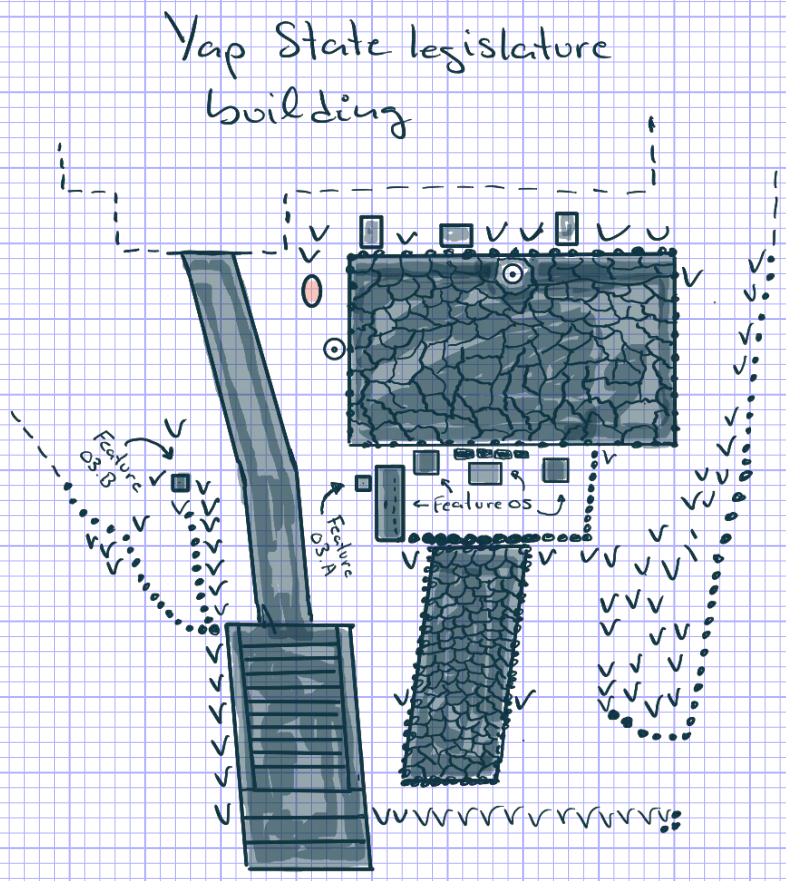


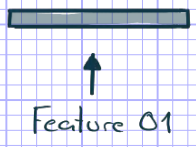
Free Multi-Width Graph Paper from http://incompetech.com/graphpaper/multiwidth/

BSV, MFN, JAMN
May 02, 2023
IA202233
INDOPACOM Posture Project
Yap Legislature Building
Plainview
GPS yes









Free Multi-Width Graph Paper from http://incompetech.com/graphpaper/multiwidth/

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PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #:** 1
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T01_1	Target 01	4	5/5/2023	JG	Stern, "Micro Spirit, Yap" inscription
T01_2	Target 01	4	5/5/2023	JG	Stern, "Micro Spirit, Yap" inscription
T01_3	Target 01	4	5/5/2023	JG	Stern, "Micro Spirit, Yap" inscription
T01_4	Target 01	4	5/5/2023	JG	Portside, stern
T01_5	Target 01	4	5/5/2023	JG	Portside, stern
T01_6	Target 01	4	5/5/2023	JG	Stern, "Micro Spirit, Yap" inscription
T01_7	Target 01	4	5/5/2023	JG	Port, rudder, propeller and shaft
T01_8	Target 01	4	5/5/2023	JG	Propeller and shaft
T01_9	Target 01	4	5/5/2023	JG	Rudder
T01_10	Target 01	4	5/5/2023	JG	Stern, "Micro Spirit, Yap" inscription
T01_11	Target 01	4	5/5/2023	JG	Stern ties
T01_12	Target 01	4	5/5/2023	JG	Stern, gash leaking water, erosion
T01_13	Target 01	4	5/5/2023	JG	Starboard, rudder, propeller and shaft
T01_14	Target 01	4	5/5/2023	JG	Starboard, rudder, plimsoll mark
T01_15	Target 01	4	5/5/2023	JG	Starboard, plimsoll mark
T01_16	Target 01	4	5/5/2023	JG	Starboard, stern
T01_17	Target 01	4	5/5/2023	JG	Starboard, stern
T01_18	Target 01	4	5/5/2023	JG	Salvaged upper deck
T01_19	Target 01	4	5/5/2023	JG	Salvaged upper deck
T01_20	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_21	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_22	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_23	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_24	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_25	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_26	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_27	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_28	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_29	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_30	Target 01	4	5/5/2023	JG	Starboard, salvaged upper decks
T01_31	Target 01	4	5/5/2023	JG	Stem
T01_32	Target 01	4	5/5/2023	JG	Stem
T01_33	Target 01	4	5/5/2023	JG	Stem, salvaged upper decks

File #	Target #	Survey Area	Date	Recorder	Description
T01_34	Target 01	4	5/5/2023	JG	Stem, salvaged upper decks
T01_35	Target 01	4	5/5/2023	JG	Plimsoll mark
T01_36	Target 01	4	5/5/2023	JG	Plimsoll mark
T01_37	Target 01	4	5/5/2023	JG	Starboard to stern
T01_38	Target 01	4	5/5/2023	JG	Starboard to stem
T01_39	Target 01	4	5/5/2023	JG	Salvaged upper deck
T01_40	Target 01	4	5/5/2023	JG	Salvaged upper deck
T01_41	Target 01	4	5/5/2023	JG	Salvaged upper deck
T01_42	Target 01	4	5/5/2023	JG	Salvaged upper deck
T01_43	Target 01	4	5/5/2023	JG	Salvaged upper deck
T01_44	Target 01	4	5/5/2023	JG	Starboard waterline
T01_45	Target 01	4	5/5/2023	JG	Portside, stern
T01_46	Target 01	4	5/5/2023	JG	Portside, stern with Target 02
T01_47	Target 01	4	5/5/2023	JG	Portside, stern with Target 02
T01_48	Target 01	4	5/5/2023	JG	Portside, with Target 02 and 03
T01_49	Target 01	4	5/5/2023	AC	Stern, "Micro Spirit, Yap" inscription
T01_50	Target 01	4	5/5/2023	AC	Portside, stern with Target 02
T01_51	Target 01	4	5/5/2023	AC	Portside, stern with Target 02
T01_52	Target 01	4	5/5/2023	AC	Port, rudder, propeller and shaft
T01_53	Target 01	4	5/5/2023	AC	Starboard, rudder, plimsoll mark
T01_54	Target 01	4	5/5/2023	AC	Starboard, salvaged upper decks
T01_55	Target 01	4	5/5/2023	AC	Starboard, salvaged upper decks
T01_56	Target 01	4	5/5/2023	AC	Starboard, salvaged upper decks
T01_57	Target 01	4	5/5/2023	AC	Starboard, salvaged upper decks
T01_58	Target 01	4	5/5/2023	AC	Starboard, plimsoll mark
T01_59	Target 01	4	5/5/2023	AC	Starboard, salvaged upper decks
T01_60	Target 01	4	5/5/2023	AC	Target 01 with scale and tag

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 2**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T02_1	Target 02	4	5/5/2023	JG	Stern, eroded
T02_2	Target 02	4	5/5/2023	JG	Stern, eroded
T02_3	Target 02	4	5/5/2023	JG	Stern, nameplate “ANIL_A_”
T02_4	Target 02	4	5/5/2023	JG	Stern, eroded, vegetation
T02_5	Target 02	4	5/5/2023	JG	Stern, eroded, vegetation
T02_6	Target 02	4	5/5/2023	JG	Stern, eroded, vegetation
T02_7	Target 02	4	5/5/2023	JG	detached metal piece of U-bolt and plate
T02_8	Target 02	4	5/5/2023	JG	Metal frames and deck plating, hatch
T02_9	Target 02	4	5/5/2023	JG	Stern, eroded, vegetation
T02_10	Target 02	4	5/5/2023	JG	Stern, eroded, vegetation
T02_11	Target 02	4	5/5/2023	JG	Metal frames and debris
T02_12	Target 02	4	5/5/2023	JG	Metal frames and deck plating, hatch
T02_13	Target 02	4	5/5/2023	JG	Metal frames and deck plating, hatch
T02_14	Target 02	4	5/5/2023	JG	Metal frames and deck plating, hatch
T02_15	Target 02	4	5/5/2023	JG	Metal frames and deck plating, hatch
T02_16	Target 02	4	5/5/2023	JG	Metal frames and deck plating, hatch
T02_17	Target 02	4	5/5/2023	JG	Plastic piping and hatch
T02_18	Target 02	4	5/5/2023	JG	Dock line and metal frames
T02_19	Target 02	4	5/5/2023	JG	Metal frames and deck plating
T02_20	Target 02	4	5/5/2023	JG	Metal frames and deck plating
T02_21	Target 02	4	5/5/2023	JG	Portside waterline with Target 03
T02_22	Target 02	4	5/5/2023	JG	Rub rails
T02_23	Target 02	4	5/5/2023	JG	Portside, rubrails, plimsoll mark
T02_24	Target 02	4	5/5/2023	JG	Portside, rubrails, plimsoll mark
T02_25	Target 02	4	5/5/2023	JG	Portside, rubrails, Target 03 and Target 01
T02_26	Target 02	4	5/5/2023	JG	Plimsoll mark
T02_27	Target 02	4	5/5/2023	JG	Metal frames, deck plating, hatch
T02_28	Target 02	4	5/5/2023	JG	Metal debris
T02_29	Target 02	4	5/5/2023	JG	Corner of stern rail
T02_30	Target 02	4	5/5/2023	JG	Inside of stern rail
T02_31	Target 02	4	5/5/2023	JG	Metal frames
T02_32	Target 02	4	5/5/2023	JG	Starboard, metal frames, deck plating, hatch
T02_33	Target 02	4	5/5/2023	AC	Stern, nameplate “ANIL_A_”

File #	Target #	Survey Area	Date	Recorder	Description
T02_34	Target 02	4	5/5/2023	AC	Metal frames and deck plating, hatch
T02_35	Target 02	4	5/5/2023	AC	Stern, nameplate “ANIL_A_”

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 3**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T03_1	Target 03	4	5/5/2023	JG	Stern, tiller, rudder, aluminum railing, rubber gasket, scuppers
T03_2	Target 03	4	5/5/2023	JG	Stern, tiller, rudder
T03_3	Target 03	4	5/5/2023	JG	Stern, tiller, rudder, aluminum railing, rubber gasket, scuppers
T03_4	Target 03	4	5/5/2023	JG	Bow, aluminum railing, electronics, cabin
T03_5	Target 03	4	5/5/2023	JG	Bow, aluminum railing, partially beached
T03_6	Target 03	4	5/5/2023	JG	Starboard, floating
T03_7	Target 03	4	5/5/2023	JG	Starboard, floating
T03_8	Target 03	4	5/5/2023	JG	Starboard, floating
T03_9	Target 03	4	5/5/2023	JG	Starboard, floating
T03_10	Target 03	4	5/5/2023	JG	Starboard, aluminum railing
T03_11	Target 03	4	5/5/2023	JG	Cabin, electronics, wheel
T03_12	Target 03	4	5/5/2023	JG	Top deck and cabin
T03_13	Target 03	4	5/5/2023	JG	Electronics and wheel
T03_14	Target 03	4	5/5/2023	JG	Electronics and wheel
T03_15	Target 03	4	5/5/2023	JG	Portside, floating
T03_16	Target 03	4	5/5/2023	JG	Portside, floating and beached at bow
T03_17	Target 03	4	5/5/2023	JG	Portside, floating and beached at bow

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 4**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T04_1	Target 04	4	5/5/2023	JG	Retrofitted engine to propeller prop
T04_2	Target 04	4	5/5/2023	JG	Retrofitted engine to propeller prop
T04_3	Target 04	4	5/5/2023	JG	Engine hose
T04_4	Target 04	4	5/5/2023	JG	Retrofitted engine to propeller prop
T04_5	Target 04	4	5/5/2023	JG	Retrofitted engine to propeller prop
T04_6	Target 04	4	5/5/2023	JG	Retrofitted engine to propeller prop
T04_7	Target 04	4	5/5/2023	JG	Propeller
T04_8	Target 04	4	5/5/2023	JG	Propeller
T04_9	Target 04	4	5/5/2023	JG	Retrofitted engine to propeller prop
T04_10	Target 04	4	5/5/2023	JG	Retrofitted engine to propeller prop, iron bolts
T04_11	Target 04	4	5/5/2023	JG	Retrofitted engine to propeller prop, iron bolts
T04_12	Target 04	4	5/5/2023	JG	Retrofitted engine to propeller prop, iron bolts
T04_13	Target 04	4	5/5/2023	JG	Fabric liner/insulation
T04_14	Target 04	4	5/5/2023	JG	Fabric liner/insulation
T04_15	Target 04	4	5/5/2023	JG	Second retrofitted engine to propeller prop in bush
T04_16	Target 04	4	5/5/2023	JG	Second retrofitted engine to propeller prop in bush
T04_17	Target 04	4	5/5/2023	JG	Second retrofitted engine to propeller prop in bush
T04_18	Target 04	4	5/5/2023	JG	Second retrofitted engine to propeller prop in bush
T04_19	Target 04	4	5/5/2023	JG	Second retrofitted engine to propeller prop in bush
T04_20	Target 04	4	5/5/2023	JG	AC documenting retrofitted engine to propeller
T04_21	Target 04	4	5/5/2023	JG	AC documenting retrofitted engine to propeller
T04_22	Target 04	4	5/5/2023	JG	AC documenting retrofitted engine to propeller
T04_23	Target 04	4	5/5/2023	JG	AC documenting retrofitted engine to propeller
T04_24	Target 04	4	5/5/2023	JG	AC documenting retrofitted engine to propeller
T04_25	Target 04	4	5/5/2023	JG	AC documenting retrofitted engine to propeller
T04_26	Target 04	4	5/5/2023	JG	Wooden frames and hull planking in debris pile
T04_27	Target 04	4	5/5/2023	JG	Wooden frames and hull planking in debris pile
T04_28	Target 04	4	5/5/2023	JG	Iron bolts and treenails
T04_29	Target 04	4	5/5/2023	JG	Iron bolts and treenails
T04_30	Target 04	4	5/5/2023	JG	Iron bolts and treenails
T04_31	Target 04	4	5/5/2023	JG	Iron bolts and treenails
T04_32	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_33	Target 04	4	5/5/2023	JG	Wooden shipwreck debris

File #	Target #	Survey Area	Date	Recorder	Description
T04_34	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_35	Target 04	4	5/5/2023	JG	Notched plank
T04_36	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_37	Target 04	4	5/5/2023	JG	Wooden shipwreck debris, probable name
T04_38	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_39	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_40	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_41	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_42	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_43	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_44	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_45	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_46	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_47	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_48	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_49	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_50	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_51	Target 04	4	5/5/2023	JG	Iron bolt
T04_52	Target 04	4	5/5/2023	JG	Iron bolts
T04_53	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_54	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_55	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_56	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_57	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_58	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_59	Target 04	4	5/5/2023	JG	Wooden shipwreck debris
T04_60	Target 04	4	5/5/2023	JG	Wooden frames and hull planking in debris pile
T04_61	Target 04	4	5/5/2023	JG	Rudder with iron bolts and treenails
T04_62	Target 04	4	5/5/2023	JG	Wooden frames and hull planking in debris pile
T04_63	Target 04	4	5/5/2023	JG	Wooden frames and hull planking, iron bolts, treenails
T04_64	Target 04	4	5/5/2023	JG	Wooden frames and hull planking, iron bolts, treenails
T04_65	Target 04	4	5/5/2023	JG	Wooden frames and hull planking in debris pile
T04_66	Target 04	4	5/5/2023	JG	Wooden frames and hull planking in debris pile
T04_67	Target 04	4	5/5/2023	JG	Keel
T04_68	Target 04	4	5/5/2023	JG	Wooden frames and hull planking, iron bolts, treenails
T04_69	Target 04	4	5/5/2023	JG	Wooden frames and hull planking, iron bolts, treenails
T04_70	Target 04	4	5/5/2023	JG	Keel

File #	Target #	Survey Area	Date	Recorder	Description
T04_71	Target 04	4	5/5/2023	JG	Wooden frames and hull planking, iron bolts, treenails
T04_72	Target 04	4	5/5/2023	JG	Keel
T04_73	Target 04	4	5/5/2023	JG	Treenails
T04_74	Target 04	4	5/5/2023	JG	Treenails
T04_75	Target 04	4	5/5/2023	JG	Treenails
T04_76	Target 04	4	5/5/2023	JG	Treenails
T04_77	Target 04	4	5/5/2023	JG	Iron bolts and treenails
T04_78	Target 04	4	5/5/2023	JG	Iron bolts and treenails
T04_79	Target 04	4	5/5/2023	JG	Another wooden shipwreck debris pile
T04_80	Target 04	4	5/5/2023	JG	Another wooden shipwreck debris pile
T04_81	Target 04	4	5/5/2023	JG	Another wooden shipwreck debris pile
T04_82	Target 04	4	5/5/2023	JG	Another wooden shipwreck debris pile
T04_83	Target 04	4	5/5/2023	JG	Another wooden shipwreck debris pile
T04_84	Target 04	4	5/5/2023	JG	Another wooden shipwreck debris pile
T04_85	Target 04	4	5/5/2023	JG	Another wooden shipwreck debris pile
T04_86	Target 04	4	5/5/2023	JG	Iron nails
T04_87	Target 04	4	5/5/2023	JG	Second retrofitted engine to propeller prop in bush
T04_88	Target 04	4	5/5/2023	JG	Second retrofitted engine to propeller prop in bush
T04_89	Target 04	4	5/5/2023	JG	Retrofitted engine to propeller prop, Target 03 in background
T04_90	Target 04	4	5/5/2023	AC	Wooden shipwreck debris, probable name
T04_91	Target 04	4	5/5/2023	AC	Wooden shipwreck debris
T04_92	Target 04	4	5/5/2023	AC	Retrofitted engine to propeller prop
T04_93	Target 04	4	5/5/2023	AC	Retrofitted engine to propeller prop
T04_94	Target 04	4	5/5/2023	AC	Retrofitted engine to propeller prop
T04_95	Target 04	4	5/5/2023	AC	Retrofitted engine to propeller prop
T04_96	Target 04	4	5/5/2023	AC	Fabric liner/insulation
T04_97	Target 04	4	5/5/2023	AC	Propeller
T04_98	Target 04	4	5/5/2023	AC	Retrofitted engine to propeller prop, Targets 03, 02, 01 in background
T04_99	Target 04	4	5/5/2023	AC	Retrofitted engine to propeller prop
T04_100	Target 04	4	5/5/2023	AC	Wooden frames and hull planking in debris pile
T04_101	Target 04	4	5/5/2023	AC	Wooden frames and hull planking in debris pile
T04_102	Target 04	4	5/5/2023	AC	Wooden frames and hull planking in debris pile
T04_103	Target 04	4	5/5/2023	AC	Rudder with iron bolts and treenails
T04_104	Target 04	4	5/5/2023	AC	Second retrofitted engine to propeller prop in bush
T04_105	Target 04	4	5/5/2023	AC	Second retrofitted engine to propeller prop in bush
T04_106	Target 04	4	5/5/2023	AC	Wooden frames and hull planking in debris pile
T04_107	Target 04	4	5/5/2023	AC	Wooden frames and hull planking in debris pile
T04_108	Target 04	4	5/5/2023	AC	Wooden shipwreck debris in water beside two debris piles

File #	Target #	Survey Area	Date	Recorder	Description
T04_109	Target 04	4	5/5/2023	AC	Wooden shipwreck debris in water beside two debris piles
T04_110	Target 04	4	5/5/2023	AC	Wooden shipwreck debris in water beside two debris piles

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 5**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T05_1	Target 05	4	5/5/2023	JG	Fiberglass debris
T05_2	Target 05	4	5/5/2023	JG	Fiberglass debris
T05_3	Target 05	4	5/5/2023	JG	Fiberglass debris
T05_4	Target 05	4	5/5/2023	JG	Fiberglass debris
T05_5	Target 05	4	5/5/2023	JG	Fiberglass debris
T05_6	Target 05	4	5/5/2023	JG	Fiberglass debris
T05_7	Target 05	4	5/5/2023	JG	Fiberglass debris in water
T05_8	Target 05	4	5/5/2023	JG	Fiberglass debris
T05_9	Target 05	4	5/5/2023	JG	Fiberglass debris
T05_10	Target 05	4	5/5/2023	JG	Fiberglass debris
T05_11	Target 05	4	5/5/2023	JG	Fiberglass debris

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 6**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T06_1	Target 06	4	5/5/2023	JG	Crane barge, rub rails, mooring bits, dock line, salvaged
T06_2	Target 06	4	5/5/2023	JG	Crane barge, rub rails, mooring bits, dock line, salvaged
T06_3	Target 06	4	5/5/2023	JG	Crane barge, rub rails, mooring bits, dock line, salvaged
T06_4	Target 06	4	5/5/2023	JG	Rub rails
T06_5	Target 06	4	5/5/2023	JG	Crane barge, rub rails, mooring bits, dock line, salvaged
T06_6	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line
T06_7	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line
T06_8	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line
T06_9	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line
T06_10	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line, metal deck plating
T06_11	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line, metal deck plating
T06_12	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line, metal deck plating
T06_13	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line, navigation light
T06_14	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line, corrosion
T06_15	Target 06	4	5/5/2023	JG	Crane barge, rub rails, mooring bits, dock line, salvaged
T06_16	Target 06	4	5/5/2023	JG	Crane barge, rub rails, mooring bits, dock line, salvaged
T06_17	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line, navigation light
T06_18	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line, navigation light
T06_19	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line, corrosion
T06_20	Target 06	4	5/5/2023	JG	Concrete seawall
T06_21	Target 06	4	5/5/2023	JG	Crane barge, rub rails, mooring bits, dock line, salvaged
T06_22	Target 06	4	5/5/2023	JG	Crane barge, rub rails, mooring bits, dock line, salvaged
T06_23	Target 06	4	5/5/2023	JG	Corrosion
T06_24	Target 06	4	5/5/2023	JG	Rub rails, mooring bits, dock line, corrosion
T06_25	Target 06	4	5/5/2023	JG	Port side, crane barge, rub rails, mooring bits, salvaged
T06_26	Target 06	4	5/5/2023	JG	Port side, crane barge, rub rails, mooring bits, salvaged
T06_27	Target 06	4	5/5/2023	JG	Port side, crane barge, rub rails, mooring bits, salvaged
T06_28	Target 06	4	5/5/2023	JG	Port side, crane barge, rub rails, mooring bits, salvaged
T06_29	Target 06	4	5/5/2023	JG	Salvaged boom
T06_30	Target 06	4	5/5/2023	JG	Stem
T06_31	Target 06	4	5/5/2023	JG	Stem
T06_32	Target 06	4	5/5/2023	JG	Stem
T06_33	Target 06	4	5/5/2023	JG	Stem

File #	Target #	Survey Area	Date	Recorder	Description
T06_34	Target 06	4	5/5/2023	JG	Stem, corrosion on port side
T06_35	Target 06	4	5/5/2023	JG	Stem, corrosion on port side
T06_36	Target 06	4	5/5/2023	JG	Dilapidated seawall/barge
T06_37	Target 06	4	5/5/2023	JG	Dilapidated seawall/barge
T06_38	Target 06	4	5/5/2023	JG	Dilapidated seawall/barge
T06_39	Target 06	4	5/5/2023	JG	Dilapidated seawall/barge
T06_40	Target 06	4	5/5/2023	JG	Port side, crane barge, rub rails, mooring bits, salvaged
T06_41	Target 06	4	5/5/2023	JG	Port side, crane barge, rub rails, mooring bits, salvaged
T06_42	Target 06	4	5/5/2023	AC	Crane barge, rub rails, mooring bits, dock line, salvaged
T06_43	Target 06	4	5/5/2023	AC	Crane barge, rub rails, mooring bits, dock line, salvaged
T06_44	Target 06	4	5/5/2023	AC	Port side, crane barge, rub rails, mooring bits, salvaged
T06_45	Target 06	4	5/5/2023	AC	Stem, salvaged, corrosion
T06_46	Target 06	4	5/5/2023	AC	Stem, salvaged, corrosion

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 7**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T07_1	Target 07	4	5/8/2023	JN	Faint railing
T07_2	Target 07	4	5/8/2023	JN	Metal structure
T07_3	Target 07	4	5/8/2023	JN	Metal structure
T07_4	Target 07	4	5/8/2023	JN	Metal structure
T07_5	Target 07	4	5/8/2023	JN	Mullions
T07_6	Target 07	4	5/8/2023	JN	Mullions
T07_7	Target 07	4	5/8/2023	JN	Metal structure, hatch, coral
T07_8	Target 07	4	5/8/2023	JN	Metal structure, hatch, coral
T07_9	Target 07	4	5/8/2023	JN	Corrugated flooring
T07_10	Target 07	4	5/8/2023	JN	Corrugated flooring
T07_11	Target 07	4	5/8/2023	JN	Metal structure, dock line, metal frames
T07_12	Target 07	4	5/8/2023	JN	Metal structure, dock line, metal frames
T07_13	Target 07	4	5/8/2023	JG	Topside, exposed anchor system, boat ramp
T07_14	Target 07	4	5/8/2023	JG	Topside, exposed anchor system, boat ramp
T07_15	Target 07	4	5/8/2023	JG	Topside, exposed anchor system, boat ramp
T07_16	Target 07	4	5/8/2023	JG	Topside, exposed top deck, hatches
T07_17	Target 07	4	5/8/2023	JG	Topside, exposed top deck, hatches
T07_18	Target 07	4	5/8/2023	JG	Topside, exposed top deck, hatches
T07_19	Target 07	4	5/8/2023	JG	Topside, exposed top deck, hatches
T07_20	Target 07	4	5/8/2023	JG	Topside, exposed top deck, hatches
T07_21	Target 07	4	5/8/2023	JG	Topside, exposed top deck, hatches
T07_22	Target 07	4	5/8/2023	JG	Topside, exposed top deck, hatches
T07_23	Target 07	4	5/8/2023	JG	Topside, exposed anchor system, boat ramp
T07_24	Target 07	4	5/8/2023	JG	Topside, exposed anchor system
T07_25	Target 07	4	5/8/2023	JG	Topside, exposed anchor system
T07_26	Target 07	4	5/8/2023	JG	Anchor system
T07_27	Target 07	4	5/8/2023	JG	Anchor system
T07_28	Target 07	4	5/8/2023	JG	Low tide, more exposed target
T07_29	Target 07	4	5/8/2023	JG	Low tide, more exposed target
T07_30	Target 07	4	5/8/2023	JG	Low tide, more exposed target

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 8**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T09_1	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_2	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_3	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_4	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_5	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_6	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_7	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_8	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_9	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_10	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_11	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_12	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_13	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_14	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_15	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_16	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_17	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_18	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_19	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_20	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_21	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_22	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_23	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_24	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_25	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_26	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_27	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_28	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_29	Target 09	2	5/8/2023	JN	AC next to metal structure
T09_30	Target 09	2	5/8/2023	JN	AC next to metal structure
T09_31	Target 09	2	5/8/2023	JN	blur
T09_32	Target 09	2	5/8/2023	JN	JN fin
T09_33	Target 09	2	5/8/2023	JN	JN fin

File #	Target #	Survey Area	Date	Recorder	Description
T09_34	Target 09	2	5/8/2023	JN	blur
T09_35	Target 09	2	5/8/2023	JN	blur
T09_36	Target 09	2	5/8/2023	JN	blur
T09_37	Target 09	2	5/8/2023	JN	blur
T09_38	Target 09	2	5/8/2023	JN	blur
T09_39	Target 09	2	5/8/2023	JN	blur
T09_40	Target 09	2	5/8/2023	JN	Faint metal structure
T09_41	Target 09	2	5/8/2023	JN	Faint metal structure
T09_42	Target 09	2	5/8/2023	JN	Faint metal structure
T09_43	Target 09	2	5/8/2023	JN	Faint metal structure
T09_44	Target 09	2	5/8/2023	JN	Faint metal structure
T09_45	Target 09	2	5/8/2023	JN	Faint metal structure
T09_46	Target 09	2	5/8/2023	JN	Faint metal structure
T09_47	Target 09	2	5/8/2023	JN	Faint metal structure
T09_48	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_49	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_50	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_51	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_52	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_53	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_54	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_55	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_56	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_57	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_58	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_59	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_60	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_61	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_62	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_63	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_64	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_65	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_66	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_67	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_68	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_69	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_70	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_71	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_72	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_73	Target 09	2	5/8/2023	JN	Metal structure with coral

File #	Target #	Survey Area	Date	Recorder	Description
T09_74	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_75	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_76	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_77	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_78	Target 09	2	5/8/2023	JN	Metal structure with coral
T09_79	Target 09	2	5/8/2023	JN	Stern, target on port side
T09_80	Target 09	2	5/8/2023	JN	Stern, target on port side
T09_81	Target 09	2	5/8/2023	JN	Stern, target on port side
T09_82	Target 09	2	5/8/2023	JN	Stern, target on port side
T09_83	Target 09	2	5/8/2023	JN	Stern, target on port side
T09_84	Target 09	2	5/8/2023	JN	Stern, target on port side
T09_85	Target 09	2	5/8/2023	JN	Rudder, propeller and prop
T09_86	Target 09	2	5/8/2023	JN	Rudder, propeller and prop
T09_87	Target 09	2	5/8/2023	JN	Structure with coral
T09_88	Target 09	2	5/8/2023	JN	Corals
T09_89	Target 09	2	5/8/2023	JN	Corals
T09_90	Target 09	2	5/8/2023	JN	Bow with railings
T09_91	Target 09	2	5/8/2023	JN	Bow with railings
T09_92	Target 09	2	5/8/2023	JN	Bow with railings
T09_93	Target 09	2	5/8/2023	JN	Bow with railings, weather deck, hatch
T09_94	Target 09	2	5/8/2023	JN	Bow with railings, weather deck, hatch
T09_95	Target 09	2	5/8/2023	JN	Bow with railings, weather deck, hatch
T09_96	Target 09	2	5/8/2023	JN	Bow with railings, weather deck, hatch
T09_97	Target 09	2	5/8/2023	JN	Bow with railings, weather deck, hatch
T09_98	Target 09	2	5/8/2023	JN	Bow with railings, weather deck, hatch
T09_99	Target 09	2	5/8/2023	JN	Weather deck, hatches, top deck railing
T09_100	Target 09	2	5/8/2023	JN	Weather deck, hatches, top deck railing
T09_101	Target 09	2	5/8/2023	JN	Upperdecks collapsed, beside wreck
T09_102	Target 09	2	5/8/2023	JN	Weather deck, hatches, top deck railing
T09_103	Target 09	2	5/8/2023	JN	Weather deck, hatches
T09_104	Target 09	2	5/8/2023	JN	Weather deck, hatches, cabin
T09_105	Target 09	2	5/8/2023	JN	Cabin with hatches, railing
T09_106	Target 09	2	5/8/2023	JN	Weather deck, hatches, cabin
T09_107	Target 09	2	5/8/2023	JN	Cabin with hatches
T09_108	Target 09	2	5/8/2023	JN	Cabin with hatches, railing
T09_109	Target 09	2	5/8/2023	JN	CM recording target
T09_110	Target 09	2	5/8/2023	JN	CM recording target
T09_111	Target 09	2	5/8/2023	JN	Stern, weather deck, corrugated flooring, hatches
T09_112	Target 09	2	5/8/2023	JN	Stern, target on port side
T09_113	Target 09	2	5/8/2023	JN	Bow with railings, weather deck, hatch

File #	Target #	Survey Area	Date	Recorder	Description
T09_114	Target 09	2	5/8/2023	JN	Machinery on weather deck
T09_115	Target 09	2	5/8/2023	JN	Machinery on weather deck, bow
T09_116	Target 09	2	5/8/2023	JN	Machinery on weather deck
T09_117	Target 09	2	5/8/2023	JN	Bow with railings, weather deck, hatch
T09_118	Target 09	2	5/8/2023	JN	Bow with railings
T09_119	Target 09	2	5/8/2023	JN	Bow with railings
T09_120	Target 09	2	5/8/2023	JN	Bow with railings
T09_121	Target 09	2	5/8/2023	JN	Bow with railings
T09_122	Target 09	2	5/8/2023	JN	Bow with railings
T09_123	Target 09	2	5/8/2023	JN	Bow
T09_124	Target 09	2	5/8/2023	JN	Keelson
T09_125	Target 09	2	5/8/2023	JN	Keelson
T09_126	Target 09	2	5/8/2023	JN	Keelson
T09_127	Target 09	2	5/8/2023	JN	Rudder, propeller and prop
T09_128	Target 09	2	5/8/2023	JN	Rudder, propeller and prop
T09_129	Target 09	2	5/8/2023	JN	Starboard railing where buoy line is attached
T09_130	Target 09	2	5/8/2023	JN	Starboard railing where buoy line is attached
T09_131	Target 09	2	5/8/2023	JN	Starboard railing, cabin
T09_132	Target 09	2	5/8/2023	JN	Starboard railing, cabin
T09_133	Target 09	2	5/8/2023	JN	Starboard railing, cabin
T09_134	Target 09	2	5/8/2023	JN	Starboard railing, cabin

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 9**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T11_1	Target 11	2	5/8/2023	JG	AC with pony-bottle
T11_2	Target 11	2	5/8/2023	JG	AC with pony-bottle
T11_3	Target 11	2	5/8/2023	JG	AC with pony-bottle
T11_4	Target 11	2	5/8/2023	JG	Landing craft ramp
T11_5	Target 11	2	5/8/2023	JG	Landing craft ramp
T11_6	Target 11	2	5/8/2023	JG	Landing craft ramp
T11_7	Target 11	2	5/8/2023	JG	Corals
T11_8	Target 11	2	5/8/2023	JG	Landing craft ramp
T11_9	Target 11	2	5/8/2023	JG	Landing craft ramp
T11_10	Target 11	2	5/8/2023	JG	Landing craft ramp
T11_11	Target 11	2	5/8/2023	JG	Landing craft ramp, top down, starboard
T11_12	Target 11	2	5/8/2023	JG	Landing craft ramp, top down, starboard
T11_13	Target 11	2	5/8/2023	JG	Interior of ramp
T11_14	Target 11	2	5/8/2023	JG	Interior of ramp
T11_15	Target 11	2	5/8/2023	JG	Interior of ramp
T11_16	Target 11	2	5/8/2023	JG	Corrugated flooring, interior of ramp
T11_17	Target 11	2	5/8/2023	JG	Starboard side, marine growth
T11_18	Target 11	2	5/8/2023	JG	Starboard side, pilot house in background
T11_19	Target 11	2	5/8/2023	JG	Starboard side, pilot house in background
T11_20	Target 11	2	5/8/2023	JG	Starboard side, pilot house in background
T11_21	Target 11	2	5/8/2023	JG	Starboard side, pilot house in background
T11_22	Target 11	2	5/8/2023	JG	Starboard side, pilot house in background
T11_23	Target 11	2	5/8/2023	JG	Starboard side, pilot house in background
T11_24	Target 11	2	5/8/2023	JG	Starboard side, pilot house in background
T11_25	Target 11	2	5/8/2023	JG	Starboard side, pilot house in background
T11_26	Target 11	2	5/8/2023	JG	Inside and interior port wall
T11_27	Target 11	2	5/8/2023	JG	Interior of ramp, corrugated floors
T11_28	Target 11	2	5/8/2023	JG	Interior of ramp, corrugated floors
T11_29	Target 11	2	5/8/2023	JG	Back, interior near pilot house
T11_30	Target 11	2	5/8/2023	JG	Back, interior, 2 ladder rungs
T11_31	Target 11	2	5/8/2023	JG	Heavy marine growth
T11_32	Target 11	2	5/8/2023	JG	Heavy marine growth, corrugated floors
T11_33	Target 11	2	5/8/2023	JG	Back, open hatch, pilot house

File #	Target #	Survey Area	Date	Recorder	Description
T11_34	Target 11	2	5/8/2023	JG	Back, open hatch, pilot house
T11_35	Target 11	2	5/8/2023	JG	Starboard, open hatch
T11_36	Target 11	2	5/8/2023	JG	Pilot house, open hatch
T11_37	Target 11	2	5/8/2023	JG	Pilot house, open hatch
T11_38	Target 11	2	5/8/2023	JG	Starboard, back, pilot house
T11_39	Target 11	2	5/8/2023	JG	Pilot house, open hatch
T11_40	Target 11	2	5/8/2023	JG	Pilot house, open hatch
T11_41	Target 11	2	5/8/2023	JG	Starboard, back, pilot house
T11_42	Target 11	2	5/8/2023	JG	Starboard, back, pilot house
T11_43	Target 11	2	5/8/2023	JG	Starboard, back, pilot house
T11_44	Target 11	2	5/8/2023	JG	Starboard, back, pilot house
T11_45	Target 11	2	5/8/2023	JG	Starboard, back, pilot house
T11_46	Target 11	2	5/8/2023	JG	Starboard, back, AC examining target
T11_47	Target 11	2	5/8/2023	JG	Starboard, back, AC examining target
T11_48	Target 11	2	5/8/2023	JG	Starboard, back, pilot house
T11_49	Target 11	2	5/8/2023	JG	Starboard, back, pilot house
T11_50	Target 11	2	5/8/2023	JG	Divemaster (Nico), Starboard, back
T11_51	Target 11	2	5/8/2023	JG	Starboard, back corner
T11_52	Target 11	2	5/8/2023	JG	Starboard, back corner
T11_53	Target 11	2	5/8/2023	JG	Stern, pilot house, open hatch, pipes
T11_54	Target 11	2	5/8/2023	JG	Stern, pilot house, open hatch, pipes, mooring bit
T11_55	Target 11	2	5/8/2023	JG	Stern, open hatch, pipes, mooring bit
T11_56	Target 11	2	5/8/2023	JG	Stern, pilot house, open hatch, pipes, mooring bit
T11_57	Target 11	2	5/8/2023	JG	Stern, pilot house
T11_58	Target 11	2	5/8/2023	JG	Port, stern corner, mooring bit, open hatch
T11_59	Target 11	2	5/8/2023	JG	Port, stern corner, mooring bit, open hatch
T11_60	Target 11	2	5/8/2023	JG	Port, stern corner, mooring bit, open hatch
T11_61	Target 11	2	5/8/2023	JG	Port, pilot house
T11_62	Target 11	2	5/8/2023	JG	Port, pilot house
T11_63	Target 11	2	5/8/2023	JG	Port, pilot house
T11_64	Target 11	2	5/8/2023	JG	Port, stern corner, mooring bit, open hatch
T11_65	Target 11	2	5/8/2023	JG	Port, stern corner
T11_66	Target 11	2	5/8/2023	JG	Bottom tiller
T11_67	Target 11	2	5/8/2023	JG	Bottom tiller
T11_68	Target 11	2	5/8/2023	JG	Bottom tiller
T11_69	Target 11	2	5/8/2023	JG	Bottom tiller
T11_70	Target 11	2	5/8/2023	JG	Bottom tiller
T11_71	Target 11	2	5/8/2023	JG	Bottom tiller
T11_72	Target 11	2	5/8/2023	JG	Bottom tiller
T11_73	Target 11	2	5/8/2023	JG	Bottom tiller

File #	Target #	Survey Area	Date	Recorder	Description
T11_74	Target 11	2	5/8/2023	JG	Bottom tiller
T11_75	Target 11	2	5/8/2023	JG	Bottom tiller
T11_76	Target 11	2	5/8/2023	JG	Bottom tiller
T11_77	Target 11	2	5/8/2023	JG	Bottom tiller
T11_78	Target 11	2	5/8/2023	JG	Bottom tiller
T11_79	Target 11	2	5/8/2023	JG	Bottom tiller
T11_80	Target 11	2	5/8/2023	JG	Port, stern corner, mooring bit, open hatch
T11_81	Target 11	2	5/8/2023	JG	Port, stern corner, mooring bit, open hatch
T11_82	Target 11	2	5/8/2023	JG	Stern
T11_83	Target 11	2	5/8/2023	JG	Open hatch
T11_84	Target 11	2	5/8/2023	JG	Open hatch
T11_85	Target 11	2	5/8/2023	JG	Mooring bits, stern
T11_86	Target 11	2	5/8/2023	JG	Mooring bits, stern
T11_87	Target 11	2	5/8/2023	JG	Eroded siding, exposed interior framing
T11_88	Target 11	2	5/8/2023	JG	Eroded siding, exposed interior framing
T11_89	Target 11	2	5/8/2023	JG	Eroded siding, exposed interior framing
T11_90	Target 11	2	5/8/2023	JG	Eroded siding, exposed interior framing
T11_91	Target 11	2	5/8/2023	JG	Pilot house, open hatch
T11_92	Target 11	2	5/8/2023	JG	Pilot house, open hatch, mooring bits
T11_93	Target 11	2	5/8/2023	JG	Blur
T11_94	Target 11	2	5/8/2023	JG	Pilot house
T11_95	Target 11	2	5/8/2023	MN	Port corner of ramp
T11_96	Target 11	2	5/8/2023	MN	Port corner of ramp
T11_97	Target 11	2	5/8/2023	MN	Port corner of ramp
T11_98	Target 11	2	5/8/2023	MN	Exterior of ramp
T11_99	Target 11	2	5/8/2023	MN	Port corner of ramp
T11_100	Target 11	2	5/8/2023	MN	Port corner of ramp, port siding
T11_101	Target 11	2	5/8/2023	MN	Port corner of ramp, port siding
T11_102	Target 11	2	5/8/2023	MN	Port side, marine growth
T11_103	Target 11	2	5/8/2023	MN	Port side, marine growth, interior of ramp
T11_104	Target 11	2	5/8/2023	MN	Pilot house, two ladder rungs, open hatch
T11_105	Target 11	2	5/8/2023	MN	Interior of ramp, corrugated flooring
T11_106	Target 11	2	5/8/2023	MN	Interior of ramp, corrugated flooring
T11_107	Target 11	2	5/8/2023	MN	Pilot house, two ladder rungs, open hatch
T11_108	Target 11	2	5/8/2023	MN	Pilot house, two ladder rungs, open hatch
T11_109	Target 11	2	5/8/2023	MN	Port, pilot house, open hatch
T11_110	Target 11	2	5/8/2023	MN	Port, pilot house, open hatch
T11_111	Target 11	2	5/8/2023	MN	Port, pilot house, open hatch
T11_112	Target 11	2	5/8/2023	MN	Port, pilot house, open hatch
T11_113	Target 11	2	5/8/2023	MN	Stern, pilot house, open hatch, pipes, mooring bit

File #	Target #	Survey Area	Date	Recorder	Description
T11_114	Target 11	2	5/8/2023	MN	Stern, pilot house, open hatch, pipes, mooring bit
T11_115	Target 11	2	5/8/2023	MN	Stern, pilot house, open hatch, pipes, mooring bit, CM
T11_116	Target 11	2	5/8/2023	MN	Pilot house, open hatch
T11_117	Target 11	2	5/8/2023	MN	Pilot house, open hatch
T11_118	Target 11	2	5/8/2023	MN	Pilot house, exposed electrical
T11_119	Target 11	2	5/8/2023	MN	Stern, pilot house, open hatch, pipes, mooring bit
T11_120	Target 11	2	5/8/2023	MN	Stern, pilot house, open hatch, pipes, mooring bit
T11_121	Target 11	2	5/8/2023	MN	Stern, pilot house, open hatch, pipes, mooring bit
T11_122	Target 11	2	5/8/2023	MN	Stern, pilot house, open hatch, pipes, mooring bit
T11_123	Target 11	2	5/8/2023	MN	Stern, pilot house, open hatch, pipes, mooring bit
T11_124	Target 11	2	5/8/2023	MN	CM beside landing craft
T11_125	Target 11	2	5/8/2023	MN	CM beside landing craft
T11_126	Target 11	2	5/8/2023	MN	CM beside landing craft
T11_127	Target 11	2	5/8/2023	MN	CM beside landing craft
T11_128	Target 11	2	5/8/2023	MN	CM beside landing craft
T11_129	Target 11	2	5/8/2023	MN	Port, interior corner of ramp
T11_130	Target 11	2	5/8/2023	MN	Port, interior corner of ramp
T11_131	Target 11	2	5/8/2023	MN	Port, exterior ramp, CM in background
T11_132	Target 11	2	5/8/2023	MN	Port, exterior ramp, CM in background
T11_133	Target 11	2	5/8/2023	MN	Port, exterior ramp, CM in background
T11_134	Target 11	2	5/8/2023	MN	CM examining interior of landing craft
T11_135	Target 11	2	5/8/2023	MN	Starboard side and interior of ramp
T11_136	Target 11	2	5/8/2023	MN	Starboard side and interior of ramp
T11_137	Target 11	2	5/8/2023	MN	Starboard side and interior of ramp
T11_138	Target 11	2	5/8/2023	MN	Starboard side and interior of ramp
T11_139	Target 11	2	5/8/2023	MN	Starboard side and interior of ramp
T11_140	Target 11	2	5/8/2023	CM	Top of ramp
T11_141	Target 11	2	5/8/2023	CM	CM beside landing craft
T11_142	Target 11	2	5/8/2023	CM	CM beside landing craft
T11_143	Target 11	2	5/8/2023	CM	Port, marine growth along side
T11_144	Target 11	2	5/8/2023	CM	Port side, stern, pilot house, open hatch,
T11_145	Target 11	2	5/8/2023	CM	Interior of ramp, corrugated flooring
T11_146	Target 11	2	5/8/2023	CM	Pilot house, open hatch, ladder rungs
T11_147	Target 11	2	5/8/2023	CM	Interior of ramp, corrugated flooring
T11_148	Target 11	2	5/8/2023	CM	Interior of ramp, corrugated flooring
T11_149	Target 11	2	5/8/2023	CM	Surrounding environment, blurry
T11_150	Target 11	2	5/8/2023	CM	Top of ramp, CM and MN taking length measurement
T11_151	Target 11	2	5/8/2023	CM	Top of ramp, CM and MN taking length measurement
T11_152	Target 11	2	5/8/2023	CM	Potential UXO
T11_153	Target 11	2	5/8/2023	CM	Potential UXO

File #	Target #	Survey Area	Date	Recorder	Description
T11_154	Target 11	2	5/8/2023	CM	Potential UXO
T11_155	Target 11	2	5/8/2023	CM	Potential UXO
T11_156	Target 11	2	5/8/2023	CM	Corals
T11_157	Target 11	2	5/8/2023	CM	Sealife
T11_158	Target 11	2	5/8/2023	CM	Sealife
T11_159	Target 11	2	5/8/2023	CM	MN beside landing craft
T11_160	Target 11	2	5/8/2023	CM	Interior of ramp, corrugated flooring
T11_161	Target 11	2	5/8/2023	CM	Interior of ramp, corrugated flooring
T11_162	Target 11	2	5/8/2023	CM	Starboard corner of ramp, exterior
T11_163	Target 11	2	5/8/2023	CM	Starboard corner of ramp, exterior
T11_164	Target 11	2	5/8/2023	CM	Marine growth on target
T11_165	Target 11	2	5/8/2023	CM	Sealife
T11_166	Target 11	2	5/8/2023	CM	Sealife

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 10**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T12_1	Target 12	4	5/9/2023	MN	Metal structure
T12_2	Target 12	4	5/9/2023	MN	Metal structure
T12_3	Target 12	4	5/9/2023	MN	Gap between deck plating
T12_4	Target 12	4	5/9/2023	MN	Circular cut-out bisected by a bar
T12_5	Target 12	4	5/9/2023	MN	Support strap for deck plating
T12_6	Target 12	4	5/9/2023	MN	Support strap for deck plating

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 11**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T13_1	Target 13	4	5/9/2023	AC	Hatch, corals
T13_2	Target 13	4	5/9/2023	AC	Hatch, corals
T13_3	Target 13	4	5/9/2023	AC	Debris on deck, pipe
T13_4	Target 13	4	5/9/2023	AC	Debris on deck, pipe
T13_5	Target 13	4	5/9/2023	JN	Corals
T13_6	Target 13	4	5/9/2023	AC	55-gallon drum
T13_7	Target 13	4	5/9/2023	AC	55-gallon drum
T13_8	Target 13	4	5/9/2023	AC	55-gallon drum
T13_9	Target 13	4	5/9/2023	JN	Open hatches, corals
T13_10	Target 13	4	5/9/2023	AC	55-gallon drum, metal structure
T13_11	Target 13	4	5/9/2023	AC	56-gallon drum, metal structure
T13_12	Target 13	4	5/9/2023	JN	Debris on deck, pipe
T13_13	Target 13	4	5/9/2023	AC	Welded deck plating
T13_14	Target 13	4	5/9/2023	AC	Welded deck plating
T13_15	Target 13	4	5/9/2023	AC	Welded deck plating
T13_16	Target 13	4	5/9/2023	AC	Welded deck plating
T13_17	Target 13	4	5/9/2023	JN	Crumbled structure
T13_18	Target 13	4	5/9/2023	AC	Welded deck plating, mooring bit
T13_19	Target 13	4	5/9/2023	AC	Welded deck plating, mooring bit
T13_20	Target 13	4	5/9/2023	AC	Welded deck plating, mooring bit
T13_21	Target 13	4	5/9/2023	AC	Welded deck plating, mooring bit
T13_22	Target 13	4	5/9/2023	AC	Welded deck plating, mooring bit
T13_23	Target 13	4	5/9/2023	JN	Welded deck plating
T13_24	Target 13	4	5/9/2023	AC	Metal structure
T13_25	Target 13	4	5/9/2023	AC	Metal structure
T13_26	Target 13	4	5/9/2023	AC	Metal structure
T13_27	Target 13	4	5/9/2023	JN	Welded deck plating, mooring bit
T13_28	Target 13	4	5/9/2023	AC	55-gallon drum, metal pipe, welded deck plating
T13_29	Target 13	4	5/9/2023	AC	55-gallon drum, metal pipe, welded deck plating
T13_30	Target 13	4	5/9/2023	AC	55-gallon drum, metal pipe, welded deck plating
T13_31	Target 13	4	5/9/2023	AC	55-gallon drum, metal pipe, welded deck plating
T13_32	Target 13	4	5/9/2023	AC	55-gallon drum, metal pipe, welded deck plating
T13_33	Target 13	4	5/9/2023	AC	Open hatch, corals

File #	Target #	Survey Area	Date	Recorder	Description
T13_34	Target 13	4	5/9/2023	AC	Debris on deck, pipe
T13_35	Target 13	4	5/9/2023	AC	Debris on deck, pipe
T13_36	Target 13	4	5/9/2023	JN	Open hatch, corals
T13_37	Target 13	4	5/9/2023	JN	Open hatch, corals
T13_38	Target 13	4	5/9/2023	JN	Open hatch, corals
T13_39	Target 13	4	5/9/2023	JN	Welded deck plating
T13_40	Target 13	4	5/9/2023	JN	Possible railing or mast

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 12**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T14_1	Target 14	7	5/9/2023	CM	Cabin controls
T14_2	Target 14	7	5/9/2023	CM	MN investigating, tracks, cabin
T14_3	Target 14	7	5/9/2023	CM	Tracks
T14_4	Target 14	7	5/9/2023	CM	Collapsed boom structure
T14_5	Target 14	7	5/9/2023	CM	Collapsed boom structure
T14_6	Target 14	7	5/9/2023	CM	Cabin controls
T14_7	Target 14	7	5/9/2023	CM	Cabin controls
T14_8	Target 14	7	5/9/2023	CM	Cabin controls
T14_9	Target 14	7	5/9/2023	CM	MN investigating, tracks, cabin
T14_10	Target 14	7	5/9/2023	CM	MN investigating, tracks, cabin
T14_11	Target 14	7	5/9/2023	CM	Collapsed boom structure
T14_12	Target 14	7	5/9/2023	CM	Collapsed boom structure

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 13**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T15_1	Target 15	5	5/10/2023	JG	Topside, beached barge
T15_2	Target 15	5	5/10/2023	JG	Topside, beached barge, collapsed stern
T15_3	Target 15	5	5/10/2023	JG	Topside, beached barge, collapsed stern
T15_4	Target 15	5	5/10/2023	JG	Topside, beached barge, collapsed stern
T15_5	Target 15	5	5/10/2023	JG	Topside, collapsed stern, flooded
T15_6	Target 15	5	5/10/2023	JG	Topside, collapsed stern, flooded
T15_7	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_8	Target 15	5	5/10/2023	JG	Topside, mooring bits, cleats, metal deck plating
T15_9	Target 15	5	5/10/2023	JG	Topside, mooring bits, cleats, metal deck plating
T15_10	Target 15	5	5/10/2023	JG	Topside, mooring bits, cleats, metal deck plating
T15_11	Target 15	5	5/10/2023	JG	Topside, mooring bits, cleats, metal deck plating
T15_12	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_13	Target 15	5	5/10/2023	JG	Topside, collapsed stern, flooded
T15_14	Target 15	5	5/10/2023	JG	Topside, collapsed stern, flooded
T15_15	Target 15	5	5/10/2023	JG	Topside, collapsed stern, flooded
T15_16	Target 15	5	5/10/2023	JG	Topside, collapsed stern, flooded
T15_17	Target 15	5	5/10/2023	JG	Topside, collapsed stern, flooded
T15_18	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_19	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_20	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_21	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_22	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_23	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_24	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_25	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_26	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits

File #	Target #	Survey Area	Date	Recorder	Description
T15_27	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_28	Target 15	5	5/10/2023	JG	Topside, round cut-out along stern
T15_29	Target 15	5	5/10/2023	JG	Topside, round cut-out along stern
T15_30	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, mooring bits
T15_31	Target 15	5	5/10/2023	JG	Topside, metal deck plating, support/framing, cleat, hatches
T15_32	Target 15	5	5/10/2023	JG	Topside, collapsed stern, flooded
T15_33	Target 15	5	5/10/2023	JG	Topside, collapsed stern, flooded

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 14**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T16_1	Target 16	5	5/12/2023	JG	Pilot house
T16_2	Target 16	5	5/12/2023	JG	Starboard, open hatch
T16_3	Target 16	5	5/12/2023	JG	Pilot house
T16_4	Target 16	5	5/12/2023	JG	Pilot house, stern
T16_5	Target 16	5	5/12/2023	JG	Open hatch, dock line
T16_6	Target 16	5	5/12/2023	JG	Metal structure, U-bolt, blurry
T16_7	Target 16	5	5/12/2023	JG	Pilot house
T16_8	Target 16	5	5/12/2023	JG	U-bolt, blurry
T16_9	Target 16	5	5/12/2023	JG	Metal structure
T16_10	Target 16	5	5/12/2023	JG	U-bolt
T16_11	Target 16	5	5/12/2023	JG	U-bolt
T16_12	Target 16	5	5/12/2023	JG	Mooring bit, dock line
T16_13	Target 16	5	5/12/2023	JG	Mooring bit, dock line
T16_14	Target 16	5	5/12/2023	JG	Mooring bit, dock line
T16_15	Target 16	5	5/12/2023	JG	Mooring bit, dock line
T16_16	Target 16	5	5/12/2023	JG	Mooring bit, dock line
T16_17	Target 16	5	5/12/2023	JG	Mooring bit, dock line
T16_18	Target 16	5	5/12/2023	JG	Metal structure
T16_19	Target 16	5	5/12/2023	JG	Metal structure
T16_20	Target 16	5	5/12/2023	JG	Metal structure
T16_21	Target 16	5	5/12/2023	JG	Inside pilot house
T16_22	Target 16	5	5/12/2023	JG	Metal deck plating
T16_23	Target 16	5	5/12/2023	JG	Inside open hatch
T16_24	Target 16	5	5/12/2023	JG	Marine growth on structure
T16_25	Target 16	5	5/12/2023	JG	Inside pilot house
T16_26	Target 16	5	5/12/2023	JG	Inside pilot house
T16_27	Target 16	5	5/12/2023	JG	Inside pilot house
T16_28	Target 16	5	5/12/2023	JG	Inside of target with coral
T16_29	Target 16	5	5/12/2023	JG	Metal structural debris
T16_30	Target 16	5	5/12/2023	JG	Open hatch
T16_31	Target 16	5	5/12/2023	JG	Side of target with coral
T16_32	Target 16	5	5/12/2023	JG	Side of target with coral
T16_33	Target 16	5	5/12/2023	JG	Side of target with coral

File #	Target #	Survey Area	Date	Recorder	Description
T16_34	Target 16	5	5/12/2023	JG	Side of target with coral
T16_35	Target 16	5	5/12/2023	JG	Side of target with coral
T16_36	Target 16	5	5/12/2023	JG	Marine growth on structure
T16_37	Target 16	5	5/12/2023	JG	Marine growth on structure
T16_38	Target 16	5	5/12/2023	JG	Marine growth on structure
T16_39	Target 16	5	5/12/2023	JG	Corrugated flooring
T16_40	Target 16	5	5/12/2023	JG	Corrugated flooring
T16_41	Target 16	5	5/12/2023	JG	Corrugated flooring and marine growth
T16_42	Target 16	5	5/12/2023	JG	Manholes to wing tanks, corrugated flooring
T16_43	Target 16	5	5/12/2023	JG	Manholes to wing tanks, corrugated flooring
T16_44	Target 16	5	5/12/2023	JG	Manholes to wing tanks
T16_45	Target 16	5	5/12/2023	JG	Manholes to wing tanks, corrugated flooring
T16_46	Target 16	5	5/12/2023	JG	Corrugated flooring
T16_47	Target 16	5	5/12/2023	JG	Corrugated flooring
T16_48	Target 16	5	5/12/2023	JG	Corrugated flooring
T16_49	Target 16	5	5/12/2023	JG	Manholes to wing tanks, corrugated flooring
T16_50	Target 16	5	5/12/2023	JG	Port side wall, open ramp
T16_51	Target 16	5	5/12/2023	JG	Top of wall
T16_52	Target 16	5	5/12/2023	JG	Top of wall to outside of structure
T16_53	Target 16	5	5/12/2023	JG	Top of wall
T16_54	Target 16	5	5/12/2023	JG	Detached ramp beside structure
T16_55	Target 16	5	5/12/2023	JG	Detached ramp, pipe across it
T16_56	Target 16	5	5/12/2023	JG	Detached ramp
T16_57	Target 16	5	5/12/2023	JG	Detached ramp
T16_58	Target 16	5	5/12/2023	JG	Front of structure, detached ramp opening
T16_59	Target 16	5	5/12/2023	JG	Hight of port side wall
T16_60	Target 16	5	5/12/2023	JG	Hight of port side wall, ramp on seafloor
T16_61	Target 16	5	5/12/2023	JG	Width of port side wall
T16_62	Target 16	5	5/12/2023	JG	Corner of front of structure, port
T16_63	Target 16	5	5/12/2023	JG	Width of port side wall
T16_64	Target 16	5	5/12/2023	JG	Lip of ramp opening
T16_65	Target 16	5	5/12/2023	JG	Starboard wall, inside, marine growth
T16_66	Target 16	5	5/12/2023	JG	Corner of front of structure, starboard
T16_67	Target 16	5	5/12/2023	JG	Debris next to structure
T16_68	Target 16	5	5/12/2023	JG	Debris next to structure
T16_69	Target 16	5	5/12/2023	JG	Debris next to structure
T16_70	Target 16	5	5/12/2023	JG	Bottom of structure
T16_71	Target 16	5	5/12/2023	JG	Corner of structure
T16_72	Target 16	5	5/12/2023	JG	Measurement
T16_73	Target 16	5	5/12/2023	JG	Measurement

File #	Target #	Survey Area	Date	Recorder	Description
T16_74	Target 16	5	5/12/2023	JG	Measurement
T16_75	Target 16	5	5/12/2023	JG	Measurement
T16_76	Target 16	5	5/12/2023	JG	Debris next to structure
T16_77	Target 16	5	5/12/2023	JG	Manholes to wing tanks, corrugated flooring
T16_78	Target 16	5	5/12/2023	JG	Manholes to wing tanks
T16_79	Target 16	5	5/12/2023	JG	Manholes to wing tanks
T16_80	Target 16	5	5/12/2023	JG	Deck width measurement beside hatch
T16_81	Target 16	5	5/12/2023	JG	Deck width measurement beside hatch
T16_82	Target 16	5	5/12/2023	JG	Hight of wall
T16_83	Target 16	5	5/12/2023	JG	Hight of wall
T16_84	Target 16	5	5/12/2023	JG	Hight of wall
T16_85	Target 16	5	5/12/2023	JG	Wall of structure
T16_86	Target 16	5	5/12/2023	JG	Wall of structure, pilot house in background
T16_87	Target 16	5	5/12/2023	JG	Wall of structure
T16_88	Target 16	5	5/12/2023	JG	Pilot house
T16_89	Target 16	5	5/12/2023	JG	Pilot house
T16_90	Target 16	5	5/12/2023	JG	Metal interior, dock line
T16_91	Target 16	5	5/12/2023	JG	Top of structure, dock line
T16_92	Target 16	5	5/12/2023	JG	Top of structure, dock line
T16_93	Target 16	5	5/12/2023	JG	Top of structure, dock line, open hatch
T16_94	Target 16	5	5/12/2023	JG	Open hatch side
T16_95	Target 16	5	5/12/2023	JG	Open hatch side
T16_96	Target 16	5	5/12/2023	JG	Top of structure, dock line, open engine room
T16_97	Target 16	5	5/12/2023	JG	Top of structure, dock line, open engine room
T16_98	Target 16	5	5/12/2023	JG	Top of structure, dock line, open engine room
T16_99	Target 16	5	5/12/2023	JG	Top of structure, dock line, open engine room
T16_100	Target 16	5	5/12/2023	JG	Top of structure, dock line, side of pilot house
T16_101	Target 16	5	5/12/2023	JG	Top of structure, dock line, side of pilot house
T16_102	Target 16	5	5/12/2023	JG	Top of pilot house
T16_103	Target 16	5	5/12/2023	JG	Top of structure, dock line, open engine room
T16_104	Target 16	5	5/12/2023	JG	Top of structure, dock line, open engine room
T16_105	Target 16	5	5/12/2023	JG	Portside of structure, open engine room
T16_106	Target 16	5	5/12/2023	JG	Portside of structure, open engine room
T16_107	Target 16	5	5/12/2023	JG	Top of pilot house
T16_108	Target 16	5	5/12/2023	JG	Top of pilot house, open engine room
T16_109	Target 16	5	5/11/2023	AC	Top of landing craft, pilot house, open engine room, open bed
T16_110	Target 16	5	5/11/2023	AC	Top of landing craft, pilot house, open engine room
T16_111	Target 16	5	5/11/2023	AC	U-bolt
T16_112	Target 16	5	5/11/2023	AC	Side of pilot house
T16_113	Target 16	5	5/11/2023	AC	Side of pilot house

File #	Target #	Survey Area	Date	Recorder	Description
T16_114	Target 16	5	5/11/2023	AC	Mooring bit, dock line
T16_115	Target 16	5	5/11/2023	AC	Metal structure, blurry
T16_116	Target 16	5	5/11/2023	AC	Pilot house
T16_117	Target 16	5	5/11/2023	AC	Portside of structure
T16_118	Target 16	5	5/11/2023	AC	Portside of structure
T16_119	Target 16	5	5/11/2023	AC	Pilot house, open engine room, dock line
T16_120	Target 16	5	5/11/2023	AC	Top down, open engine room, exposed engine parts
T16_121	Target 16	5	5/11/2023	AC	Pilot house
T16_122	Target 16	5	5/11/2023	AC	Pilot house
T16_123	Target 16	5	5/11/2023	AC	Top down, open engine room, exposed engine parts
T16_124	Target 16	5	5/11/2023	AC	Top down, open engine room
T16_125	Target 16	5	5/11/2023	AC	Top down, open engine room
T16_126	Target 16	5	5/11/2023	AC	Open bed, looking towards mouth
T16_127	Target 16	5	5/11/2023	AC	Corrugated flooring, debris
T16_128	Target 16	5	5/11/2023	AC	Manholes to wing tanks
T16_129	Target 16	5	5/11/2023	AC	Manholes to wing tanks, corrugated flooring
T16_130	Target 16	5	5/11/2023	AC	Open engine room and pilot room
T16_131	Target 16	5	5/11/2023	AC	Manholes to wing tanks, corrugated flooring, debris
T16_132	Target 16	5	5/11/2023	AC	Manholes to wing tanks
T16_133	Target 16	5	5/11/2023	AC	Ramp on seafloor, open bed, MN examining structure
T16_134	Target 16	5	5/11/2023	AC	Ramp on seafloor, open bed
T16_135	Target 16	5	5/11/2023	AC	Ramp on seafloor, open bed, MN examining structure
T16_136	Target 16	5	5/11/2023	AC	Ramp on seafloor
T16_137	Target 16	5	5/11/2023	AC	Ramp on seafloor, open bed
T16_138	Target 16	5	5/11/2023	AC	Ramp on seafloor, open bed, portside
T16_139	Target 16	5	5/11/2023	AC	Heavy marine growth
T16_140	Target 16	5	5/11/2023	AC	Topside, front of landing craft
T16_141	Target 16	5	5/11/2023	AC	Topside, front of landing craft
T16_142	Target 16	5	5/11/2023	AC	Topside, front of landing craft
T16_143	Target 16	5	5/11/2023	AC	Topside, front of landing craft
T16_144	Target 16	5	5/11/2023	AC	Exterior starboard side of landing craft
T16_145	Target 16	5	5/11/2023	AC	Exterior starboard side of landing craft
T16_146	Target 16	5	5/11/2023	AC	Exterior starboard side of landing craft, pilot house

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 15**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T17_1	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_2	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_3	Target 17	5	5/11/2023	AC	Metal beam
T17_4	Target 17	5	5/11/2023	AC	Metal beam
T17_5	Target 17	5	5/11/2023	AC	Triangular support bracket/frame
T17_6	Target 17	5	5/11/2023	AC	Triangular support bracket/frame
T17_7	Target 17	5	5/11/2023	AC	Triangular support bracket/frame, metal rods
T17_8	Target 17	5	5/11/2023	AC	Triangular support bracket/frame, metal rods
T17_9	Target 17	5	5/11/2023	AC	Metal beam
T17_10	Target 17	5	5/11/2023	AC	Metal beam
T17_11	Target 17	5	5/11/2023	AC	Vertical metal rods/supports, debris
T17_12	Target 17	5	5/11/2023	AC	Vertical metal rods/supports, debris
T17_13	Target 17	5	5/11/2023	AC	Metal beam
T17_14	Target 17	5	5/11/2023	AC	Metal beam
T17_15	Target 17	5	5/11/2023	AC	Triangular support bracket/frame, metal rods
T17_16	Target 17	5	5/11/2023	AC	Triangular support bracket/frame, metal rods
T17_17	Target 17	5	5/11/2023	AC	Vertical metal rods/supports, debris
T17_18	Target 17	5	5/11/2023	AC	Vertical metal rods/supports, debris
T17_19	Target 17	5	5/11/2023	AC	Metal structure
T17_20	Target 17	5	5/11/2023	AC	Metal structure
T17_21	Target 17	5	5/11/2023	AC	Metal structure
T17_22	Target 17	5	5/11/2023	AC	Metal structure
T17_23	Target 17	5	5/11/2023	AC	Metal structure
T17_24	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_25	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_26	Target 17	5	5/11/2023	AC	Metal structure
T17_27	Target 17	5	5/11/2023	AC	Metal structure
T17_28	Target 17	5	5/11/2023	AC	Metal structure
T17_29	Target 17	5	5/11/2023	AC	Metal structure
T17_30	Target 17	5	5/11/2023	AC	Vertical metal rods/supports, debris
T17_31	Target 17	5	5/11/2023	AC	Vertical metal rods/supports, debris
T17_32	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_33	Target 17	5	5/11/2023	AC	Vertical metal rods/supports

File #	Target #	Survey Area	Date	Recorder	Description
T17_34	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_35	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_36	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_37	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_38	Target 17	5	5/11/2023	AC	Metal structure
T17_39	Target 17	5	5/11/2023	AC	Triangular support bracket, corner
T17_40	Target 17	5	5/11/2023	AC	Metal structure
T17_41	Target 17	5	5/11/2023	AC	Metal structure
T17_42	Target 17	5	5/11/2023	AC	Metal structure
T17_43	Target 17	5	5/11/2023	AC	Metal structure
T17_44	Target 17	5	5/11/2023	AC	Metal beam with rods
T17_45	Target 17	5	5/11/2023	AC	Metal beam with rods
T17_46	Target 17	5	5/10/2023	CM	Metal beam
T17_47	Target 17	5	5/10/2023	CM	Metal beam
T17_48	Target 17	5	5/10/2023	CM	Metal beam
T17_49	Target 17	5	5/10/2023	CM	Metal beams
T17_50	Target 17	5	5/10/2023	CM	Metal beams
T17_51	Target 17	5	5/10/2023	CM	Linear metal railing/structure
T17_52	Target 17	5	5/10/2023	CM	Metal structure
T17_53	Target 17	5	5/10/2023	CM	Metal beams
T17_54	Target 17	5	5/10/2023	CM	Metal beam
T17_55	Target 17	5	5/10/2023	CM	Triangular support bracket
T17_56	Target 17	5	5/10/2023	CM	Triangular support bracket
T17_57	Target 17	5	5/10/2023	CM	Metal beams
T17_58	Target 17	5	5/10/2023	CM	Metal structure
T17_59	Target 17	5	5/10/2023	CM	Metal structure
T17_60	Target 17	5	5/10/2023	CM	Triangular support bracket, corner
T17_61	Target 17	5	5/10/2023	CM	Vertical metal rods/supports
T17_62	Target 17	5	5/10/2023	CM	Metal structure
T17_63	Target 17	5	5/10/2023	CM	Metal structure
T17_64	Target 17	5	5/10/2023	CM	Metal beams
T17_65	Target 17	5	5/10/2023	CM	Metal beams
T17_66	Target 17	5	5/10/2023	CM	Metal beams
T17_67	Target 17	5	5/10/2023	CM	Metal beams
T17_68	Target 17	5	5/10/2023	CM	Metal beams
T17_69	Target 17	5	5/10/2023	CM	Triangular support, metal structure
T17_70	Target 17	5	5/10/2023	CM	Triangular support, metal structure
T17_71	Target 17	5	5/11/2023	AC	Metal rods, metal framing
T17_72	Target 17	5	5/11/2023	AC	Metal beams
T17_73	Target 17	5	5/11/2023	AC	Vertical metal rods/supports

File #	Target #	Survey Area	Date	Recorder	Description
T17_74	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_75	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_76	Target 17	5	5/11/2023	AC	Linear metal railing/structure
T17_77	Target 17	5	5/11/2023	AC	Triangular support, metal structure
T17_78	Target 17	5	5/11/2023	AC	Metal beams
T17_79	Target 17	5	5/11/2023	AC	Metal beam
T17_80	Target 17	5	5/11/2023	AC	Metal beam
T17_81	Target 17	5	5/11/2023	AC	Metal beam
T17_82	Target 17	5	5/11/2023	AC	Metal beams
T17_83	Target 17	5	5/11/2023	AC	Metal beam
T17_84	Target 17	5	5/11/2023	AC	Metal beam
T17_85	Target 17	5	5/11/2023	AC	Metal beam, pipe
T17_86	Target 17	5	5/11/2023	AC	Metal beam
T17_87	Target 17	5	5/11/2023	AC	Metal structure
T17_88	Target 17	5	5/11/2023	AC	Metal structure
T17_89	Target 17	5	5/11/2023	AC	Triangular support, metal structure
T17_90	Target 17	5	5/11/2023	AC	Triangular support, metal structure
T17_91	Target 17	5	5/11/2023	AC	Triangular support, metal structure
T17_92	Target 17	5	5/11/2023	AC	Linear metal railing/structure
T17_93	Target 17	5	5/11/2023	AC	Metal structure
T17_94	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_95	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_96	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_97	Target 17	5	5/11/2023	AC	Vertical metal rods/supports
T17_98	Target 17	5	5/11/2023	AC	Metal structure
T17_99	Target 17	5	5/11/2023	AC	Triangular support bracket, corner
T17_100	Target 17	5	5/11/2023	AC	Metal structure
T17_101	Target 17	5	5/11/2023	AC	Metal structure
T17_102	Target 17	5	5/11/2023	AC	Triangular support bracket
T17_103	Target 17	5	5/11/2023	AC	Metal beams
T17_104	Target 17	5	5/11/2023	AC	Metal structure, vertical rods, debris
T17_105	Target 17	5	5/11/2023	AC	Metal beam, rods

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 16**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T18_1	Target 18	4	5/12/2023	CM	Rock/coral ridge
T18_2	Target 18	4	5/12/2023	CM	Rock/coral ridge

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 17**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T20_1	Target 20	3	5/11/2023	JG	Unknown machinery
T20_2	Target 20	3	5/11/2023	JG	Unknown machinery
T20_3	Target 20	3	5/11/2023	JG	Unknown machinery
T20_4	Target 20	3	5/11/2023	JG	Unknown machinery
T20_5	Target 20	3	5/11/2023	JG	Unknown machinery
T20_6	Target 20	3	5/11/2023	JG	Unknown machinery
T20_7	Target 20	3	5/11/2023	JG	Unknown machinery
T20_8	Target 20	3	5/11/2023	JG	Unknown machinery
T20_9	Target 20	3	5/11/2023	JG	Unknown machinery
T20_10	Target 20	3	5/11/2023	JG	Unknown machinery
T20_11	Target 20	3	5/11/2023	JG	Unknown machinery
T20_12	Target 20	3	5/11/2023	JG	Unknown machinery
T20_13	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_14	Target 20	3	5/11/2023	JG	Unknown machinery
T20_15	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_16	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_17	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_18	Target 20	3	5/11/2023	JG	Unknown machinery
T20_19	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_20	Target 20	3	5/11/2023	JG	Unknown machinery
T20_21	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_22	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_23	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_24	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_25	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_26	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_27	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_28	Target 20	3	5/11/2023	JG	Corals
T20_29	Target 20	3	5/11/2023	JG	Unknown machinery, scale
T20_30	Target 20	3	5/11/2023	JG	Unknown machinery
T20_31	Target 20	3	5/11/2023	JG	Unknown machinery
T20_32	Target 20	3	5/11/2023	JG	Unknown machinery
T20_33	Target 20	3	5/11/2023	JG	Unknown machinery

File #	Target #	Survey Area	Date	Recorder	Description
T20_34	Target 20	3	5/11/2023	JG	Unknown machinery
T20_35	Target 20	3	5/11/2023	JG	Unknown machinery
T20_36	Target 20	3	5/11/2023	JG	Unknown machinery
T20_37	Target 20	3	5/11/2023	JG	Unknown machinery
T20_38	Target 20	3	5/11/2023	JG	Unknown machinery

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 18**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T21_1	Target 21	5	5/10/2023	AC	Metal frame with concretion
T21_2	Target 21	5	5/10/2023	AC	Metal frame with concretion
T21_3	Target 21	5	5/10/2023	AC	Joining frames and metal deck plating
T21_4	Target 21	5	5/10/2023	AC	Joining frames and metal deck plating
T21_5	Target 21	5	5/10/2023	AC	Metal structures
T21_6	Target 21	5	5/10/2023	AC	Metal structures
T21_7	Target 21	5	5/10/2023	AC	Metal structures
T21_8	Target 21	5	5/10/2023	AC	Metal deck plating, coral
T21_9	Target 21	5	5/10/2023	AC	Metal deck plating, coral
T21_10	Target 21	5	5/10/2023	AC	Metal frames
T21_11	Target 21	5	5/10/2023	AC	Metal frames
T21_12	Target 21	5	5/10/2023	AC	Single riveting butt straps
T21_13	Target 21	5	5/10/2023	AC	Single riveting butt straps
T21_14	Target 21	5	5/10/2023	AC	Single riveting butt straps
T21_15	Target 21	5	5/10/2023	AC	Single riveting butt straps
T21_16	Target 21	5	5/10/2023	AC	Open hatch, single riveting butt straps
T21_17	Target 21	5	5/10/2023	AC	Open hatch, single riveting butt straps
T21_18	Target 21	5	5/10/2023	AC	Joint frames
T21_19	Target 21	5	5/10/2023	AC	Joint frames
T21_20	Target 21	5	5/10/2023	AC	Metal structure
T21_21	Target 21	5	5/10/2023	AC	Metal structure
T21_22	Target 21	5	5/10/2023	AC	Metal structure
T21_23	Target 21	5	5/10/2023	AC	Metal structure
T21_24	Target 21	5	5/10/2023	AC	Metal structure
T21_25	Target 21	5	5/10/2023	AC	Metal structure
T21_26	Target 21	5	5/10/2023	AC	Metal frame
T21_27	Target 21	5	5/10/2023	AC	Metal frame
T21_28	Target 21	5	5/10/2023	AC	Metal frame
T21_29	Target 21	5	5/10/2023	AC	Metal frame
T21_30	Target 21	5	5/10/2023	AC	Metal frame
T21_31	Target 21	5	5/10/2023	AC	Metal frame
T21_32	Target 21	5	5/10/2023	AC	Metal beam
T21_33	Target 21	5	5/10/2023	AC	Metal beam

File #	Target #	Survey Area	Date	Recorder	Description
T21_34	Target 21	5	5/10/2023	AC	Metal beam
T21_35	Target 21	5	5/10/2023	AC	Metal beam
T21_36	Target 21	5	5/10/2023	AC	Cleat
T21_37	Target 21	5	5/10/2023	AC	Cleat
T21_38	Target 21	5	5/10/2023	AC	Cleat
T21_39	Target 21	5	5/10/2023	AC	Cleat
T21_40	Target 21	5	5/10/2023	AC	Cleat
T21_41	Target 21	5	5/10/2023	AC	Cleat
T21_42	Target 21	5	5/10/2023	AC	Rivet along beam with deck plating
T21_43	Target 21	5	5/10/2023	AC	Rivet along beam with deck plating
T21_44	Target 21	5	5/10/2023	AC	Metal plating, coral
T21_45	Target 21	5	5/10/2023	AC	Metal plating, coral
T21_46	Target 21	5	5/10/2023	AC	Metal plating, coral
T21_47	Target 21	5	5/10/2023	AC	Rivet along beam with deck plating
T21_48	Target 21	5	5/10/2023	AC	Rivet along beam with deck plating
T21_49	Target 21	5	5/10/2023	AC	Rivet along beam with deck plating
T21_50	Target 21	5	5/10/2023	AC	Rivet along beam with deck plating
T21_51	Target 21	5	5/10/2023	AC	Rivet along beam with deck plating
T21_52	Target 21	5	5/10/2023	AC	Metal frame
T21_53	Target 21	5	5/10/2023	AC	Metal frame
T21_54	Target 21	5	5/10/2023	AC	Metal frame
T21_55	Target 21	5	5/10/2023	AC	U-bolt
T21_56	Target 21	5	5/10/2023	AC	U-bolt
T21_57	Target 21	5	5/10/2023	AC	Metal structure, broken, dock line
T21_58	Target 21	5	5/10/2023	AC	Metal structure, broken, dock line
T21_59	Target 21	5	5/10/2023	AC	Dock line attached to structure
T21_60	Target 21	5	5/10/2023	AC	Dock line attached to structure
T21_61	Target 21	5	5/10/2023	AC	Dock line attached to structure
T21_62	Target 21	5	5/10/2023	AC	Metal structure with frames
T21_63	Target 21	5	5/10/2023	AC	Metal structure with frames
T21_64	Target 21	5	5/10/2023	AC	Metal structure with frames
T21_65	Target 21	5	5/10/2023	AC	Metal structure with frames
T21_66	Target 21	5	5/10/2023	AC	Metal structure with frames
T21_67	Target 21	5	5/10/2023	AC	Metal structure with frames
T21_68	Target 21	5	5/10/2023	AC	Metal deck plating
T21_69	Target 21	5	5/10/2023	AC	Metal deck plating
T21_70	Target 21	5	5/10/2023	AC	Metal deck plating
T21_71	Target 21	5	5/10/2023	AC	Metal deck plating
T21_72	Target 21	5	5/10/2023	AC	Single riveting butt straps, deck plating
T21_73	Target 21	5	5/10/2023	AC	Single riveting butt straps, deck plating

File #	Target #	Survey Area	Date	Recorder	Description
T21_74	Target 21	5	5/10/2023	AC	Single riveting butt straps, deck plating
T21_75	Target 21	5	5/10/2023	AC	Single riveting butt straps, deck plating
T21_76	Target 21	5	5/10/2023	AC	Single riveting butt straps, deck plating
T21_77	Target 21	5	5/10/2023	AC	Metal structure with frames and deck plating
T21_78	Target 21	5	5/10/2023	AC	Metal structure with frames and deck plating
T21_79	Target 21	5	5/10/2023	AC	Metal structure with frames and deck plating
T21_80	Target 21	5	5/10/2023	AC	Metal structure with frames and deck plating
T21_81	Target 21	5	5/10/2023	AC	Metal structure with frames and deck plating
T21_82	Target 21	5	5/10/2023	JG	Topside, submerged metal structure and frames
T21_83	Target 21	5	5/10/2023	JG	Topside, submerged metal structure and frames
T21_84	Target 21	5	5/10/2023	JG	Topside, submerged metal structure and frames
T21_85	Target 21	5	5/10/2023	JG	Topside, submerged metal structure and frames
T21_86	Target 21	5	5/10/2023	JG	Topside, AC and MN shallow diving target
T21_87	Target 21	5	5/10/2023	JG	Topside, AC and MN shallow diving target
T21_88	Target 21	5	5/10/2023	JG	Topside, AC and MN measuring length of target
T21_89	Target 21	5	5/10/2023	JG	Topside, AC and MN measuring length of target
T21_90	Target 21	5	5/10/2023	JG	Topside, AC and MN measuring width of target
T21_91	Target 21	5	5/10/2023	JG	Topside, target exposed during low tide
T21_92	Target 21	5	5/10/2023	JG	Topside, target exposed during low tide
T21_93	Target 21	5	5/10/2023	JG	Topside, target exposed during low tide
T21_94	Target 21	5	5/10/2023	JG	Topside, target exposed during low tide
T21_95	Target 21	5	5/10/2023	JG	Topside, target exposed during low tide
T21_96	Target 21	5	5/10/2023	JG	Topside, target exposed during low tide
T21_97	Target 21	5	5/10/2023	JG	Topside, target exposed during low tide
T21_98	Target 21	5	5/10/2023	JG	Topside, target exposed during low tide
T21_99	Target 21	5	5/10/2023	JG	Topside, target exposed during low tide

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 19**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T22_1	Target 22	5	5/10/2023	JG	Topside, AC and MN measuring length
T22_2	Target 22	5	5/10/2023	JG	Topside, MN measuring length
T22_3	Target 22	5	5/10/2023	JG	Topside, MN measuring length
T22_4	Target 22	5	5/10/2023	JG	Topside, frames of metal structure
T22_5	Target 22	5	5/10/2023	JG	Topside, submerged structure and exposed framing
T22_6	Target 22	5	5/10/2023	JG	Topside, submerged structure and exposed framing
T22_7	Target 22	5	5/10/2023	JG	Topside, submerged structure and exposed framing
T22_8	Target 22	5	5/10/2023	JG	Topside, submerged structure and exposed framing
T22_9	Target 22	5	5/10/2023	JG	Topside, exposed framing with PVC pipe
T22_10	Target 22	5	5/10/2023	JG	Topside, exposed framing with PVC pipe
T22_11	Target 22	5	5/10/2023	JG	Topside, exposed framing with PVC pipe
T22_12	Target 22	5	5/10/2023	JG	Topside, submerged structure
T22_13	Target 22	5	5/10/2023	JG	Topside, exposed framing with PVC pipe
T22_14	Target 22	5	5/10/2023	JG	Topside, exposed framing with PVC pipe
T22_15	Target 22	5	5/10/2023	JG	Topside, seawall
T22_16	Target 22	5	5/10/2023	JG	Topside, exposed framing with PVC pipe
T22_17	Target 22	5	5/10/2023	JG	Topside, exposed framing with PVC pipe
T22_18	Target 23	5	5/10/2023	JG	Topside, partially exposed frames
T22_19	Target 24	5	5/10/2023	JG	Topside, partially exposed frames, PVS pipe

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 20**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T23_1	Target 23	3	5/10/2023	AC	Anchor
T23_2	Target 23	3	5/10/2023	AC	Anchor
T23_3	Target 23	3	5/10/2023	AC	Anchor
T23_4	Target 23	3	5/10/2023	AC	Metal debris
T23_5	Target 23	3	5/10/2023	AC	Metal debris
T23_6	Target 23	3	5/10/2023	AC	Metal debris
T23_7	Target 23	3	5/10/2023	AC	Metal frames/structure
T23_8	Target 23	3	5/10/2023	AC	Metal frames/structure
T23_9	Target 23	3	5/10/2023	AC	Metal structure, cylindrical feature
T23_10	Target 23	3	5/10/2023	AC	Metal frames/structure
T23_11	Target 23	3	5/10/2023	AC	Metal frames/structure
T23_12	Target 23	3	5/10/2023	AC	Metal structure, reinforced keelson
T23_13	Target 23	3	5/10/2023	AC	Engine
T23_14	Target 23	3	5/10/2023	AC	Engine block, metal frames
T23_15	Target 23	3	5/10/2023	AC	Prop shafts
T23_16	Target 23	3	5/10/2023	AC	Engine, prop shaft
T23_17	Target 23	3	5/10/2023	AC	Engine, prop shaft
T23_18	Target 23	3	5/10/2023	AC	Prop shafts
T23_19	Target 23	3	5/10/2023	AC	Prop shafts
T23_20	Target 23	3	5/10/2023	AC	Propeller prop and shaft
T23_21	Target 23	3	5/11/2023	AC	Propeller
T23_22	Target 23	3	5/12/2023	AC	Anchor under prop
T23_23	Target 23	3	5/13/2023	AC	Anchor under prop
T23_24	Target 23	3	5/14/2023	AC	Propeller
T23_25	Target 23	3	5/15/2023	AC	Propeller
T23_26	Target 23	3	5/16/2023	AC	Anchor
T23_27	Target 23	3	5/11/2023	MN	Propeller prop and shaft
T23_28	Target 23	3	5/11/2023	MN	Propeller prop and shaft
T23_29	Target 23	3	5/11/2023	MN	Propeller prop and shaft
T23_30	Target 23	3	5/11/2023	MN	Propeller prop and shaft
T23_31	Target 23	3	5/11/2023	MN	CM documenting structure
T23_32	Target 23	3	5/11/2023	MN	Propeller
T23_33	Target 23	3	5/11/2023	MN	Blur

File #	Target #	Survey Area	Date	Recorder	Description
T23_34	Target 23	3	5/11/2023	MN	Propeller, scale
T23_35	Target 23	3	5/11/2023	MN	Propeller, scale
T23_36	Target 23	3	5/11/2023	MN	Propeller, scale
T23_37	Target 23	3	5/11/2023	MN	Propeller, scale
T23_38	Target 23	3	5/11/2023	MN	Propeller, scale
T23_39	Target 23	3	5/11/2023	MN	Propeller, scale
T23_40	Target 23	3	5/11/2023	MN	Propeller, scale
T23_41	Target 23	3	5/11/2023	MN	Propeller, scale
T23_42	Target 23	3	5/11/2023	MN	Propeller, scale
T23_43	Target 23	3	5/11/2023	MN	Propeller, scale
T23_44	Target 23	3	5/11/2023	MN	Propeller, scale
T23_45	Target 23	3	5/11/2023	MN	Anchor, scale
T23_46	Target 23	3	5/11/2023	MN	Anchor, scale
T23_47	Target 23	3	5/11/2023	MN	Anchor, scale
T23_48	Target 23	3	5/11/2023	MN	Anchor, scale
T23_49	Target 23	3	5/11/2023	MN	Anchor, scale
T23_50	Target 23	3	5/11/2023	MN	Anchor, scale
T23_51	Target 23	3	5/11/2023	MN	Anchor, scale
T23_52	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_53	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_54	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_55	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_56	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_57	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_58	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_59	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_60	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_61	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_62	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_63	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_64	Target 23	3	5/11/2023	MN	Propeller, prop and shaft, scale
T23_65	Target 23	3	5/11/2023	MN	CM beside propeller
T23_66	Target 23	3	5/11/2023	MN	CM beside propeller
T23_67	Target 23	3	5/11/2023	MN	Radiator, scale, prop shaft
T23_68	Target 23	3	5/11/2023	MN	Radiator, scale, prop shaft
T23_69	Target 23	3	5/11/2023	MN	Radiator, scale, prop shaft
T23_70	Target 23	3	5/11/2023	MN	Radiator, scale, prop shaft
T23_71	Target 23	3	5/11/2023	MN	Radiator, scale
T23_72	Target 23	3	5/11/2023	MN	Radiator, scale
T23_73	Target 23	3	5/11/2023	MN	Radiator, scale

File #	Target #	Survey Area	Date	Recorder	Description
T23_74	Target 23	3	5/11/2023	MN	Radiator, scale
T23_75	Target 23	3	5/11/2023	MN	Radiator, scale
T23_76	Target 23	3	5/11/2023	MN	Radiator, scale
T23_77	Target 23	3	5/11/2023	MN	Radiator, scale, prop shaft, CM
T23_78	Target 23	3	5/11/2023	MN	Radiator, scale, prop shaft
T23_79	Target 23	3	5/11/2023	MN	Radiators
T23_80	Target 23	3	5/11/2023	MN	Radiator, scale, prop shaft
T23_81	Target 23	3	5/11/2023	MN	Radiator, scale, prop shaft
T23_82	Target 23	3	5/11/2023	MN	Radiator, scale, prop shaft, cylindrical structure, CM
T23_83	Target 23	3	5/11/2023	MN	Radiator, scale, prop shaft, cylindrical structure, CM
T23_84	Target 23	3	5/11/2023	MN	Cylindrical structure, scale
T23_85	Target 23	3	5/11/2023	MN	Cylindrical structure, scale
T23_86	Target 23	3	5/11/2023	MN	Cylindrical structure, scale
T23_87	Target 23	3	5/11/2023	MN	Cylindrical structure, scale
T23_88	Target 23	3	5/11/2023	MN	Cylindrical structure, scale
T23_89	Target 23	3	5/11/2023	MN	Cylindrical structure, scale
T23_90	Target 23	3	5/11/2023	MN	Cylindrical structure, scale
T23_91	Target 23	3	5/11/2023	MN	Radiator, prop shaft, cylindrical structure
T23_92	Target 23	3	5/11/2023	MN	Radiator, prop shaft, cylindrical structure
T23_93	Target 23	3	5/11/2023	MN	Radiator, prop shaft, cylindrical structure
T23_94	Target 23	3	5/11/2023	MN	Engines, prop shafts
T23_95	Target 23	3	5/11/2023	MN	Engines, prop shafts
T23_96	Target 23	3	5/11/2023	MN	Engines, prop shafts
T23_97	Target 23	3	5/11/2023	MN	Engines, prop shafts
T23_98	Target 23	3	5/11/2023	MN	Engines, prop shafts
T23_99	Target 23	3	5/11/2023	MN	Engines, prop shafts
T23_100	Target 23	3	5/11/2023	MN	Engines, prop shafts
T23_101	Target 23	3	5/11/2023	MN	Engine, scale, CM
T23_102	Target 23	3	5/11/2023	MN	Engine, scale, CM
T23_103	Target 23	3	5/11/2023	MN	Engine, scale, CM
T23_104	Target 23	3	5/11/2023	MN	Engine, scale, CM
T23_105	Target 23	3	5/11/2023	MN	Engine, scale
T23_106	Target 23	3	5/11/2023	MN	Engine, scale
T23_107	Target 23	3	5/11/2023	MN	Engine, scale, CM
T23_108	Target 23	3	5/11/2023	MN	Engine, scale, CM
T23_109	Target 23	3	5/11/2023	MN	Engine, scale
T23_110	Target 23	3	5/11/2023	MN	Engine
T23_111	Target 23	3	5/11/2023	MN	Engine, CM
T23_112	Target 23	3	5/11/2023	MN	Engine
T23_113	Target 23	3	5/11/2023	MN	Engine

File #	Target #	Survey Area	Date	Recorder	Description
T23_114	Target 23	3	5/11/2023	MN	Engine, scale
T23_115	Target 23	3	5/11/2023	MN	Engine
T23_116	Target 23	3	5/11/2023	MN	Engine
T23_117	Target 23	3	5/11/2023	MN	Engine, scale
T23_118	Target 23	3	5/11/2023	MN	Engine, scale, metal structure
T23_119	Target 23	3	5/11/2023	MN	Engine, scale, metal structure
T23_120	Target 23	3	5/11/2023	MN	Engine, scale
T23_121	Target 23	3	5/11/2023	MN	Engine, scale
T23_122	Target 23	3	5/11/2023	MN	Engine, scale
T23_123	Target 23	3	5/11/2023	MN	Metal structure
T23_124	Target 23	3	5/11/2023	MN	Metal structure
T23_125	Target 23	3	5/11/2023	MN	Metal structure, reinforced keelson with triangular supports
T23_126	Target 23	3	5/11/2023	MN	Engine/windlass, CM
T23_127	Target 23	3	5/11/2023	MN	Engine/windlass, CM
T23_128	Target 23	3	5/11/2023	MN	Engine/windlass
T23_129	Target 23	3	5/11/2023	MN	Engine/windlass, CM
T23_130	Target 23	3	5/11/2023	MN	Engine/windlass, CM
T23_131	Target 23	3	5/11/2023	MN	Engine/windlass, scale
T23_132	Target 23	3	5/11/2023	MN	Engine/windlass, scale
T23_133	Target 23	3	5/11/2023	MN	Engine/windlass, scale
T23_134	Target 23	3	5/11/2023	MN	Engine/windlass, scale
T23_135	Target 23	3	5/11/2023	MN	Reinforced keelson with triangular supports
T23_136	Target 23	3	5/11/2023	MN	Reinforced keelson with triangular supports
T23_137	Target 23	3	5/11/2023	MN	Reinforced keelson with triangular supports
T23_138	Target 23	3	5/11/2023	MN	Reinforced keelson with triangular supports
T23_139	Target 23	3	5/11/2023	JG	Serial number on fastener, scale
T23_140	Target 23	3	5/11/2023	JG	Serial number on fastener, scale
T23_141	Target 23	3	5/11/2023	JG	Serial number on fastener, scale
T23_142	Target 23	3	5/11/2023	JG	Serial number on fastener, scale
T23_143	Target 23	3	5/11/2023	JG	Serial number on fastener, scale
T23_144	Target 23	3	5/11/2023	JG	Copper fastenings
T23_145	Target 23	3	5/11/2023	JG	Copper fastenings, scale
T23_146	Target 23	3	5/11/2023	JG	Copper fastenings, scale
T23_147	Target 23	3	5/11/2023	JG	CM, propeller prop and shaft
T23_148	Target 23	3	5/11/2023	JG	CM, propeller prop and shaft
T23_149	Target 23	3	5/11/2023	JG	Possible coin
T23_150	Target 23	3	5/11/2023	JG	Possible coin
T23_151	Target 23	3	5/11/2023	JG	Possible coin
T23_152	Target 23	3	5/11/2023	JG	Possible coin
T23_153	Target 23	3	5/11/2023	JG	Possible coin in center of cylindrical structure

File #	Target #	Survey Area	Date	Recorder	Description
T23_154	Target 23	3	5/11/2023	JG	Possible coin in center of cylindrical structure
T23_155	Target 23	3	5/11/2023	JG	Possible coin
T23_156	Target 23	3	5/11/2023	JG	Possible coin
T23_157	Target 23	3	5/11/2023	JG	Possible coin
T23_158	Target 23	3	5/11/2023	JG	Hosing under prop
T23_159	Target 23	3	5/11/2023	JG	Hosing under prop
T23_160	Target 23	3	5/11/2023	JG	Hosing under prop
T23_161	Target 23	3	5/11/2023	JG	Hosing under prop
T23_162	Target 23	3	5/11/2023	JG	Copper fastenings
T23_163	Target 23	3	5/11/2023	JG	Exposed pipe
T23_164	Target 23	3	5/11/2023	JG	Exposed pipe
T23_165	Target 23	3	5/11/2023	JG	Hosing under prop
T23_166	Target 23	3	5/11/2023	JG	Engine, metal structure
T23_167	Target 23	3	5/11/2023	JG	Engine, metal structure
T23_168	Target 23	3	5/11/2023	JG	Engine, metal structure
T23_169	Target 23	3	5/11/2023	JG	Engine
T23_170	Target 23	3	5/11/2023	JG	Engine, metal structure
T23_171	Target 23	3	5/11/2023	JG	Engine, metal structure
T23_172	Target 23	3	5/11/2023	JG	Engine, metal structure
T23_173	Target 23	3	5/11/2023	JG	Engine, metal structure
T23_174	Target 23	3	5/11/2023	JG	Copper fastenings
T23_175	Target 23	3	5/11/2023	JG	Copper fastenings
T23_176	Target 23	3	5/11/2023	JG	Copper fastenings
T23_177	Target 23	3	5/11/2023	JG	Copper fastenings
T23_178	Target 23	3	5/11/2023	JG	Engine, metal structure
T23_179	Target 23	3	5/11/2023	JG	Engine, metal structure
T23_180	Target 23	3	5/11/2023	JG	Copper fastenings
T23_181	Target 23	3	5/11/2023	JG	Copper fastenings
T23_182	Target 23	3	5/11/2023	JG	Copper fastenings
T23_183	Target 23	3	5/11/2023	JG	Hosing
T23_184	Target 23	3	5/11/2023	JG	Surrounding environment
T23_185	Target 23	3	5/11/2023	JG	Surrounding environment
T23_186	Target 23	3	5/11/2023	JG	Surrounding environment
T23_187	Target 23	3	5/11/2023	JG	Surrounding environment
T23_188	Target 23	3	5/11/2023	JG	Surrounding environment
T23_189	Target 23	3	5/11/2023	JG	Propeller, prop and shaft
T23_190	Target 23	3	5/11/2023	JG	Propeller, prop and shaft
T23_191	Target 23	3	5/11/2023	JG	Propeller, prop and shaft
T23_192	Target 23	3	5/11/2023	JG	Propeller, prop and shaft
T23_193	Target 23	3	5/11/2023	JG	Possible coin

File #	Target #	Survey Area	Date	Recorder	Description
T23_194	Target 23	3	5/11/2023	JG	Possible coin
T23_195	Target 23	3	5/11/2023	JG	Copper fastenings
T23_196	Target 23	3	5/11/2023	JG	Copper fastenings, blurry
T23_197	Target 23	3	5/11/2023	JG	Engine
T23_198	Target 23	3	5/10/2023	JN	Metal structure, shallow waters
T23_199	Target 23	3	5/10/2023	JN	Metal structure, metal framing, shallow waters
T23_200	Target 23	3	5/10/2023	JN	Metal structure, metal framing, shallow waters, partially exposed
T23_201	Target 23	3	5/10/2023	JN	Reinforced keelson with triangular supports
T23_202	Target 23	3	5/10/2023	JN	Metal debris
T23_203	Target 23	3	5/10/2023	JN	Metal frames/structure
T23_204	Target 23	3	5/10/2023	JN	Metal frames/structure, reinforced keelson with triangular supports
T23_205	Target 23	3	5/10/2023	JN	Metal frames/structure
T23_206	Target 23	3	5/10/2023	JN	Metal frames/structure
T23_207	Target 23	3	5/10/2023	JN	Metal frames/structure
T23_208	Target 23	3	5/10/2023	JN	Metal frames/structure
T23_209	Target 23	3	5/10/2023	JN	Metal frames/structure, reinforced keelson with triangular supports
T23_210	Target 23	3	5/10/2023	JN	Metal frames/structure
T23_211	Target 23	3	5/10/2023	JN	Metal frames/structure
T23_212	Target 23	3	5/10/2023	JN	Metal frames/structure, reinforced keelson with triangular supports
T23_213	Target 23	3	5/10/2023	JN	Metal frames/structure, reinforced keelson with triangular supports
T23_214	Target 23	3	5/10/2023	JN	Metal structure
T23_215	Target 23	3	5/10/2023	JN	Metal structure
T23_216	Target 23	3	5/10/2023	JN	Metal frames/structure, chain
T23_217	Target 23	3	5/10/2023	JN	Engine, metal structure
T23_218	Target 23	3	5/10/2023	JN	Engine, metal structure
T23_219	Target 23	3	5/10/2023	JN	Radiators, propeller shafts
T23_220	Target 23	3	5/10/2023	JN	Anchor
T23_221	Target 23	3	5/10/2023	JN	Propeller prop
T23_222	Target 23	3	5/10/2023	JN	Propeller prop and shaft, AC
T23_223	Target 23	3	5/10/2023	JN	Propeller
T23_224	Target 23	3	5/10/2023	JN	AC reeling tape out for measurement
T23_225	Target 23	3	5/10/2023	JN	AC reeling tape out for measurement
T23_226	Target 23	3	5/10/2023	JN	Engine
T23_227	Target 23	3	5/10/2023	JN	Engine
T23_228	Target 23	3	5/10/2023	JN	Blur
T23_229	Target 23	3	5/10/2023	JN	Windlass
T23_230	Target 23	3	5/10/2023	JN	Reinforced keelson with triangular supports

File #	Target #	Survey Area	Date	Recorder	Description
T23_231	Target 23	3	5/10/2023	JN	Reinforced keelson with triangular supports, AC reeling tape out
T23_232	Target 23	3	5/10/2023	JN	Reinforced keelson with triangular supports, AC reeling tape out
T23_233	Target 23	3	5/10/2023	JN	Reinforced keelson with triangular supports, AC reeling tape out
T23_234	Target 23	3	5/10/2023	JN	Reinforced keelson with triangular supports
T23_235	Target 23	3	5/10/2023	JN	Reinforced keelson with triangular supports
T23_236	Target 23	3	5/10/2023	JN	Cylindrical structure
T23_237	Target 23	3	5/10/2023	JN	Reinforced keelson with triangular supports
T23_238	Target 23	3	5/10/2023	JN	Reinforced keelson with triangular supports
T23_239	Target 23	3	5/10/2023	JN	Engines, prop shafts
T23_240	Target 23	3	5/10/2023	JN	Engines, metal structure, metal frames
T23_241	Target 23	3	5/10/2023	JN	Radiators
T23_242	Target 23	3	5/10/2023	JN	Cylindrical structure
T23_243	Target 23	3	5/10/2023	JN	Propeller prop and shaft
T23_244	Target 23	3	5/10/2023	JN	Anchor under prop
T23_245	Target 23	3	5/10/2023	JN	Anchor under prop
T23_246	Target 23	3	5/10/2023	JN	Anchor, propeller prop and shaft
T23_247	Target 23	3	5/10/2023	JN	Propeller prop and shaft
T23_248	Target 23	3	5/10/2023	JN	Probable windlass
T23_249	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_250	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_251	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_252	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_253	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_254	Target 23	3	5/11/2023	CM	MN documenting target
T23_255	Target 23	3	5/11/2023	CM	MN documenting target
T23_256	Target 23	3	5/11/2023	CM	MN documenting target
T23_257	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_258	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_259	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_260	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_261	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_262	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_263	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_264	Target 23	3	5/11/2023	CM	Anchor
T23_265	Target 23	3	5/11/2023	CM	Anchor
T23_266	Target 23	3	5/11/2023	CM	Anchor
T23_267	Target 23	3	5/11/2023	CM	MN documenting propeller
T23_268	Target 23	3	5/11/2023	CM	Propeller prop, scale

File #	Target #	Survey Area	Date	Recorder	Description
T23_269	Target 23	3	5/11/2023	CM	Propeller prop, scale
T23_270	Target 23	3	5/11/2023	CM	Propeller prop, scale
T23_271	Target 23	3	5/11/2023	CM	MN documenting anchor, scale
T23_272	Target 23	3	5/11/2023	CM	Anchor, scale
T23_273	Target 23	3	5/11/2023	CM	Anchor, scale
T23_274	Target 23	3	5/11/2023	CM	Anchor, scale
T23_275	Target 23	3	5/11/2023	CM	Anchor, scale
T23_276	Target 23	3	5/11/2023	CM	Propeller prop and shaft
T23_277	Target 23	3	5/11/2023	CM	MN documenting propeller
T23_278	Target 23	3	5/11/2023	CM	MN documenting propeller
T23_279	Target 23	3	5/11/2023	CM	MN documenting propeller
T23_280	Target 23	3	5/11/2023	CM	MN documenting propeller
T23_281	Target 23	3	5/11/2023	CM	Radiators, propeller shafts
T23_282	Target 23	3	5/11/2023	CM	Radiators, propeller shafts, scale
T23_283	Target 23	3	5/11/2023	CM	Radiators, propeller shafts, scale
T23_284	Target 23	3	5/11/2023	CM	Radiators, propeller shafts, scale
T23_285	Target 23	3	5/11/2023	CM	Cylindrical structure
T23_286	Target 23	3	5/11/2023	CM	Cylindrical structure
T23_287	Target 23	3	5/11/2023	CM	Cylindrical structure
T23_288	Target 23	3	5/11/2023	CM	Anchor under prop
T23_289	Target 23	3	5/11/2023	CM	Anchor under prop
T23_290	Target 23	3	5/11/2023	CM	Anchor under prop
T23_291	Target 23	3	5/11/2023	CM	Anchor under prop
T23_292	Target 23	3	5/11/2023	CM	Anchor under prop
T23_293	Target 23	3	5/11/2023	CM	MN documenting target
T23_294	Target 23	3	5/11/2023	CM	Engines, prop shafts
T23_295	Target 23	3	5/11/2023	CM	MN documenting engine
T23_296	Target 23	3	5/11/2023	CM	Metal structure
T23_297	Target 23	3	5/11/2023	CM	Engines
T23_298	Target 23	3	5/11/2023	CM	Metal structure, framing
T23_299	Target 23	3	5/11/2023	CM	Engine
T23_300	Target 23	3	5/11/2023	CM	Engine
T23_301	Target 23	3	5/11/2023	CM	Engine
T23_302	Target 23	3	5/11/2023	CM	Engine
T23_303	Target 23	3	5/11/2023	CM	Engine, CM
T23_304	Target 23	3	5/11/2023	CM	Engine
T23_305	Target 23	3	5/11/2023	CM	Engine, CM
T23_306	Target 23	3	5/11/2023	CM	Engine, scale
T23_307	Target 23	3	5/11/2023	CM	Engine, scale
T23_308	Target 23	3	5/11/2023	CM	MN documenting engine

File #	Target #	Survey Area	Date	Recorder	Description
T23_309	Target 23	3	5/11/2023	CM	Engine
T23_310	Target 23	3	5/11/2023	CM	Engine
T23_311	Target 23	3	5/11/2023	CM	Probable windlass
T23_312	Target 23	3	5/11/2023	CM	Probable windlass
T23_313	Target 23	3	5/11/2023	CM	Probable windlass
T23_314	Target 23	3	5/11/2023	CM	Probable windlass, MN
T23_315	Target 23	3	5/11/2023	CM	Probable windlass, MN, scale
T23_316	Target 23	3	5/11/2023	CM	Reinforced keelson with triangular supports
T23_317	Target 23	3	5/11/2023	CM	Reinforced keelson with triangular supports
T23_318	Target 23	3	5/11/2023	CM	Copper fastener
T23_319	Target 23	3	5/11/2023	CM	Cylindrical structure
T23_320	Target 23	3	5/11/2023	CM	Cylindrical structure
T23_321	Target 23	3	5/11/2023	CM	Serial number on fastener
T23_322	Target 23	3	5/11/2023	CM	Serial number on fastener
T23_323	Target 23	3	5/11/2023	CM	Serial number on fastener
T23_324	Target 23	3	5/11/2023	CM	Serial number on fastener
T23_325	Target 23	3	5/11/2023	CM	Serial number on fastener
T23_326	Target 23	3	5/11/2023	CM	Serial number on fastener
T23_327	Target 23	3	5/11/2023	CM	Serial number on fastener
T23_328	Target 23	3	5/11/2023	CM	Copper fasteners
T23_329	Target 23	3	5/11/2023	CM	Copper fasteners
T23_330	Target 23	3	5/11/2023	CM	Copper fasteners
T23_331	Target 23	3	5/11/2023	CM	Copper fasteners
T23_332	Target 23	3	5/11/2023	CM	CM
T23_333	Target 23	3	5/11/2023	CM	CM
T23_334	Target 23	3	5/11/2023	CM	CM
T23_335	Target 23	3	5/11/2023	CM	CM
T23_336	Target 23	3	5/11/2023	CM	CM
T23_337	Target 23	3	5/11/2023	CM	Topside, artifacts
T23_338	Target 23	3	5/11/2023	CM	Topside, artifacts
T23_339	Target 23	3	5/10/2023	JG	Topside, anchor, prop shaft
T23_340	Target 23	3	5/10/2023	JG	Topside, anchor, prop shaft
T23_341	Target 23	3	5/10/2023	JG	Topside, anchor, prop shaft
T23_342	Target 23	3	5/10/2023	JG	Topside, anchor, prop shaft
T23_343	Target 23	3	5/10/2023	JG	Topside, anchor, prop shaft
T23_344	Target 23	3	5/10/2023	JG	Topside, anchor
T23_345	Target 23	3	5/10/2023	JG	Topside, anchor
T23_346	Target 23	3	5/10/2023	JG	Topside, anchor
T23_347	Target 23	3	5/10/2023	JG	Topside, anchor
T23_348	Target 23	3	5/10/2023	JG	Topside, propeller

File #	Target #	Survey Area	Date	Recorder	Description
T23_349	Target 23	3	5/10/2023	JG	Topside, anchor
T23_350	Target 23	3	5/10/2023	JG	Topside, anchor
T23_351	Target 23	3	5/10/2023	JG	Topside, anchor
T23_352	Target 23	3	5/10/2023	JG	Topside, anchor
T23_353	Target 23	3	5/10/2023	JG	Topside, propeller, anchor
T23_354	Target 23	3	5/10/2023	JG	Topside, propeller
T23_355	Target 23	3	5/10/2023	JG	Topside, propeller

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 21**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T24_1	Target 24	3	5/11/2023	AC	Anchor, scale
T24_2	Target 24	3	5/11/2023	AC	Anchor, scale
T24_3	Target 24	3	5/11/2023	AC	Porthole, scale
T24_4	Target 24	3	5/11/2023	AC	Porthole, scale
T24_5	Target 24	3	5/11/2023	AC	Measurement of anchor fluke
T24_6	Target 24	3	5/11/2023	AC	Measurement of anchor fluke
T24_7	Target 24	3	5/11/2023	AC	Measurement of anchor fluke
T24_8	Target 24	3	5/11/2023	AC	Measurement of anchor fluke
T24_9	Target 24	3	5/11/2023	AC	Measurement of anchor fluke
T24_10	Target 24	3	5/11/2023	AC	Concreted metal coil, scale
T24_11	Target 24	3	5/11/2023	AC	Concreted metal coil, scale
T24_12	Target 24	3	5/11/2023	AC	Concreted metal coil, scale
T24_13	Target 24	3	5/11/2023	AC	Concreted metal coil, scale
T24_14	Target 24	3	5/11/2023	AC	Concreted metal coil, scale
T24_15	Target 24	3	5/11/2023	AC	Concreted metal coil, scale
T24_16	Target 24	3	5/11/2023	AC	Concreted metal coil, scale
T24_17	Target 24	3	5/11/2023	AC	Concreted metal coil, scale
T24_18	Target 24	3	5/11/2023	AC	Windlass, scale
T24_19	Target 24	3	5/11/2023	AC	Windlass, scale
T24_20	Target 24	3	5/11/2023	AC	Windlass, scale
T24_21	Target 24	3	5/11/2023	AC	Windlass, scale
T24_22	Target 24	3	5/11/2023	AC	Chain, scale
T24_23	Target 24	3	5/11/2023	AC	Chain, scale
T24_24	Target 24	3	5/11/2023	AC	Chain, scale
T24_25	Target 24	3	5/11/2023	AC	Chain, scale
T24_26	Target 24	3	5/11/2023	AC	Chain, scale
T24_27	Target 24	3	5/11/2023	AC	Smokestack/steam
T24_28	Target 24	3	5/11/2023	AC	Smokestack/steam
T24_29	Target 24	3	5/11/2023	AC	Smokestack/steam
T24_30	Target 24	3	5/11/2023	AC	Smokestack/steam
T24_31	Target 24	3	5/11/2023	AC	Smokestack/steam
T24_32	Target 24	3	5/11/2023	AC	Smokestack/steam
T24_33	Target 24	3	5/11/2023	AC	Smokestack/steam

File #	Target #	Survey Area	Date	Recorder	Description
T24_34	Target 24	3	5/11/2023	AC	Smokestack/steam
T24_35	Target 24	3	5/11/2023	AC	Smokestack/steam
T24_36	Target 24	3	5/11/2023	AC	Metal structural debris
T24_37	Target 24	3	5/11/2023	AC	Metal structural debris
T24_38	Target 24	3	5/11/2023	AC	Metal structural debris
T24_39	Target 24	3	5/11/2023	AC	Metal structural debris
T24_40	Target 24	3	5/11/2023	AC	Metal structural debris
T24_41	Target 24	3	5/11/2023	AC	Chain
T24_42	Target 24	3	5/11/2023	AC	Chain
T24_43	Target 24	3	5/11/2023	AC	Chain
T24_44	Target 24	3	5/11/2023	AC	Chain
T24_45	Target 24	3	5/11/2023	AC	Chain
T24_46	Target 24	3	5/11/2023	AC	Chain
T24_47	Target 24	3	5/11/2023	AC	Chain
T24_48	Target 24	3	5/11/2023	AC	Chain
T24_49	Target 24	3	5/11/2023	AC	Chain
T24_50	Target 24	3	5/11/2023	AC	Chain
T24_51	Target 24	3	5/11/2023	AC	Chain
T24_52	Target 24	3	5/11/2023	AC	Chain
T24_53	Target 24	3	5/11/2023	AC	Chain
T24_54	Target 24	3	5/11/2023	AC	Boiler
T24_55	Target 24	3	5/11/2023	AC	Boiler
T24_56	Target 24	3	5/11/2023	AC	Boiler, scale
T24_57	Target 24	3	5/11/2023	AC	Boiler, scale
T24_58	Target 24	3	5/11/2023	AC	Boiler, scale
T24_59	Target 24	3	5/11/2023	AC	Boiler, scale
T24_60	Target 24	3	5/11/2023	AC	Metal structural debris, scale
T24_61	Target 24	3	5/11/2023	AC	Metal structural debris, scale
T24_62	Target 24	3	5/11/2023	AC	Metal structural debris, scale
T24_63	Target 24	3	5/11/2023	AC	Metal structural debris, scale
T24_64	Target 24	3	5/11/2023	AC	Metal structural debris, scale
T24_65	Target 24	3	5/11/2023	AC	Metal structural debris, scale
T24_66	Target 24	3	5/11/2023	AC	Metal structural debris, scale
T24_67	Target 24	3	5/11/2023	AC	Metal structural debris, scale
T24_68	Target 24	3	5/11/2023	AC	Metal structural debris, scale
T24_69	Target 24	3	5/11/2023	AC	Chain, Scale
T24_70	Target 24	3	5/11/2023	AC	Chain, Scale
T24_71	Target 24	3	5/11/2023	AC	Chain, Scale
T24_72	Target 24	3	5/11/2023	AC	Chain, Scale
T24_73	Target 24	3	5/11/2023	AC	Windlass, scale

File #	Target #	Survey Area	Date	Recorder	Description
T24_74	Target 24	3	5/11/2023	AC	Windlass, scale
T24_75	Target 24	3	5/11/2023	AC	Windlass, scale
T24_76	Target 24	3	5/11/2023	AC	Windlass, scale
T24_77	Target 24	3	5/11/2023	AC	Windlass, scale
T24_78	Target 24	3	5/11/2023	AC	Windlass, scale
T24_79	Target 24	3	5/11/2023	AC	Debris field
T24_80	Target 24	3	5/11/2023	AC	Debris field
T24_81	Target 24	3	5/11/2023	AC	Debris field
T24_82	Target 24	3	5/11/2023	AC	Debris field
T24_83	Target 24	3	5/11/2023	AC	Debris field
T24_84	Target 24	3	5/11/2023	AC	Debris field
T24_85	Target 24	3	5/11/2023	AC	Debris field
T24_86	Target 24	3	5/11/2023	AC	Porthole, scale
T24_87	Target 24	3	5/11/2023	AC	Porthole, scale
T24_88	Target 24	3	5/11/2023	AC	Porthole, scale
T24_89	Target 24	3	5/11/2023	AC	Porthole, scale
T24_90	Target 24	3	5/11/2023	AC	Porthole, scale
T24_91	Target 24	3	5/11/2023	AC	Porthole, scale
T24_92	Target 24	3	5/11/2023	AC	Metal structural debris
T24_93	Target 24	3	5/11/2023	AC	Metal structural debris
T24_94	Target 24	3	5/11/2023	AC	Metal structural debris
T24_95	Target 24	3	5/11/2023	AC	Metal structural debris
T24_96	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_97	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_98	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_99	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_100	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_101	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_102	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_103	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_104	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_105	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_106	Target 24	3	5/11/2023	AC	Metal framing, scale
T24_107	Target 24	3	5/11/2023	AC	Metal framing
T24_108	Target 24	3	5/11/2023	AC	Metal framing
T24_109	Target 24	3	5/11/2023	AC	Metal container/probable battery, scale
T24_110	Target 24	3	5/11/2023	AC	Metal container/probable battery, scale
T24_111	Target 24	3	5/11/2023	AC	Metal small coil, scale
T24_112	Target 24	3	5/11/2023	AC	Metal small coil, scale
T24_113	Target 24	3	5/11/2023	AC	Metal small coil, scale

File #	Target #	Survey Area	Date	Recorder	Description
T24_114	Target 24	3	5/11/2023	AC	Metal small coil, scale
T24_115	Target 24	3	5/11/2023	AC	Metal small coil, scale
T24_116	Target 24	3	5/11/2023	AC	Mooring bits, scale
T24_117	Target 24	3	5/11/2023	AC	Mooring bits, scale
T24_118	Target 24	3	5/11/2023	AC	Mooring bits, scale
T24_119	Target 24	3	5/11/2023	AC	Mooring bits, scale
T24_120	Target 24	3	5/11/2023	AC	Mooring bits diameter, scale
T24_121	Target 24	3	5/11/2023	AC	Mooring bits diameter, scale
T24_122	Target 24	3	5/11/2023	AC	Metal structural debris
T24_123	Target 24	3	5/11/2023	AC	Metal structural debris
T24_124	Target 24	3	5/11/2023	AC	Metal structural debris
T24_125	Target 24	3	5/11/2023	AC	Metal structural debris
T24_126	Target 24	3	5/11/2023	AC	Metal structural debris, smokestack/steam, scale
T24_127	Target 24	3	5/11/2023	AC	Metal structural debris, smokestack/steam, scale
T24_128	Target 24	3	5/11/2023	AC	Metal structural debris, smokestack/steam, scale
T24_129	Target 24	3	5/11/2023	AC	Metal structural debris, smokestack/steam, scale
T24_130	Target 24	3	5/11/2023	AC	Metal structural debris, smokestack/steam, scale
T24_131	Target 24	3	5/11/2023	AC	Metal structural debris, smokestack/steam, scale
T24_132	Target 24	3	5/11/2023	AC	Metal structural debris, smokestack/steam, scale
T24_133	Target 24	3	5/11/2023	AC	Metal structural debris, smokestack/steam, scale
T24_134	Target 24	3	5/11/2023	AC	Metal fastener (?), scale
T24_135	Target 24	3	5/11/2023	AC	Metal fastener (?), scale
T24_136	Target 24	3	5/11/2023	AC	Metal fastener (?), scale
T24_137	Target 24	3	5/11/2023	AC	Metal fastener (?), scale
T24_138	Target 24	3	5/11/2023	AC	Metal fastener (?), scale
T24_139	Target 24	3	5/11/2023	AC	Metal fastener (?), scale
T24_140	Target 24	3	5/11/2023	AC	Metal fastener (?), scale
T24_141	Target 24	3	5/11/2023	AC	Metal fastener (?), scale
T24_142	Target 24	3	5/11/2023	AC	Metal fastener (?), scale
T24_143	Target 24	3	5/11/2023	AC	Metal fastener (?), scale
T24_144	Target 24	3	5/11/2023	AC	Anchor, scale
T24_145	Target 24	3	5/11/2023	AC	Anchor, scale
T24_146	Target 24	3	5/11/2023	AC	Anchor, scale
T24_147	Target 24	3	5/11/2023	AC	Anchor, scale
T24_148	Target 24	3	5/11/2023	AC	Anchor, scale
T24_149	Target 24	3	5/11/2023	AC	Anchor fluke measurement
T24_150	Target 24	3	5/11/2023	AC	Anchor fluke measurement
T24_151	Target 24	3	5/11/2023	AC	Anchor fluke measurement
T24_152	Target 24	3	5/11/2023	AC	Window ports and siding, scale
T24_153	Target 24	3	5/11/2023	AC	Window ports and siding, scale

File #	Target #	Survey Area	Date	Recorder	Description
T24_154	Target 24	3	5/11/2023	AC	Window ports and siding, scale
T24_155	Target 24	3	5/11/2023	AC	Metal structural debris
T24_156	Target 24	3	5/11/2023	AC	Metal structural debris
T24_157	Target 24	3	5/11/2023	AC	Metal structural debris
T24_158	Target 24	3	5/11/2023	AC	Metal structural debris
T24_159	Target 24	3	5/11/2023	AC	Metal structural debris
T24_160	Target 24	3	5/11/2023	AC	Metal structural debris
T24_161	Target 24	3	5/11/2023	AC	Metal structural debris
T24_162	Target 24	3	5/11/2023	AC	Metal structural debris
T24_163	Target 24	3	5/11/2023	AC	Metal structural debris
T24_164	Target 24	3	5/11/2023	AC	Metal structural debris
T24_165	Target 24	3	5/11/2023	AC	Metal structural debris
T24_166	Target 24	3	5/11/2023	AC	Metal structural debris
T24_167	Target 24	3	5/11/2023	AC	Metal structural debris
T24_168	Target 24	3	5/11/2023	AC	Metal structural debris
T24_169	Target 24	3	5/11/2023	AC	Metal structural debris
T24_170	Target 24	3	5/11/2023	AC	Metal structural debris
T24_171	Target 24	3	5/11/2023	AC	Metal structural debris
T24_172	Target 24	3	5/11/2023	AC	Metal structural debris
T24_173	Target 24	3	5/11/2023	AC	Metal structural debris
T24_174	Target 24	3	5/11/2023	AC	Metal structural debris
T24_175	Target 24	3	5/11/2023	AC	Metal structural debris
T24_176	Target 24	3	5/11/2023	AC	Metal structural debris
T24_177	Target 24	3	5/11/2023	AC	Metal structural debris
T24_178	Target 24	3	5/11/2023	AC	Metal structural debris
T24_179	Target 24	3	5/11/2023	AC	Metal structural debris
T24_180	Target 24	3	5/11/2023	AC	Metal structural debris
T24_181	Target 24	3	5/11/2023	AC	Metal structural debris
T24_182	Target 24	3	5/11/2023	AC	Metal structural debris
T24_183	Target 24	3	5/11/2023	AC	Metal structural debris
T24_184	Target 24	3	5/11/2023	AC	Metal structural debris
T24_185	Target 24	3	5/11/2023	AC	Metal figure eight fastener (?), scale
T24_186	Target 24	3	5/11/2023	AC	Metal figure eight fastener (?), scale
T24_187	Target 24	3	5/11/2023	AC	Metal figure eight fastener (?), scale
T24_188	Target 24	3	5/11/2023	AC	Metal figure eight fastener (?), scale
T24_189	Target 24	3	5/11/2023	AC	Metal figure eight fastener (?), scale
T24_190	Target 24	3	5/11/2023	AC	Windlass, scale
T24_191	Target 24	3	5/11/2023	AC	Windlass, scale
T24_192	Target 24	3	5/11/2023	AC	Ornate wing tipped fastener, scale
T24_193	Target 24	3	5/11/2023	AC	Ornate wing tipped fastener, scale

File #	Target #	Survey Area	Date	Recorder	Description
T24_194	Target 24	3	5/11/2023	AC	Ornate wing tipped fastener, scale
T24_195	Target 24	3	5/11/2023	AC	Ornate wing tipped fastener, scale
T24_196	Target 24	3	5/11/2023	AC	Ornate wing tipped fastener, scale
T24_197	Target 24	3	5/11/2023	AC	Mast, scale
T24_198	Target 24	3	5/11/2023	AC	Mast, scale
T24_199	Target 24	3	5/11/2023	AC	Mast, scale
T24_200	Target 24	3	5/11/2023	AC	Mast, scale
T24_201	Target 24	3	5/11/2023	AC	Mast, scale
T24_202	Target 24	3	5/11/2023	AC	Mast, scale
T24_203	Target 24	3	5/11/2023	AC	Mast, scale
T24_204	Target 24	3	5/11/2023	AC	Mast, scale
T24_205	Target 24	3	5/11/2023	AC	Mast
T24_206	Target 24	3	5/11/2023	AC	Mast
T24_207	Target 24	3	5/11/2023	AC	Mast
T24_208	Target 24	3	5/11/2023	AC	Mast
T24_209	Target 24	3	5/11/2023	AC	Mast
T24_210	Target 24	3	5/11/2023	AC	Mast
T24_211	Target 24	3	5/11/2023	AC	Mast
T24_212	Target 24	3	5/11/2023	AC	Mast
T24_213	Target 24	3	5/11/2023	AC	Metal structural debris
T24_214	Target 24	3	5/11/2023	AC	Metal structural debris
T24_215	Target 24	3	5/11/2023	AC	Metal structural debris
T24_216	Target 24	3	5/11/2023	AC	Metal structural debris
T24_217	Target 24	3	5/11/2023	AC	Metal structural debris
T24_218	Target 24	3	5/11/2023	AC	Metal structural debris
T24_219	Target 24	3	5/11/2023	AC	Metal structural debris
T24_220	Target 24	3	5/11/2023	AC	Metal structural debris
T24_221	Target 24	3	5/11/2023	AC	Metal framing, chain
T24_222	Target 24	3	5/11/2023	AC	Metal framing, chain
T24_223	Target 24	3	5/10/2023	JG	Metal structural debris
T24_224	Target 24	3	5/10/2023	JG	Metal structural debris
T24_225	Target 24	3	5/10/2023	JG	Metal structural debris
T24_226	Target 24	3	5/10/2023	JG	Metal structural debris
T24_227	Target 24	3	5/10/2023	JG	Metal structural debris
T24_228	Target 24	3	5/10/2023	JG	Metal structural debris
T24_229	Target 24	3	5/10/2023	JG	Metal structural debris
T24_230	Target 24	3	5/10/2023	JG	Metal structural debris
T24_231	Target 24	3	5/10/2023	JG	Metal fragment with two circular openings
T24_232	Target 24	3	5/10/2023	JG	Metal fragment with two circular openings
T24_233	Target 24	3	5/10/2023	JG	Metal fragment with two circular openings

File #	Target #	Survey Area	Date	Recorder	Description
T24_234	Target 24	3	5/10/2023	JG	Corals
T24_235	Target 24	3	5/10/2023	JG	Metal fragment with two circular openings
T24_236	Target 24	3	5/10/2023	JG	Metal structural debris
T24_237	Target 24	3	5/10/2023	JG	Metal structural debris
T24_238	Target 24	3	5/10/2023	JG	Metal structural debris
T24_239	Target 24	3	5/10/2023	JG	Metal structural debris
T24_240	Target 24	3	5/10/2023	JG	Metal framing, hull siding
T24_241	Target 24	3	5/10/2023	JG	Metal framing, hull siding
T24_242	Target 24	3	5/10/2023	JG	Coals, metal debris
T24_243	Target 24	3	5/10/2023	JG	Coals, metal debris
T24_244	Target 24	3	5/10/2023	JG	Metal framing
T24_245	Target 24	3	5/10/2023	JG	Metal framing
T24_246	Target 24	3	5/10/2023	JG	Metal framing
T24_247	Target 24	3	5/10/2023	JG	Metal framing
T24_248	Target 24	3	5/10/2023	JG	Metal framing
T24_249	Target 24	3	5/10/2023	JG	Metal framing
T24_250	Target 24	3	5/10/2023	JG	Chain
T24_251	Target 24	3	5/10/2023	JG	Metal structural debris
T24_252	Target 24	3	5/10/2023	JG	Metal structural debris
T24_253	Target 24	3	5/10/2023	JG	Metal structural debris
T24_254	Target 24	3	5/10/2023	JG	Metal framing
T24_255	Target 24	3	5/10/2023	JG	Metal structural debris
T24_256	Target 24	3	5/10/2023	JG	Metal structural debris
T24_257	Target 24	3	5/10/2023	JG	Metal structural debris
T24_258	Target 24	3	5/10/2023	JG	Metal structural debris
T24_259	Target 24	3	5/10/2023	JG	Metal structural debris
T24_260	Target 24	3	5/10/2023	JG	Metal structural debris
T24_261	Target 24	3	5/10/2023	JG	Metal structural debris
T24_262	Target 24	3	5/10/2023	JG	Metal structural debris
T24_263	Target 24	3	5/10/2023	JG	Metal structural debris
T24_264	Target 24	3	5/10/2023	JG	Metal structural debris
T24_265	Target 24	3	5/10/2023	JG	Metal structural debris, chain
T24_266	Target 24	3	5/10/2023	JG	Metal structural debris, port hole
T24_267	Target 24	3	5/10/2023	JG	Metal structural debris, port hole
T24_268	Target 24	3	5/10/2023	JG	Metal structural debris, port hole
T24_269	Target 24	3	5/10/2023	JG	Metal structural debris, port hole
T24_270	Target 24	3	5/10/2023	JG	Metal structural debris, port hole
T24_271	Target 24	3	5/10/2023	JG	Metal structural debris, port hole
T24_272	Target 24	3	5/10/2023	JG	Metal structural debris, port hole
T24_273	Target 24	3	5/10/2023	JG	Metal structural debris, port hole

File #	Target #	Survey Area	Date	Recorder	Description
T24_274	Target 24	3	5/10/2023	JG	Metal structural debris, port hole
T24_275	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_276	Target 24	3	5/10/2023	JG	Metal structural debris, frames, metal hull plating
T24_277	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_278	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_279	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_280	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_281	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_282	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_283	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_284	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_285	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_286	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_287	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_288	Target 24	3	5/10/2023	JG	Metal structural debris, chain
T24_289	Target 24	3	5/10/2023	JG	Chain
T24_290	Target 24	3	5/10/2023	JG	Chain
T24_291	Target 24	3	5/10/2023	JG	Chain
T24_292	Target 24	3	5/10/2023	JG	Chain
T24_293	Target 24	3	5/10/2023	JG	Chain
T24_294	Target 24	3	5/10/2023	JG	Chain
T24_295	Target 24	3	5/10/2023	JG	Chain, knife scale for scale
T24_296	Target 24	3	5/10/2023	JG	Chain, knife scale for scale
T24_297	Target 24	3	5/10/2023	JG	Chain, knife scale for scale
T24_298	Target 24	3	5/10/2023	JG	Chain
T24_299	Target 24	3	5/10/2023	JG	Chain
T24_300	Target 24	3	5/10/2023	JG	Chain
T24_301	Target 24	3	5/10/2023	JG	Chain
T24_302	Target 24	3	5/10/2023	JG	Hull plating, hawse pipe
T24_303	Target 24	3	5/10/2023	JG	hawse pipe
T24_304	Target 24	3	5/10/2023	JG	hawse pipe
T24_305	Target 24	3	5/10/2023	JG	hawse pipe
T24_306	Target 24	3	5/10/2023	JG	hawse pipe
T24_307	Target 24	3	5/10/2023	JG	Chain
T24_308	Target 24	3	5/10/2023	JG	Metal structural debris
T24_309	Target 24	3	5/10/2023	JG	Chain
T24_310	Target 24	3	5/10/2023	JG	Chain
T24_311	Target 24	3	5/10/2023	JG	Chain
T24_312	Target 24	3	5/10/2023	JG	Chain
T24_313	Target 24	3	5/10/2023	JG	Anchor

File #	Target #	Survey Area	Date	Recorder	Description
T24_314	Target 24	3	5/10/2023	JG	Anchor
T24_315	Target 24	3	5/10/2023	JG	Anchor
T24_316	Target 24	3	5/10/2023	JG	Anchor
T24_317	Target 24	3	5/10/2023	JG	Anchor
T24_318	Target 24	3	5/10/2023	JG	Anchor
T24_319	Target 24	3	5/10/2023	JG	Anchor
T24_320	Target 24	3	5/10/2023	JG	Anchor
T24_321	Target 24	3	5/10/2023	JG	Anchor
T24_322	Target 24	3	5/10/2023	JG	Anchor
T24_323	Target 24	3	5/10/2023	JG	Anchor
T24_324	Target 24	3	5/10/2023	JG	Anchor, MN documenting
T24_325	Target 24	3	5/10/2023	JG	Anchor, MN documenting
T24_326	Target 24	3	5/10/2023	JG	Anchor, MN documenting
T24_327	Target 24	3	5/10/2023	JG	Anchor, MN documenting
T24_328	Target 24	3	5/10/2023	JG	Anchor, MN documenting
T24_329	Target 24	3	5/10/2023	JG	Anchor
T24_330	Target 24	3	5/10/2023	JG	Anchor
T24_331	Target 24	3	5/10/2023	JG	Anchor
T24_332	Target 24	3	5/10/2023	JG	Anchor, knife scale for fluke
T24_333	Target 24	3	5/10/2023	JG	Anchor, knife scale for fluke
T24_334	Target 24	3	5/10/2023	JG	Anchor, knife scale for fluke
T24_335	Target 24	3	5/10/2023	JG	Anchor, knife scale for fluke
T24_336	Target 24	3	5/10/2023	JG	Anchor, knife scale for fluke
T24_337	Target 24	3	5/10/2023	JG	Metal structural debris
T24_338	Target 24	3	5/10/2023	JG	Metal structural debris, probable windlass
T24_339	Target 24	3	5/10/2023	JG	Probable windlass
T24_340	Target 24	3	5/10/2023	JG	Probable windlass
T24_341	Target 24	3	5/10/2023	JG	Probable windlass
T24_342	Target 24	3	5/10/2023	JG	Probable windlass
T24_343	Target 24	3	5/10/2023	JG	Probable windlass
T24_344	Target 24	3	5/10/2023	JG	Probable windlass
T24_345	Target 24	3	5/10/2023	JG	Metal detailed fastenings
T24_346	Target 24	3	5/10/2023	JG	Metal detailed fastenings
T24_347	Target 24	3	5/10/2023	JG	Metal detailed fastenings
T24_348	Target 24	3	5/10/2023	JG	Probable windlass
T24_349	Target 24	3	5/10/2023	JG	Probable windlass
T24_350	Target 24	3	5/10/2023	JG	Probable windlass
T24_351	Target 24	3	5/10/2023	JG	Probable windlass
T24_352	Target 24	3	5/10/2023	JG	Probable windlass
T24_353	Target 24	3	5/10/2023	JG	Probable windlass

File #	Target #	Survey Area	Date	Recorder	Description
T24_354	Target 24	3	5/10/2023	JG	Chain
T24_355	Target 24	3	5/10/2023	JG	Chain
T24_356	Target 24	3	5/10/2023	JG	Chain
T24_357	Target 24	3	5/10/2023	JG	Chain, structural components
T24_358	Target 24	3	5/10/2023	JG	Probable windlass
T24_359	Target 24	3	5/10/2023	JG	Probable windlass
T24_360	Target 24	3	5/10/2023	JG	Probable windlass
T24_361	Target 24	3	5/10/2023	JG	Probable windlass
T24_362	Target 24	3	5/10/2023	JG	Probable windlass
T24_363	Target 24	3	5/10/2023	JG	Probable windlass
T24_364	Target 24	3	5/10/2023	JG	Probable windlass
T24_365	Target 24	3	5/10/2023	JG	Probable windlass
T24_366	Target 24	3	5/10/2023	JG	Probable windlass
T24_367	Target 24	3	5/10/2023	JG	Probable windlass
T24_368	Target 24	3	5/10/2023	JG	Probable windlass
T24_369	Target 24	3	5/10/2023	JG	Probable windlass
T24_370	Target 24	3	5/10/2023	JG	Probable windlass
T24_371	Target 24	3	5/10/2023	JG	Probable windlass
T24_372	Target 24	3	5/10/2023	JG	Metal hook or bent pipe
T24_373	Target 24	3	5/10/2023	JG	Metal hook or bent pipe
T24_374	Target 24	3	5/10/2023	JG	Metal structural debris
T24_375	Target 24	3	5/10/2023	JG	Metal structural debris
T24_376	Target 24	3	5/10/2023	JG	Metal structural debris, mast
T24_377	Target 24	3	5/10/2023	JG	Metal structural debris, window ports in hull plating
T24_378	Target 24	3	5/10/2023	JG	Hull plating details
T24_379	Target 24	3	5/10/2023	JG	Hull plating details
T24_380	Target 24	3	5/10/2023	JG	Hull plating details
T24_381	Target 24	3	5/10/2023	JG	Hull plating details
T24_382	Target 24	3	5/10/2023	JG	Hull plating details
T24_383	Target 24	3	5/10/2023	JG	Hull plating details
T24_384	Target 24	3	5/10/2023	JG	Hull plating details
T24_385	Target 24	3	5/10/2023	JG	Seafloor, metal fragment
T24_386	Target 24	3	5/10/2023	JG	Seafloor, metal fragments
T24_387	Target 24	3	5/10/2023	JG	MN beside target
T24_388	Target 24	3	5/10/2023	JG	MN beside target
T24_389	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_390	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating, frames, probable windlass
T24_391	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating, frames, probable windlass

File #	Target #	Survey Area	Date	Recorder	Description
T24_392	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating, frames, probable windlass
T24_393	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating, frames, probable windlass
T24_394	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating, frames, probable windlass
T24_395	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating, frames, probable windlass
T24_396	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating, frames, probable windlass
T24_397	Target 24	3	5/10/2023	JG	Metal structural debris
T24_398	Target 24	3	5/10/2023	JG	Metal structural debris
T24_399	Target 24	3	5/10/2023	JG	Metal structural debris
T24_400	Target 24	3	5/10/2023	JG	Mast
T24_401	Target 24	3	5/10/2023	JG	Mast
T24_402	Target 24	3	5/10/2023	JG	Chain
T24_403	Target 24	3	5/10/2023	JG	Metal structural debris
T24_404	Target 24	3	5/10/2023	JG	Metal structural debris
T24_405	Target 24	3	5/10/2023	JG	Metal structural debris
T24_406	Target 24	3	5/10/2023	JG	Metal structural debris
T24_407	Target 24	3	5/10/2023	JG	Metal structural debris
T24_408	Target 24	3	5/10/2023	JG	Metal structural debris
T24_409	Target 24	3	5/10/2023	JG	Metal structural debris
T24_410	Target 24	3	5/10/2023	JG	Metal structural debris
T24_411	Target 24	3	5/10/2023	JG	Metal structural debris
T24_412	Target 24	3	5/10/2023	JG	Metal structural debris
T24_413	Target 24	3	5/10/2023	JG	Metal structural debris
T24_414	Target 24	3	5/10/2023	JG	Metal structural debris
T24_415	Target 24	3	5/10/2023	JG	Metal structural debris
T24_416	Target 24	3	5/10/2023	JG	Metal structural debris
T24_417	Target 24	3	5/10/2023	JG	Metal structural debris
T24_418	Target 24	3	5/10/2023	JG	Metal structural debris
T24_419	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_420	Target 24	3	5/10/2023	JG	Metal structural debris, frames, hull plating
T24_421	Target 24	3	5/10/2023	JG	Metal structural debris, frames, hull plating
T24_422	Target 24	3	5/10/2023	JG	Metal structural debris, frames, hull plating
T24_423	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_424	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_425	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_426	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_427	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_428	Target 24	3	5/10/2023	JG	Metal structural debris, frames

File #	Target #	Survey Area	Date	Recorder	Description
T24_429	Target 24	3	5/10/2023	JG	Metal structural debris
T24_430	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_431	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_432	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_433	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_434	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_435	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_436	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_437	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_438	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_439	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_440	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_441	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating circular cut-out
T24_442	Target 24	3	5/10/2023	JG	Metal structural debris, corrugated tube
T24_443	Target 24	3	5/10/2023	JG	Metal structural debris
T24_444	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_445	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_446	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_447	Target 24	3	5/10/2023	JG	Metal frame
T24_448	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_449	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_450	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating, mooring bits, chain
T24_451	Target 24	3	5/10/2023	JG	Mooring bits
T24_452	Target 24	3	5/10/2023	JG	Mooring bits
T24_453	Target 24	3	5/10/2023	JG	Mooring bits
T24_454	Target 24	3	5/10/2023	JG	Metal spiral
T24_455	Target 24	3	5/10/2023	JG	Metal spiral
T24_456	Target 24	3	5/10/2023	JG	Metal spiral
T24_457	Target 24	3	5/10/2023	JG	Metal spiral
T24_458	Target 24	3	5/10/2023	JG	Metal frame
T24_459	Target 24	3	5/10/2023	JG	Metal frame
T24_460	Target 24	3	5/10/2023	JG	Metal frame
T24_461	Target 24	3	5/10/2023	JG	Metal frame
T24_462	Target 24	3	5/10/2023	JG	Metal frame
T24_463	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_464	Target 24	3	5/10/2023	JG	Mooring bits
T24_465	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_466	Target 24	3	5/10/2023	JG	Metal frame
T24_467	Target 24	3	5/10/2023	JG	Metal container/probable battery
T24_468	Target 24	3	5/10/2023	JG	Metal structural debris

File #	Target #	Survey Area	Date	Recorder	Description
T24_469	Target 24	3	5/10/2023	JG	Metal structural debris
T24_470	Target 24	3	5/10/2023	JG	Metal structural debris
T24_471	Target 24	3	5/10/2023	JG	Metal structural debris
T24_472	Target 24	3	5/10/2023	JG	Metal structural debris
T24_473	Target 24	3	5/10/2023	JG	Metal structural debris
T24_474	Target 24	3	5/10/2023	JG	Metal structural debris
T24_475	Target 24	3	5/10/2023	JG	Metal structural debris
T24_476	Target 24	3	5/10/2023	JG	Metal structural debris
T24_477	Target 24	3	5/10/2023	JG	Metal structural debris
T24_478	Target 24	3	5/10/2023	JG	Metal structural debris
T24_479	Target 24	3	5/10/2023	JG	Metal structural debris
T24_480	Target 24	3	5/10/2023	JG	Metal structural debris
T24_481	Target 24	3	5/10/2023	JG	Metal structural debris, 2 pin in background
T24_482	Target 24	3	5/10/2023	JG	Metal structural debris, 2 pin in background
T24_483	Target 24	3	5/10/2023	JG	Metal structural debris, 2 pin in background
T24_484	Target 24	3	5/10/2023	JG	Metal structural debris, 2 pin in background
T24_485	Target 24	3	5/10/2023	JG	Metal structural debris, 2 pin in background
T24_486	Target 24	3	5/10/2023	JG	Metal structural debris, 2 pin in background
T24_487	Target 24	3	5/10/2023	JG	Metal structural debris, framing
T24_488	Target 24	3	5/10/2023	JG	Metal structural debris, framing
T24_489	Target 24	3	5/10/2023	JG	Metal structural debris, framing
T24_490	Target 24	3	5/10/2023	JG	Metal structural debris, framing
T24_491	Target 24	3	5/10/2023	JG	Metal structural debris, framing
T24_492	Target 24	3	5/10/2023	JG	Metal structural debris, framing
T24_493	Target 24	3	5/10/2023	JG	Metal structural debris, framing, hull plating
T24_494	Target 24	3	5/10/2023	JG	Metal structural debris
T24_495	Target 24	3	5/10/2023	JG	Metal structural debris
T24_496	Target 24	3	5/10/2023	JG	Metal structural debris
T24_497	Target 24	3	5/10/2023	JG	Metal structural debris
T24_498	Target 24	3	5/10/2023	JG	Metal structural debris
T24_499	Target 24	3	5/10/2023	JG	Metal structural debris
T24_500	Target 24	3	5/10/2023	JG	Metal structural debris
T24_501	Target 24	3	5/10/2023	JG	Metal structural debris
T24_502	Target 24	3	5/10/2023	JG	Metal structural debris
T24_503	Target 24	3	5/10/2023	JG	Metal structural debris
T24_504	Target 24	3	5/10/2023	JG	Metal structural debris
T24_505	Target 24	3	5/10/2023	JG	Metal structural debris
T24_506	Target 24	3	5/10/2023	JG	Metal structural debris
T24_507	Target 24	3	5/10/2023	JG	Metal structural debris
T24_508	Target 24	3	5/10/2023	JG	Metal structural debris

File #	Target #	Survey Area	Date	Recorder	Description
T24_509	Target 24	3	5/10/2023	JG	Metal structural debris
T24_510	Target 24	3	5/10/2023	JG	Metal structural debris
T24_511	Target 24	3	5/10/2023	JG	Metal structural debris
T24_512	Target 24	3	5/10/2023	JG	Metal structural debris
T24_513	Target 24	3	5/10/2023	JG	Metal structural debris
T24_514	Target 24	3	5/10/2023	JG	Metal structural debris
T24_515	Target 24	3	5/10/2023	JG	Mast, metal framing
T24_516	Target 24	3	5/10/2023	JG	Mast, metal framing
T24_517	Target 24	3	5/10/2023	JG	Mast, metal framing
T24_518	Target 24	3	5/10/2023	JG	Mast, metal framing
T24_519	Target 24	3	5/10/2023	JG	Mast, metal framing
T24_520	Target 24	3	5/10/2023	JG	Mast, metal framing
T24_521	Target 24	3	5/10/2023	JG	Mast
T24_522	Target 24	3	5/10/2023	JG	Mast
T24_523	Target 24	3	5/10/2023	JG	Mast
T24_524	Target 24	3	5/10/2023	JG	Mast
T24_525	Target 24	3	5/10/2023	JG	Mast
T24_526	Target 24	3	5/10/2023	JG	Mast
T24_527	Target 24	3	5/10/2023	JG	Mast
T24_528	Target 24	3	5/10/2023	JG	Mast
T24_529	Target 24	3	5/10/2023	JG	Metal structural debris
T24_530	Target 24	3	5/10/2023	JG	Metal structural debris
T24_531	Target 24	3	5/10/2023	JG	Mast
T24_532	Target 24	3	5/10/2023	JG	Mast
T24_533	Target 24	3	5/10/2023	JG	Mast
T24_534	Target 24	3	5/10/2023	JG	Mast
T24_535	Target 24	3	5/10/2023	JG	Mast
T24_536	Target 24	3	5/10/2023	JG	Mast
T24_537	Target 24	3	5/10/2023	JG	Corals
T24_538	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_539	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_540	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_541	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_542	Target 24	3	5/10/2023	JG	Corals
T24_543	Target 24	3	5/10/2023	JG	Metal structural debris, hull plating
T24_544	Target 24	3	5/10/2023	JG	Mast
T24_545	Target 24	3	5/10/2023	JG	Mast
T24_546	Target 24	3	5/10/2023	JG	Mast
T24_547	Target 24	3	5/10/2023	JG	Mast
T24_548	Target 24	3	5/10/2023	JG	Mast

File #	Target #	Survey Area	Date	Recorder	Description
T24_549	Target 24	3	5/10/2023	JG	Mast
T24_550	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_551	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_552	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_553	Target 24	3	5/10/2023	JG	Corals, metal structural debris, mast
T24_554	Target 24	3	5/10/2023	JG	Corals, metal structural debris, mast
T24_555	Target 24	3	5/10/2023	JG	Corals, metal structural debris, mast
T24_556	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_557	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_558	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_559	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_560	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_561	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_562	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_563	Target 24	3	5/10/2023	JG	Corals, metal structural debris
T24_564	Target 24	3	5/10/2023	JG	Round metal object
T24_565	Target 24	3	5/10/2023	JG	Round metal object
T24_566	Target 24	3	5/10/2023	JG	Round metal object
T24_567	Target 24	3	5/10/2023	JG	Metal structural debris
T24_568	Target 24	3	5/10/2023	JG	Metal structural debris
T24_569	Target 24	3	5/10/2023	JG	Metal structural debris
T24_570	Target 24	3	5/10/2023	JG	Metal structural debris
T24_571	Target 24	3	5/10/2023	JG	Metal structural debris
T24_572	Target 24	3	5/10/2023	JG	Metal structural debris
T24_573	Target 24	3	5/10/2023	JG	Metal structural debris
T24_574	Target 24	3	5/10/2023	JG	Metal structural debris
T24_575	Target 24	3	5/10/2023	JG	Metal structural debris, bent pipe
T24_576	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_577	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_578	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_579	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_580	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_581	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_582	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_583	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_584	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_585	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_586	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_587	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_588	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating

File #	Target #	Survey Area	Date	Recorder	Description
T24_589	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_590	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_591	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_592	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_593	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_594	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_595	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_596	Target 24	3	5/10/2023	JG	Isolated chunk of metal frames and hull plating
T24_597	Target 24	3	5/10/2023	JG	More of shipwreck continues into channel
T24_598	Target 24	3	5/10/2023	JG	More of shipwreck continues into channel
T24_599	Target 24	3	5/10/2023	JG	More of shipwreck continues into channel
T24_600	Target 24	3	5/10/2023	JG	More of shipwreck continues into channel
T24_601	Target 24	3	5/10/2023	JG	Corals
T24_602	Target 24	3	5/10/2023	JG	Bent metal pipe/structural component
T24_603	Target 24	3	5/10/2023	JG	Anchor
T24_604	Target 24	3	5/10/2023	JG	Anchor
T24_605	Target 24	3	5/10/2023	JG	Anchor
T24_606	Target 24	3	5/10/2023	JG	Anchor
T24_607	Target 24	3	5/10/2023	JG	Anchor
T24_608	Target 24	3	5/10/2023	JG	Anchor
T24_609	Target 24	3	5/10/2023	JG	Anchor
T24_610	Target 24	3	5/10/2023	JG	Anchor
T24_611	Target 24	3	5/10/2023	JG	Anchor
T24_612	Target 24	3	5/10/2023	JG	Anchor
T24_613	Target 24	3	5/10/2023	JG	Anchor
T24_614	Target 24	3	5/10/2023	JG	Anchor, knife scale
T24_615	Target 24	3	5/10/2023	JG	Anchor, knife scale
T24_616	Target 24	3	5/10/2023	JG	Anchor, knife scale
T24_617	Target 24	3	5/10/2023	JG	Anchor
T24_618	Target 24	3	5/10/2023	JG	Anchor
T24_619	Target 24	3	5/10/2023	JG	Anchor
T24_620	Target 24	3	5/10/2023	JG	Anchor
T24_621	Target 24	3	5/10/2023	JG	Bent metal pipe/structural component
T24_622	Target 24	3	5/10/2023	JG	Bent metal pipe/structural component
T24_623	Target 24	3	5/10/2023	JG	Bent metal pipe/structural component, plating
T24_624	Target 24	3	5/10/2023	JG	Bent metal pipe/structural component, plating
T24_625	Target 24	3	5/10/2023	JG	Metal frame
T24_626	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating
T24_627	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating
T24_628	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating

File #	Target #	Survey Area	Date	Recorder	Description
T24_629	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating
T24_630	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating
T24_631	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating
T24_632	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating
T24_633	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating
T24_634	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating
T24_635	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating
T24_636	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating, frames
T24_637	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating, frames
T24_638	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating, frames
T24_639	Target 24	3	5/10/2023	JG	Metal structural debris, outer hull plating, MN
T24_640	Target 24	3	5/10/2023	JG	Metal structural debris
T24_641	Target 24	3	5/10/2023	JG	Metal structural debris
T24_642	Target 24	3	5/10/2023	JG	Metal structural debris
T24_643	Target 24	3	5/10/2023	JG	Metal structural debris
T24_644	Target 24	3	5/10/2023	JG	Metal structural debris
T24_645	Target 24	3	5/10/2023	JG	Metal structural debris
T24_646	Target 24	3	5/10/2023	JG	Metal structural debris
T24_647	Target 24	3	5/10/2023	JG	Metal structural debris
T24_648	Target 24	3	5/10/2023	JG	Metal structural debris
T24_649	Target 24	3	5/10/2023	JG	Metal structural debris
T24_650	Target 24	3	5/10/2023	JG	Metal structural debris
T24_651	Target 24	3	5/10/2023	JG	Metal structural debris
T24_652	Target 24	3	5/10/2023	JG	Metal structural debris
T24_653	Target 24	3	5/10/2023	JG	Metal outer hull plating, window port
T24_654	Target 24	3	5/10/2023	JG	Metal outer hull plating, window port
T24_655	Target 24	3	5/10/2023	JG	Metal structural debris
T24_656	Target 24	3	5/10/2023	JG	Metal structural debris
T24_657	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_658	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_659	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_660	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_661	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_662	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_663	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_664	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_665	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_666	Target 24	3	5/10/2023	JG	Metal structural debris, frames
T24_667	Target 24	3	5/11/2023	AC	Corals
T24_668	Target 24	3	5/11/2023	AC	Anchor, scale

File #	Target #	Survey Area	Date	Recorder	Description
T24_669	Target 24	3	5/11/2023	AC	Anchor, scale
T24_670	Target 24	3	5/11/2023	AC	Chain, scale
T24_671	Target 24	3	5/11/2023	AC	Smokestack/steam
T24_672	Target 24	3	5/11/2023	AC	Boiler
T24_673	Target 24	3	5/11/2023	AC	Boiler, scale
T24_674	Target 24	3	5/11/2023	AC	Chain, scale
T24_675	Target 24	3	5/11/2023	AC	Chain, scale
T24_676	Target 24	3	5/11/2023	AC	Probable windlass, scale
T24_677	Target 24	3	5/11/2023	AC	Probable windlass, scale
T24_678	Target 24	3	5/11/2023	AC	Probable windlass, scale
T24_679	Target 24	3	5/11/2023	AC	Metal structural debris
T24_680	Target 24	3	5/11/2023	AC	Metal structural debris
T24_681	Target 24	3	5/11/2023	AC	Metal structural debris
T24_682	Target 24	3	5/11/2023	AC	Metal container/probable battery, scale
T24_683	Target 24	3	5/11/2023	AC	Anchor fluke measurement
T24_684	Target 24	3	5/11/2023	AC	Hull siding with window ports, scale
T24_685	Target 24	3	5/11/2023	AC	Hull siding with window ports, scale
T24_686	Target 24	3	5/11/2023	AC	Metal structural debris
T24_687	Target 24	3	5/11/2023	AC	Metal structural debris
T24_688	Target 24	3	5/11/2023	AC	Metal structural debris
T24_689	Target 24	3	5/11/2023	AC	Metal structural debris
T24_690	Target 24	3	5/11/2023	AC	Round metal object, scale
T24_691	Target 24	3	5/11/2023	AC	Round metal object, scale
T24_692	Target 24	3	5/11/2023	AC	Ornate wing tipped fastener, scale
T24_693	Target 24	3	5/11/2023	AC	Mast, scale
T24_694	Target 24	3	5/11/2023	AC	Metal hull structure, chain
T24_695	Target 24	3	5/11/2023	AC	Metal hull structure, chain
T24_696	Target 24	3	5/10/2023	MN	Metal structural debris
T24_697	Target 24	3	5/10/2023	MN	Metal structural debris
T24_698	Target 24	3	5/10/2023	MN	Metal structural debris
T24_699	Target 24	3	5/10/2023	MN	Metal structural debris
T24_700	Target 24	3	5/10/2023	MN	Metal structural debris, frames
T24_701	Target 24	3	5/10/2023	MN	Metal structural debris, frames
T24_702	Target 24	3	5/10/2023	MN	Metal structural debris, frames
T24_703	Target 24	3	5/10/2023	MN	Metal structural debris, frames
T24_704	Target 24	3	5/10/2023	MN	Metal structural debris, frames
T24_705	Target 24	3	5/10/2023	MN	JG inspects frames
T24_706	Target 24	3	5/10/2023	MN	JG inspects frames
T24_707	Target 24	3	5/10/2023	MN	Metal structural debris
T24_708	Target 24	3	5/10/2023	MN	Metal structural debris

File #	Target #	Survey Area	Date	Recorder	Description
T24_709	Target 24	3	5/10/2023	MN	Metal structural debris
T24_710	Target 24	3	5/10/2023	MN	Metal structural debris
T24_711	Target 24	3	5/10/2023	MN	Metal structural debris
T24_712	Target 24	3	5/10/2023	MN	JG inspects porthole
T24_713	Target 24	3	5/10/2023	MN	JG inspects porthole
T24_714	Target 24	3	5/10/2023	MN	Porthole
T24_715	Target 24	3	5/10/2023	MN	Porthole
T24_716	Target 24	3	5/10/2023	MN	Porthole
T24_717	Target 24	3	5/10/2023	MN	Metal structural debris
T24_718	Target 24	3	5/10/2023	MN	Metal structural debris
T24_719	Target 24	3	5/10/2023	MN	Metal structural debris
T24_720	Target 24	3	5/10/2023	MN	Metal structural debris
T24_721	Target 24	3	5/10/2023	MN	Metal structural debris
T24_722	Target 24	3	5/10/2023	MN	Metal structural debris
T24_723	Target 24	3	5/10/2023	MN	Anchor
T24_724	Target 24	3	5/10/2023	MN	Anchor
T24_725	Target 24	3	5/10/2023	MN	Metal structural debris
T24_726	Target 24	3	5/10/2023	MN	Metal structural debris
T24_727	Target 24	3	5/10/2023	MN	Metal structural debris
T24_728	Target 24	3	5/10/2023	MN	Metal structural debris
T24_729	Target 24	3	5/10/2023	MN	Anchor
T24_730	Target 24	3	5/10/2023	MN	Anchor
T24_731	Target 24	3	5/10/2023	MN	Anchor
T24_732	Target 24	3	5/10/2023	MN	Anchor
T24_733	Target 24	3	5/10/2023	MN	Anchor, knife scale
T24_734	Target 24	3	5/10/2023	MN	Metal structural debris
T24_735	Target 24	3	5/10/2023	MN	Metal structural debris
T24_736	Target 24	3	5/11/2023	CM	AC and JN inspect anchor
T24_737	Target 24	3	5/11/2023	CM	AC and JN inspect anchor
T24_738	Target 24	3	5/11/2023	CM	AC and JN inspect anchor
T24_739	Target 24	3	5/11/2023	CM	Anchor
T24_740	Target 24	3	5/11/2023	CM	Anchor
T24_741	Target 24	3	5/11/2023	CM	AC and JN inspect probable windlass, scale
T24_742	Target 24	3	5/11/2023	CM	AC and JN inspect probable windlass, scale
T24_743	Target 24	3	5/11/2023	CM	AC and JN inspect probable windlass, scale
T24_744	Target 24	3	5/11/2023	CM	Metal structural debris, mast
T24_745	Target 24	3	5/11/2023	CM	Metal structural debris, mast
T24_746	Target 24	3	5/11/2023	CM	AC and JN inspect chain, scale
T24_747	Target 24	3	5/11/2023	CM	AC and JN inspect chain, scale
T24_748	Target 24	3	5/11/2023	CM	Smokestack/steam

File #	Target #	Survey Area	Date	Recorder	Description
T24_749	Target 24	3	5/11/2023	CM	Smoke stack
T24_750	Target 24	3	5/11/2023	CM	Fish
T24_751	Target 24	3	5/11/2023	CM	Fish
T24_752	Target 24	3	5/11/2023	CM	Fish
T24_753	Target 24	3	5/11/2023	CM	Fish
T24_754	Target 24	3	5/11/2023	CM	Boiler, scale
T24_755	Target 24	3	5/11/2023	CM	Boiler, scale
T24_756	Target 24	3	5/11/2023	CM	Boiler, scale
T24_757	Target 24	3	5/11/2023	CM	Boiler, top
T24_758	Target 24	3	5/11/2023	CM	Boiler, top, scale, JN
T24_759	Target 24	3	5/11/2023	CM	Boiler, top, scale
T24_760	Target 24	3	5/11/2023	CM	Boiler, top, scale
T24_761	Target 24	3	5/11/2023	CM	Sealife
T24_762	Target 24	3	5/11/2023	CM	Sealife
T24_763	Target 24	3	5/11/2023	CM	Sealife
T24_764	Target 24	3	5/11/2023	CM	Metal structural debris
T24_765	Target 24	3	5/11/2023	CM	Metal structural debris
T24_766	Target 24	3	5/11/2023	CM	Metal structural debris
T24_767	Target 24	3	5/11/2023	CM	Porthole
T24_768	Target 24	3	5/11/2023	CM	Porthole
T24_769	Target 24	3	5/11/2023	CM	Porthole
T24_770	Target 24	3	5/11/2023	CM	Porthole
T24_771	Target 24	3	5/11/2023	CM	Porthole
T24_772	Target 24	3	5/11/2023	CM	Porthole, scale
T24_773	Target 24	3	5/11/2023	CM	Porthole, scale
T24_774	Target 24	3	5/11/2023	CM	Porthole, scale
T24_775	Target 24	3	5/11/2023	CM	Porthole, scale
T24_776	Target 24	3	5/11/2023	CM	Metal framing, scale
T24_777	Target 24	3	5/11/2023	CM	Metal framing, scale
T24_778	Target 24	3	5/11/2023	CM	Metal framing, scale
T24_779	Target 24	3	5/11/2023	CM	Metal framing, scale
T24_780	Target 24	3	5/11/2023	CM	Metal framing, scale
T24_781	Target 24	3	5/11/2023	CM	Metal framing, scale
T24_782	Target 24	3	5/11/2023	CM	Metal framing
T24_783	Target 24	3	5/11/2023	CM	Metal container/probable battery, scale
T24_784	Target 24	3	5/11/2023	CM	Metal container/probable battery, scale
T24_785	Target 24	3	5/11/2023	CM	Metal container/probable battery, scale
T24_786	Target 24	3	5/11/2023	CM	AC inspects mooring bits, scale
T24_787	Target 24	3	5/11/2023	CM	Metal structural debris
T24_788	Target 24	3	5/11/2023	CM	Mooring bits, metal spiral object

File #	Target #	Survey Area	Date	Recorder	Description
T24_789	Target 24	3	5/11/2023	CM	Mooring bits, metal spiral object
T24_790	Target 24	3	5/11/2023	CM	Metal hull structure surface
T24_791	Target 24	3	5/11/2023	CM	Metal hull structure surface
T24_792	Target 24	3	5/11/2023	CM	Large bolt on mettle hull plating
T24_793	Target 24	3	5/11/2023	CM	Large bolt on mettle hull plating
T24_794	Target 24	3	5/11/2023	CM	Metal structural debris
T24_795	Target 24	3	5/11/2023	CM	Anchor
T24_796	Target 24	3	5/11/2023	CM	Anchor, scale
T24_797	Target 24	3	5/11/2023	CM	Anchor, scale
T24_798	Target 24	3	5/11/2023	CM	AC and JN document anchor
T24_799	Target 24	3	5/11/2023	CM	Anchor
T24_800	Target 24	3	5/11/2023	CM	Anchor
T24_801	Target 24	3	5/11/2023	CM	CM with anchor
T24_802	Target 24	3	5/11/2023	CM	CM with anchor
T24_803	Target 24	3	5/11/2023	CM	CM with anchor
T24_804	Target 24	3	5/11/2023	CM	Metal hull plating, window ports, scale
T24_805	Target 24	3	5/11/2023	CM	Metal hull plating, window ports, scale
T24_806	Target 24	3	5/11/2023	CM	Sealife
T24_807	Target 24	3	5/11/2023	CM	Metal plate with stamped holes
T24_808	Target 24	3	5/11/2023	CM	Metal plate with stamped holes
T24_809	Target 24	3	5/11/2023	CM	Metal structural debris
T24_810	Target 24	3	5/11/2023	CM	Metal structural debris
T24_811	Target 24	3	5/11/2023	CM	Metal structural debris
T24_812	Target 24	3	5/11/2023	CM	Metal structural debris
T24_813	Target 24	3	5/11/2023	CM	AC documenting target
T24_814	Target 24	3	5/11/2023	CM	Metal structural debris
T24_815	Target 24	3	5/11/2023	CM	Round metal object, scale
T24_816	Target 24	3	5/11/2023	CM	Round metal object, scale, AC documenting
T24_817	Target 24	3	5/11/2023	CM	Round metal object, scale
T24_818	Target 24	3	5/11/2023	CM	Metal structural debris, 2 pin in background
T24_819	Target 24	3	5/11/2023	CM	Sealife
T24_820	Target 24	3	5/11/2023	CM	Sealife
T24_821	Target 24	3	5/11/2023	CM	Sealife
T24_822	Target 24	3	5/11/2023	CM	Mast end
T24_823	Target 24	3	5/11/2023	CM	Mast end
T24_824	Target 24	3	5/11/2023	CM	Surrounding environment
T24_825	Target 24	3	5/11/2023	CM	AC and JN over mast
T24_826	Target 24	3	5/11/2023	CM	AC and JN over mast
T24_827	Target 24	3	5/11/2023	CM	Divemaster (Nico) at safety stop
T24_828	Target 24	3	5/11/2023	CM	Divemaster (Nico) at safety stop

File #	Target #	Survey Area	Date	Recorder	Description
T24_829	Target 24	3	5/11/2023	CM	Sealife
T24_830	Target 24	3	5/11/2023	CM	Sealife
T24_831	Target 24	3	5/11/2023	CM	Sealife

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 22**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T25_1	Target 25	4	5/12/2023	MN	Seawall wrapped around side of target
T25_2	Target 25	4	5/12/2023	MN	Seawall wrapped around side of target
T25_3	Target 25	4	5/12/2023	MN	Seawall wrapped around side of target, attached to shore via line
T25_4	Target 25	4	5/12/2023	MN	Seawall wrapped around side of target, attached to shore via line
T25_5	Target 25	4	5/12/2023	MN	Line attached to seawall, corner of barge
T25_6	Target 25	4	5/12/2023	MN	Line attached to seawall, corner of barge
T25_7	Target 25	4	5/12/2023	MN	Line wrapped in tarp that attaches to shore
T25_8	Target 25	4	5/12/2023	MN	Line wrapped in tarp that attaches to shore, scale
T25_9	Target 25	4	5/12/2023	MN	Line wrapped in tarp that attaches to shore, scale
T25_10	Target 25	4	5/12/2023	MN	Line wrapped in tarp that attaches to shore
T25_11	Target 25	4	5/12/2023	MN	Line wrapped in tarp that attaches to shore
T25_12	Target 25	4	5/12/2023	MN	Line wrapped in tarp that attaches to shore
T25_13	Target 25	4	5/12/2023	MN	Rub rail, stem, torn mooring bit from deck plating
T25_14	Target 25	4	5/12/2023	MN	Rub rail, stem, torn mooring bit from deck plating
T25_15	Target 25	4	5/12/2023	MN	Wrapped seawall along seafloor
T25_16	Target 25	4	5/12/2023	MN	Wrapped seawall along seafloor
T25_17	Target 25	4	5/12/2023	MN	Wrapped seawall along seafloor
T25_18	Target 25	4	5/12/2023	MN	Wrapped seawall along seafloor
T25_19	Target 25	4	5/11/2023	JN	Torn mooring bit from deck plating, winch, open hatch
T25_20	Target 25	4	5/11/2023	JN	Rub rail, stem, torn mooring bit from deck plating
T25_21	Target 25	4	5/11/2023	JN	Rub rail, stem, torn mooring bit from deck plating
T25_22	Target 25	4	5/11/2023	JN	Seawall wrapped around side of target
T25_23	Target 25	4	5/11/2023	JN	Seawall wrapped around side of target
T25_24	Target 25	4	5/11/2023	JN	Loose metal debris and coral
T25_25	Target 25	4	5/11/2023	JN	Loose metal debris and coral
T25_26	Target 25	4	5/11/2023	JN	Loose metal debris beside target
T25_27	Target 25	4	5/11/2023	JN	Open hatch and metal debris, dock line
T25_28	Target 25	4	5/11/2023	JN	Mooring bit and structure
T25_29	Target 25	4	5/11/2023	JN	Detached cabin door
T25_30	Target 25	4	5/11/2023	JN	Interior engine room
T25_31	Target 25	4	5/11/2023	JN	Interior engine room
T25_32	Target 25	4	5/11/2023	JN	Interior engine room

File #	Target #	Survey Area	Date	Recorder	Description
T25_33	Target 25	4	5/11/2023	JN	Inside open hatch, mooring bit, dock line
T25_34	Target 25	4	5/11/2023	JN	Mooring bits
T25_35	Target 25	4	5/11/2023	JN	Interior engine room
T25_36	Target 25	4	5/11/2023	JN	Interior engine room
T25_37	Target 25	4	5/11/2023	JN	Interior engine room
T25_38	Target 25	4	5/11/2023	JN	Winch, dock line, hoses
T25_39	Target 25	4	5/11/2023	JN	Winch, dock line, hoses
T25_40	Target 25	4	5/11/2023	JN	Rub rail, stem, torn mooring bit from deck plating
T25_41	Target 25	4	5/11/2023	JN	CM photographing mooring bit tear
T25_42	Target 25	4	5/11/2023	JN	Mooring bit tear
T25_43	Target 25	4	5/11/2023	JN	Debris lodged between winch, cabin, and seawall
T25_44	Target 25	4	5/11/2023	JN	Debris between top deck and seawall
T25_45	Target 25	4	5/12/2023	AC	Seawall wrapped along cabin and winch
T25_46	Target 25	4	5/12/2023	AC	Seawall wrapped around cabin and winch, top deck, torn mooring
T25_47	Target 25	4	5/12/2023	AC	Seawall trailing off target and onto seafloor
T25_48	Target 25	4	5/12/2023	AC	Wrapped seawall along seafloor
T25_49	Target 25	4	5/12/2023	AC	Wrapped seawall along seafloor
T25_50	Target 25	4	5/12/2023	AC	Wrapped seawall along seafloor
T25_51	Target 25	4	5/12/2023	AC	Seawall, scale
T25_52	Target 25	4	5/12/2023	AC	Seawall, scale
T25_53	Target 25	4	5/12/2023	AC	Seawall, scale
T25_54	Target 25	4	5/12/2023	AC	Seawall, scale
T25_55	Target 25	4	5/12/2023	AC	Tire
T25_56	Target 25	4	5/12/2023	AC	Tire
T25_57	Target 25	4	5/12/2023	AC	Wrapped seawall along seafloor
T25_58	Target 25	4	5/12/2023	AC	Tire
T25_59	Target 25	4	5/12/2023	AC	Seawall trailing off target and onto seafloor
T25_60	Target 25	4	5/12/2023	AC	Seawall trailing off target and onto seafloor
T25_61	Target 25	4	5/12/2023	AC	Seawall trailing off target and onto seafloor
T25_62	Target 25	4	5/12/2023	AC	Cabin, open hatches, detached cabin door
T25_63	Target 25	4	5/12/2023	AC	Detached cabin door, dock line
T25_64	Target 25	4	5/12/2023	AC	Debris beside target
T25_65	Target 25	4	5/12/2023	AC	Detached cabin door, open hatch, seawall tied to shore via line in background
T25_66	Target 25	4	5/12/2023	AC	Detached cabin door, dock line, scale
T25_67	Target 25	4	5/12/2023	AC	Detached cabin door, dock line, scale
T25_68	Target 25	4	5/12/2023	AC	Top deck, open hatch
T25_69	Target 25	4	5/12/2023	AC	Top deck, open hatch
T25_70	Target 25	4	5/12/2023	AC	Top deck, wrapped seawall and line on left, scale
T25_71	Target 25	4	5/12/2023	AC	Top deck moorings and structure, scale

File #	Target #	Survey Area	Date	Recorder	Description
T25_72	Target 25	4	5/12/2023	AC	Interior engine room
T25_73	Target 25	4	5/12/2023	AC	Interior hatch, mooring bit, dock line
T25_74	Target 25	4	5/12/2023	AC	Interior hatch, mooring bit, dock line
T25_75	Target 25	4	5/12/2023	AC	Mooring bits, scale
T25_76	Target 25	4	5/12/2023	AC	Mooring bits, edge of open hatch, scale
T25_77	Target 25	4	5/12/2023	AC	Wrapped seawall tied to shore via line
T25_78	Target 25	4	5/12/2023	AC	Seawall wrapped around side of target, CM in background
T25_79	Target 25	4	5/12/2023	AC	Seawall line attached to shore, wrapped around tarp
T25_80	Target 25	4	5/12/2023	AC	Seawall line attached to shore, wrapped around tarp
T25_81	Target 25	4	5/12/2023	AC	Tire
T25_82	Target 25	4	5/12/2023	AC	Tire
T25_83	Target 25	4	5/12/2023	AC	Independent seawall on seafloor 30ft from target
T25_84	Target 25	4	5/12/2023	AC	Independent seawall on seafloor 30ft from target
T25_85	Target 25	4	5/12/2023	AC	Independent seawall on seafloor 30ft from target
T25_86	Target 25	4	5/12/2023	AC	Independent seawall on seafloor 30ft from target, scale
T25_87	Target 25	4	5/12/2023	AC	Independent seawall on seafloor 30ft from target, scale
T25_88	Target 25	4	5/12/2023	AC	Metal debris near target, scale
T25_89	Target 25	4	5/12/2023	AC	Metal debris near target, scale
T25_90	Target 25	4	5/12/2023	AC	Metal debris near target
T25_91	Target 25	4	5/12/2023	AC	Independent seawall on seafloor 30ft from target
T25_92	Target 25	4	5/12/2023	AC	Independent seawall on seafloor 30ft from target
T25_93	Target 25	4	5/12/2023	AC	Debris lodged seawall and top deck, scale
T25_94	Target 25	4	5/12/2023	AC	Debris lodged seawall and top deck, scale
T25_95	Target 25	4	5/12/2023	AC	Debris lodged seawall and top deck, scale
T25_96	Target 25	4	5/12/2023	AC	Winch, scale
T25_97	Target 25	4	5/12/2023	AC	Winch, scale
T25_98	Target 25	4	5/12/2023	AC	Winch, scale
T25_99	Target 25	4	5/12/2023	AC	Winch, scale
T25_100	Target 25	4	5/12/2023	AC	Winch, scale
T25_101	Target 25	4	5/12/2023	AC	Torn mooring bit from deck plating, scale
T25_102	Target 25	4	5/12/2023	AC	Torn mooring bit from deck plating, scale
T25_103	Target 25	4	5/12/2023	AC	Torn mooring bit from deck plating, scale
T25_104	Target 25	4	5/12/2023	AC	Debris beside target
T25_105	Target 25	4	5/12/2023	AC	Debris beside target
T25_106	Target 25	4	5/12/2023	AC	Seawall wrapped around target between cabin and winch
T25_107	Target 25	4	5/12/2023	AC	Seawall wrapped around target between cabin and winch
T25_108	Target 25	4	5/12/2023	AC	Seawall trailing off target and onto seafloor

File #	Target #	Survey Area	Date	Recorder	Description
T25_109	Target 25	4	5/12/2023	AC	Seawall wrapped around target between cabin and winch, CM photographing winch
T25_110	Target 25	4	5/12/2023	AC	Seawall trailing off target and onto seafloor
T25_111	Target 25	4	5/12/2023	AC	Seawall trailing off target and onto seafloor
T25_112	Target 25	4	5/12/2023	CM	Sealife
T25_113	Target 25	4	5/12/2023	CM	Sealife
T25_114	Target 25	4	5/12/2023	CM	Seawall wrapped around target
T25_115	Target 25	4	5/12/2023	CM	Top deck, cabin, seawall and line
T25_116	Target 25	4	5/12/2023	CM	Top deck, cabin, seawall and line
T25_117	Target 25	4	5/12/2023	CM	Top deck, mooring bit, open hatch, dock line
T25_118	Target 25	4	5/12/2023	CM	Top deck, mooring bit, open hatch, dock line
T25_119	Target 25	4	5/12/2023	CM	Engine room
T25_120	Target 25	4	5/12/2023	CM	Engine room
T25_121	Target 25	4	5/12/2023	CM	Mooring bits
T25_122	Target 25	4	5/12/2023	AC	Machinery in cabin
T25_123	Target 25	4	5/12/2023	AC	Machinery in cabin
T25_124	Target 25	4	5/12/2023	AC	Machinery in cabin, JN shinning flashlight through window
T25_125	Target 25	4	5/12/2023	AC	Machinery in cabin
T25_126	Target 25	4	5/12/2023	CM	Seawall wedged between cabin and winch
T25_127	Target 25	4	5/12/2023	CM	Rub rail, stem, torn mooring bit from deck plating
T25_128	Target 25	4	5/12/2023	CM	Torn mooring bit
T25_129	Target 25	4	5/12/2023	CM	Seawall wrapped around target
T25_130	Target 25	4	5/12/2023	CM	Seawall wrapped around target
T25_131	Target 25	4	5/12/2023	CM	Seawall wrapped around target
T25_132	Target 25	4	5/12/2023	CM	Loose metal debris and coral
T25_133	Target 25	4	5/12/2023	CM	Loose metal debris and coral
T25_134	Target 25	4	5/12/2023	CM	Coral
T25_135	Target 25	4	5/12/2023	CM	Coral
T25_136	Target 25	4	5/12/2023	CM	Top deck, mooring bit, open hatch, dock line, seawall attached to shore via line
T25_137	Target 25	4	5/12/2023	CM	AC documenting target
T25_138	Target 25	4	5/12/2023	CM	AC and MN documenting target
T25_139	Target 25	4	5/12/2023	CM	Seawall, tear
T25_140	Target 25	4	5/12/2023	CM	Open hatch to machinery
T25_141	Target 25	4	5/12/2023	CM	Machinery in cabin
T25_142	Target 25	4	5/12/2023	CM	Debris beside target
T25_143	Target 25	4	5/12/2023	CM	Debris beside target
T25_144	Target 25	4	5/12/2023	CM	Debris beside target
T25_145	Target 25	4	5/12/2023	CM	Independent seawall 30ft from target
T25_146	Target 25	4	5/12/2023	CM	Independent seawall 30ft from target

File #	Target #	Survey Area	Date	Recorder	Description
T25_147	Target 25	4	5/12/2023	CM	Independent seawall 30ft from target
T25_148	Target 25	4	5/12/2023	CM	Independent seawall 30ft from target
T25_149	Target 25	4	5/12/2023	CM	Independent seawall 30ft from target
T25_150	Target 25	4	5/12/2023	CM	AC documenting torn mooring bit, scale
T25_151	Target 25	4	5/12/2023	CM	Winch, seawall
T25_152	Target 25	4	5/12/2023	CM	Winch
T25_153	Target 25	4	5/12/2023	CM	Winch

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 23**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T26_1	Target 26	1	5/12/2023	JN	Metal fragment
T26_2	Target 26	1	5/12/2023	JN	Metal fragment
T26_3	Target 26	1	5/12/2023	JN	Prop, windless in background
T26_4	Target 26	1	5/12/2023	JN	Windless
T26_5	Target 26	1	5/12/2023	JN	Anchor
T26_6	Target 26	1	5/12/2023	JN	Prop
T26_7	Target 26	1	5/12/2023	JN	Prop
T26_8	Target 26	1	5/12/2023	JN	Partially buried propeller
T26_9	Target 26	1	5/12/2023	JN	Prop
T26_10	Target 26	1	5/12/2023	JN	Anchor
T26_11	Target 26	1	5/12/2023	JN	AC documenting anchor
T26_12	Target 26	1	5/12/2023	JN	Anchor
T26_13	Target 26	1	5/12/2023	JN	Anchor
T26_14	Target 26	1	5/12/2023	JN	Metal fragment
T26_15	Target 26	1	5/12/2023	JN	Partially buried propeller
T26_16	Target 26	1	5/12/2023	JN	Partially buried propeller
T26_17	Target 26	1	5/12/2023	JN	Partially buried propeller
T26_18	Target 26	1	5/12/2023	JN	Partially buried propeller
T26_19	Target 26	1	5/12/2023	JN	Prop, windless in background
T26_20	Target 26	1	5/12/2023	JN	Prop, windless in background
T26_21	Target 26	1	5/12/2023	JN	Windless
T26_22	Target 26	1	5/12/2023	JN	Windless
T26_23	Target 26	1	5/12/2023	JN	Windless
T26_24	Target 26	1	5/12/2023	JN	Engine machinery
T26_25	Target 26	1	5/12/2023	JN	Engine machinery
T26_26	Target 26	1	5/12/2023	JN	Engine machinery
T26_27	Target 26	1	5/12/2023	JN	Loose screw bolts
T26_28	Target 26	1	5/12/2023	JN	Engine machinery
T26_29	Target 26	1	5/12/2023	JN	Engine machinery
T26_30	Target 26	1	5/12/2023	JN	Engine machinery
T26_31	Target 26	1	5/12/2023	JN	Metal, corals
T26_32	Target 26	1	5/12/2023	JN	Metal, corals
T26_33	Target 26	1	5/12/2023	JN	Cylindrical machinery part

File #	Target #	Survey Area	Date	Recorder	Description
T26_34	Target 26	1	5/12/2023	JN	Large gash in seafloor
T26_35	Target 26	1	5/12/2023	JN	Large gash in seafloor
T26_36	Target 26	1	5/12/2023	JN	Large gash in seafloor
T26_37	Target 26	1	5/12/2023	JN	Large gash in seafloor
T26_38	Target 26	1	5/12/2023	AC	Cylindrical metal fragment
T26_39	Target 26	1	5/12/2023	AC	Seafloor with metal fragments in background
T26_40	Target 26	1	5/12/2023	AC	Prop
T26_41	Target 26	1	5/12/2023	AC	Prop
T26_42	Target 26	1	5/12/2023	AC	Prop
T26_43	Target 26	1	5/12/2023	AC	Prop
T26_44	Target 26	1	5/12/2023	AC	Prop
T26_45	Target 26	1	5/12/2023	AC	Anchor
T26_46	Target 26	1	5/12/2023	AC	Anchor
T26_47	Target 26	1	5/12/2023	AC	Anchor
T26_48	Target 26	1	5/12/2023	AC	Metal fragment
T26_49	Target 26	1	5/12/2023	AC	Metal fragment
T26_50	Target 26	1	5/12/2023	AC	Metal fragment
T26_51	Target 26	1	5/12/2023	AC	Metal fragment
T26_52	Target 26	1	5/12/2023	AC	Partially buried propeller and shaft
T26_53	Target 26	1	5/12/2023	AC	Partially buried propeller and shaft
T26_54	Target 26	1	5/12/2023	AC	Partially buried propeller and shaft
T26_55	Target 26	1	5/12/2023	AC	Partially buried propeller and shaft
T26_56	Target 26	1	5/12/2023	AC	Partially buried propeller and shaft
T26_57	Target 26	1	5/12/2023	AC	Prop
T26_58	Target 26	1	5/12/2023	AC	Prop, windless in background
T26_59	Target 26	1	5/12/2023	AC	Windlass and prop
T26_60	Target 26	1	5/12/2023	AC	Windlass and prop
T26_61	Target 26	1	5/12/2023	AC	Windlass
T26_62	Target 26	1	5/12/2023	AC	Windlass
T26_63	Target 26	1	5/12/2023	AC	Windlass
T26_64	Target 26	1	5/12/2023	AC	Partially buried propeller
T26_65	Target 26	1	5/12/2023	AC	Engine machinery
T26_66	Target 26	1	5/12/2023	AC	Engine machinery
T26_67	Target 26	1	5/12/2023	AC	Engine machinery
T26_68	Target 26	1	5/12/2023	AC	Engine machinery
T26_69	Target 26	1	5/12/2023	AC	Engine machinery
T26_70	Target 26	1	5/12/2023	AC	Loose screw bolts
T26_71	Target 26	1	5/12/2023	AC	Loose screw bolts
T26_72	Target 26	1	5/12/2023	AC	Engine machinery, blurry
T26_73	Target 26	1	5/12/2023	AC	Engine machinery

File #	Target #	Survey Area	Date	Recorder	Description
T26_74	Target 26	1	5/12/2023	AC	Engine machinery
T26_75	Target 26	1	5/12/2023	AC	Anchor
T26_76	Target 26	1	5/12/2023	AC	Anchor
T26_77	Target 26	1	5/12/2023	AC	Engine machinery, blurry
T26_78	Target 26	1	5/12/2023	AC	Engine machinery
T26_79	Target 26	1	5/12/2023	AC	Engine machinery
T26_80	Target 26	1	5/12/2023	AC	Wreck extends into surgey reef
T26_81	Target 26	1	5/12/2023	AC	Wreck extends into surgey reef
T26_82	Target 26	1	5/12/2023	AC	Engine machinery
T26_83	Target 26	1	5/12/2023	AC	Engine machinery
T26_84	Target 26	1	5/12/2023	AC	Metal fragment
T26_85	Target 26	1	5/12/2023	AC	Cylindrical metal fragment
T26_86	Target 26	1	5/12/2023	AC	Large gash in seafloor
T26_87	Target 26	1	5/12/2023	AC	Large gash in seafloor
T26_88	Target 26	1	5/12/2023	AC	Large gash in seafloor
T26_89	Target 26	1	5/12/2023	AC	Large gash in seafloor

PHOTOGRAPHIC MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #: 24**
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Survey Area	Date	Recorder	Description
T27_1	Target 27	3	5/11/2023	JG	Windlass
T27_2	Target 27	3	5/11/2023	JG	Windlass
T27_3	Target 27	3	5/11/2023	JG	Windlass, obscured by hand
T27_4	Target 27	3	5/11/2023	JG	Windlass
T27_5	Target 27	3	5/11/2023	JG	Windlass
T27_6	Target 27	3	5/11/2023	JG	Windlass
T27_7	Target 27	3	5/11/2023	JG	Windlass
T27_8	Target 27	3	5/11/2023	JG	Windlass
T27_9	Target 27	3	5/11/2023	JG	Windlass
T27_10	Target 27	3	5/11/2023	JG	Windlass
T27_11	Target 27	3	5/11/2023	JG	Windlass
T27_12	Target 27	3	5/11/2023	JG	Windlass
T27_13	Target 27	3	5/11/2023	JG	Windlass
T27_14	Target 27	3	5/11/2023	JG	Windlass
T27_15	Target 27	3	5/11/2023	JG	Windlass
T27_16	Target 27	3	5/11/2023	JG	Windlass
T27_17	Target 27	3	5/11/2023	JG	Windlass
T27_18	Target 27	3	5/11/2023	JG	Windlass
T27_19	Target 27	3	5/11/2023	JG	Windlass, scale
T27_20	Target 27	3	5/11/2023	JG	Windlass, scale
T27_21	Target 27	3	5/11/2023	JG	Windlass, scale
T27_22	Target 27	3	5/11/2023	JG	Windlass, scale
T27_23	Target 27	3	5/11/2023	JG	Windlass, scale
T27_24	Target 27	3	5/11/2023	JG	Windlass, scale
T27_25	Target 27	3	5/11/2023	JG	Windlass, scale
T27_26	Target 27	3	5/11/2023	JG	Windlass, scale
T27_27	Target 27	3	5/11/2023	JG	Windlass, scale
T27_28	Target 27	3	5/11/2023	JG	Windlass, scale
T27_29	Target 27	3	5/11/2023	JG	Windlass, scale
T27_30	Target 27	3	5/11/2023	JG	Windlass, scale

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Terrestrial Photo Log

Photo	GPS Location	Project	Site Number	Feature Number	Description	View	Recorder	Device	Date
2023-04-28 09.53.38.jpg	9.5154323,138.1242222	IA202233	n/a	Spanish fort	Project director explained the trimble process to YSHPO personnel	east	BSV	Tablet S8-00	4/28/2023 9:53:37
2023-04-28 10.03.40.jpg, 2023-04-28 10.04.25.jpg	9.5153027,138.1244182	IA202233	Spanish fort	n/a	South section of the Spanish Fort East Wall	west	BSV	Tablet S8-00	4/28/2023 10:03:39
2023-04-28 10.09.23.jpg, 2023-04-28 10.09.33.jpg	9.5155869,138.1243383	IA202233	Spanish fort	n/a	North section of the Spanish Fort East Wall	west	BSV	Tablet S8-00	4/28/2023 10:09:21
2023-04-28 10.16.03.jpg, 2023-04-28 10.20.11.jpg	9.5150961,138.1241145	IA202233	Spanish fort	n/a	South East corner of Spanish Fort	northwest	BSV	Tablet S8-00	4/28/2023 10:16:00
2023-04-28 10.23.04.jpg, 2023-04-28 10.23.28.jpg	9.5151501,138.1242537	IA202233	Spanish fort	n/a	South East Corner of Spanish fort * unable to take west facing photographs due to parked car*	northwest	BSV	Tablet S8-00	4/28/2023 10:23:02
2023-04-28 10.25.26.jpg, 2023-04-28 10.26.06.jpg	9.5151151,138.1241384	IA202233	Spanish fort	n/a	South East Corner of Spanish fort	north	BSV	Tablet S8-00	4/28/2023 10:25:25

Terrestrial Photo Log									
Photo	GPS Location	Project	Site Number	Feature Number	Description	View	Recorder	Device	Date
2023-04-28 10.31.05.jpg	9.5154381,138.1242272	IA202233	Spanish fort	Feature 1	Feature 1,Stairway thought to be of Japanese construction present in the middle of the east wall of the Spanish fort *board incorrectly states they are modern, can not retake due to a car parked in front prior to edit*	west	BSV	Tablet S8-00	4/28/2023 10:31:05
2023-04-28 10.32.52.jpg, 2023-04-28 10.33.05.jpg	9.5154169,138.1241098	IA202233	Spanish fort	Feature 1	Zoomed out (0.5) overview of the stairway thought to be Japanese construction. Add on connects the east wall segments. *Board, although hard to see in photographs incorrectly states stairs are of modern construction*	west	BSV	Tablet S8-00	4/28/2023 10:32:51

Terrestrial Photo Log									
Photo	GPS Location	Project	Site Number	Feature Number	Description	View	Recorder	Device	Date
2023-04-28 11.56.47.jpg, 2023-04-28 11.57.25.jpg	9.5153308,138.1242364	IA202233	Spanish fort	Feature 1	Horizontal view of stairway thought to be of Japanese construction present on the eastern segment of the historic east wall	north	BSV	Tablet S8-00	4/28/2023 10:35:16
2023-04-28 10.37.49.jpg, 2023-04-28 10.38.25.jpg	9.5156229,138.1241407	IA202233	Spanish fort	n/a	Overview of modern infrastructure over historic wall, located on the north eastern wall segment	west	BSV	Tablet S8-00	4/28/2023 10:37:47
2023-04-28 10.41.01.jpg, 2023-04-28 10.41.14.jpg	9.5158147,138.1240875	IA202233	Spanish fort	n/a	North East Corner of the Spanish fort	southwest	BSV	Tablet S8-00	4/28/2023 10:41:00
2023-04-28 10.45.01.jpg, 2023-04-28 10.45.17.jpg	9.5158629,138.1240684	IA202233	n/a	Spanish Fort	East section of the northern wall	southeast	BSV	Tablet S8-00	4/28/2023 10:45:01
2023-04-28 10.46.10.jpg, 2023-04-28 10.46.27.jpg	9.515864,138.1240635	IA202233	Spanish fort	n/a	Overview of the northern wall, modern parking lot located in front	south	BSV	Tablet S8-00	4/28/2023 10:46:07
2023-04-28 10.48.54.jpg, 2023-04-28 10.49.07.jpg	9.515988,138.1238373	IA202233	Spanish fort	n/a	North West corner of the Spanish fort	south	BSV	Tablet S8-00	4/28/2023 10:48:53

Terrestrial Photo Log

Photo	GPS Location	Project	Site Number	Feature Number	Description	View	Recorder	Device	Date
2023-04-28 10.53.19.jpg, 2023-04-28 10.53.50.jpg	9.5156232,138.1238157	IA202233	Spanish fort	Feature 2	North section of the western wall of the fort, drainage pipe present going into the historic wall noted as feature 2 due to being an addition to the original historic feature	east	BSV	Tablet S8-00	4/28/2023 10:53:19
2023-04-28 12.04.46.jpg, 2023-04-28 12.05.27.jpg	9.5153514,138.1241861	IA202233	Spanish fort	Feature 1	US coast and geodetic survey bench marker present in the sixth step up of the stairway	north	BSV	Tablet S8-00	4/28/2023 12:04:41
2023-04-28 12.09.18.jpg, 2023-04-28 12.09.36.jpg	9.5153628,138.1241481	IA202233	Spanish fort	Feature 1	Close up view of damage in the east wall of the feature 1 stairway. Damage reveals a rebar that appears to be smooth along with concrete that shows pebble sized aggregates mixed in. Both are congruent with Japanese WW2 construction.	west	BSV	Tablet S8-00	4/28/2023 12:09:16

Terrestrial Photo Log									
Photo	GPS Location	Project	Site Number	Feature Number	Description	View	Recorder	Device	Date
2023-04-28 12.31.00.jpg, 2023-04-28 12.32.18.jpg	9.5153151,138.1240427	IA202233	Spanish fort	Feature 3	Feature 3, Steps of unknown age, possibly Japanese	east	BSV	Tablet S8-00	4/28/2023 12:30:21
2023-04-28 12.40.07.jpg, 2023-04-28 12.40.20.jpg	9.5151424,138.1239975	IA202233	Spanish fort	n/a	South wall of the Spanish fort, closer view ofconstruction as well as overview of most of the wall	north	BSV	Tablet S8-00	4/28/2023 12:40:06
2023-04-28 12.43.59.jpg, 2023-04-28 12.44.18.jpg	9.5151128,138.1238324	IA202233	Spanish fort	n/a	South West Wall of Spanish fort	north	BSV	Tablet S8-00	4/28/2023 12:43:58
2023-04-28 12.48.18.jpg, 2023-04-28 12.48.39.jpg	9.5152224,138.1238205	IA202233	Spanish fort	Feature 4	Feature 4, Stepped terrace add on, representative sample of possibly modern add on of traditional terrace on west side of building.	North east	BSV	Tablet S8-00	4/28/2023 12:48:17
2023-04-28 12.51.14.jpg, 2023-04-28 12.51.44.jpg	9.5152488,138.1237941	IA202233	Spanish fort	Feature 5	Feature 5, Steps of unknown age, possibly Japanese construction on western side of building	north	BSV	Tablet S8-00	4/28/2023 12:51:11

Terrestrial Photo Log

Photo	GPS Location	Project	Site Number	Feature Number	Description	View	Recorder	Device	Date
2023-04-28 12.52.12.jpg	9.5152432,138.1238163	IA202233	Spanish fort	n/a	Overview of the western wall of Spanish fort showing the possibly modern terrace add on as well as modern building	north	BSV	Tablet S8-00	4/28/2023 12:52:12
2023-04-30 07.15.20.jpg, 2023-04-30 07.15.57.jpg, 2023-04-30 07.21.22.jpg	9.515498,138.1241591	IA202233	Spanish fort/Japanese hospital	Feature 6	Japanese building, possible morgue, west and north wall	south and east	BSV	Tablet S8-00	4/30/2023 7:15:18
2023-04-30 07.26.49.jpg, 2023-04-30 07.28.12.jpg, 2023-04-30 07.28.44.jpg, 2023-04-30 07.29.40.jpg, 2023-04-30 07.31.23.jpg	9.5153129,138.1243889	IA202233	Spanish fort/Japanese hospital	Feature 6	Japanese building, possible morgue, east wall	northwest, southwest, west	BSV	Tablet S8-00	4/30/2023 7:15:18
2023-04-30 07.33.15.jpg		IA202233	Spanish fort/Japanese hospital	Feature 6	Japanese building, possible morgue, south wall	northeast	BSV	Tablet S8-00	4/30/2023 7:15:18
2023-04-30 14.40.43.jpg, 2023-04-30 14.41.37.jpg, 2023-04-30 14.45.04.jpg	9.5149272,138.1236517	IA202233	Spanish fort	Feature 4	Overview of Feature 4, showing all of the possible modern terrace additions.	north	BSV	Tablet S8-00	4/30/2023 14:40:42
2023-05-01 08.03.25.jpg, 2023-05-01 08.03.44.jpg, 2023-05-01 08.04.11.jpg	9.515889,138.1241021	IA202233	Spanish fort/Japanese hospital	n/a	NE corner of north wall, overview of profile jamn03	south	BSV	Tablet S8-00	5/1/2023 8:03:06
2023-05-01 08.08.36.jpg		IA202233	Spanish fort	n/a	Overview of west wall	south	BSV	Tablet S8-00	5/1/2023 8:08:34
2023-05-01 08.11.47.jpg	9.5157007,138.1238661	IA202233	Spanish fort/Japanese hospital	n/a	West wall of Spanish fort	northeast	BSV	Tablet S8-00	5/1/2023 8:11:44
2023-05-01 08.13.19.jpg, 2023-05-01 08.16.08.jpg	9.5157751,138.123882	IA202233	Spanish fort	n/a	West wall of Spanish fort	southeast	BSV	Tablet S8-00	5/1/2023 8:13:17

Terrestrial Photo Log

Photo	GPS Location	Project	Site Number	Feature Number	Description	View	Recorder	Device	Date
2023-05-01 08.21.19.jpg, 2023-05-01 08.21.39.jpg	9.5152073,138.124144	IA202233	Spanish fort	n/a	Highlight of Spanish "silleria" present in the wall core	north	BSV	Tablet S8-00	5/1/2023 8:21:14
2023-05-01 15.05.38.jpg, 2023-05-01 15.05.52.jpg	9.5152927,138.1238774	IA202233	Spanish fort	Feature 07	Feature 07, possible original Spanish brick foundation	east	BSV	Tablet S8-00	5/1/2023 15:02:38
2023-05-02 10.03.59.jpg, 2023-05-02 10.04.24.jpg, 2023-05-02 10.04.38.jpg	9.5149206,138.1250587	IA202233	Yap Legislature Building	Feature 1	Overview of Feature 1, large concrete gateway of Japanese manufacture. Most likely shrine entrance.	southwest	BSV	Tablet S8-00	5/2/2023 10:03:59
2023-05-02 11.11.59.jpg	9.5150619,138.1246562	IA202233	Yap Legislature Building	n/a	Overview of Yap Legislature Building	east	BSV	Tablet S8-00	5/2/2023 11:11:53
2023-05-02 11.31.07.jpg, 2023-05-02 11.32.26.jpg	9.5148957,138.1251068	IA202233	Yap Legislature Building	Feature 02	Spanish Cannon present at the entry of the building	south, east	BSV	Tablet S8-00	5/2/2023 11:31:06
2023-05-02 11.47.33.jpg, 2023-05-02 11.47.46.jpg	9.5149539,138.1250174	IA202233	Yap Legislature Building	Feature 03	Feature 03a, Japanese monument structure	south	BSV	Tablet S8-00	5/2/2023 11:47:32
2023-05-02 13.03.51.jpg, 2023-05-02 13.04.04.jpg	9.5149048,138.1251041	IA202233	Yap Legislature Building	Feature 03b	Feature 03a, Japanese monument structure	north	BSV	Tablet S8-00	5/2/2023 13:03:48
2023-05-02 13.07.30.jpg, 2023-05-02 13.07.49.jpg, 2023-05-02 13.08.05.jpg	9.5149171,138.1250436	IA202233	Yap Legislature Building		Overview of monuments	east	BSV	Tablet S8-00	5/2/2023 13:07:28

Terrestrial Photo Log

Photo	GPS Location	Project	Site Number	Feature Number	Description	View	Recorder	Device	Date
2023-05-04 11.52.31.jpg, 2023-05-04 11.52.56.jpg, 2023-05-04 11.53.13.jpg	9.5142936,1 38.1168161	IA202233	n/a	Feature JAMN01	XX century or possible Japanese stairs and stones wall	south	JAMN	Tablet S8-00	5/4/2023 11:52:27
2023-05-04 13.52.45.jpg, 2023-05-04 13.53.52.jpg, 2023-05-04 13.56.02.jpg, 2023-05-04 13.56.17.jpg	9.5147584,1 38.1154479	IA202233	n/a	Feature JAMN02	XX century traditional retaining wall	west	JAMN	Tablet S8-00	5/4/2023 13:52:17
2023-05-05 14.48.03.jpg, 2023-05-05 14.48.35.jpg, 2023-05-05 14.49.24.jpg, 2023-05-05 14.52.11.jpg, 2023-05-05 14.54.51.jpg, 2023-05-05 14.55.58.jpg	9.5127412,1 38.1265753	IA202233	n/a	Target 01	Target 01 "Micro Spirit Yap", overview and highlights photos	various	JAMN	Tablet S8-00	5/5/2023 14:48:02
2023-05-05 14.59.30.jpg, 2023-05-05 14.59.44.jpg, 2023-05-05 14.59.56.jpg, 2023-05-05 15.00.13.jpg	9.5167747,1 38.1216392	IA202233	n/a	Target 02	Target 02, overview and highlight of "ANIL. A" inscription photos	various	JAMN	Tablet S8-00	5/5/2023 14:48:02
2023-05-05 15.22.47.jpg, 2023-05-05 15.22.59.jpg	9.5129502,1 38.1262738	IA202233	n/a	Target 03	Target 03 photos, probable modern	east	JAMN	Tablet S8-00	5/5/2023 14:48:02
2023-05-05 15.26.02.jpg, 2023-05-05 15.26.26.jpg, 2023-05-05 15.28.42.jpg, 2023-05-05 15.31.10.jpg, 2023-05-05 15.33.38.jpg, 2023-05-05 15.52.29.jpg, 2023-05-05 15.52.59.jpg, 2023-05-05 15.53.15.jpg, 2023-05-05 16.11.17.jpg	9.5128287,1 38.126261	IA202233	n/a	Target 04	Target 04, overview ad highlights photos	various	JAMN	Tablet S8-00	5/5/2023 14:48:02
2023-05-05 15.37.26.jpg	9.5167741,1 38.1216436	IA202233	n/a	Target 05	Target 05 photos	northeast	JAMN	Tablet S8-00	5/5/2023 14:48:02

Terrestrial Photo Log									
Photo	**GPS Location**	**Project**	**Site Number**	**Feature Number**	**Description**	**View**	**Recorder**	**Device**	**Date**
2023-05-05 15.39.02.jpg	9.5167741,138.1216436	IA202233	n/a	Target 05	Target 05 photos	noth	JAMN	Tablet S8-00	5/5/2023 14:48:02
2023-05-05 16.37.30.jpg, 2023-05-05 16.38.13.jpg, 2023-05-05 16.40.00.jpg, 2023-05-05 16.43.23.jpg	9.5158137,138.1239323	IA202233	n/a	Target 06	Target 06 photos	west	JAMN	Tablet S8-00	5/5/2023 14:48:02

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VIDEO MANAGEMENT LOG		
Project: Marine Cultural Survey	**Project Dates:** 5/3/2023-5/16/2023	**Log Sheet #:** 1
Location: Yap, Federated States of Micronesia		
Camera Make & Model: Go Pro 7		
Recorders: Joe Grinnan (JG), Amber Cabading (AC), Chris Marshall (CM), Matt Napolitano (MN), Juanan Nicolau (JN)		

File #	Target #	Location	Date	Recorder	Description
GX010897	N/A	7	5/7/2023	AC	Broken corals
GX010898	N/A	7	5/7/2023	AC	Metal bar folded
GX010899	N/A	7	5/7/2023	AC	Metal bar folded at the bottom of a wall of broken corals
GX010900	N/A	7	5/7/2023	AC	Surrounding coral wall
GX010872	Target 08	7	5/7/2023	MN	Perimeter of barge, chain, mooring bits, hatches, rub rails, dock lines
GX010873	Target 08	7	5/7/2023	MN	Perimeter of barge, chain, mooring bits, hatches, rub rails, dock lines
GX030873	Target 08	7	5/7/2023	CM	Perimeter of barge, chain, mooring bits, hatches, rub rails, dock lines
GOPR4409	Target 09	2	5/8/2023	CM	Stern to bow, weather deck, cabin, MN ahead documenting
GX010901	Target 09	2	5/8/2023	AC	Propeller, prop and rudder
GX010936	Target 09	2	5/8/2023	AC	Stern, weather deck, cabin, starboard side, top decks on seafloor
GX020901	Target 09	2	5/8/2023	AC	Stern, weather deck, cabin, rudder, prop, propeller
GX030901	Target 09	2	5/8/2023	AC	Propeller, keelson, bottom hull of target to bow
GOPR4420	Target 11	2	5/8/2023	CM	Port side ramp
GX011082	Target 11	2	5/8/2023	JG	Stern to ramp, interior framing, inside engine room and pilot house
GOPR4454	Target 12	4	5/9/2023	CM	Top of structure
GX011228	Target 12	4	5/9/2023	MN	Perimeter of structure
GX011229	Target 12	4	5/9/2023	MN	Perimeter and top of structure
GOPR4458	Target 13	4	5/9/2023	JN	Anchor, side of vessel
GX011236	Target 13	4	5/9/2023	AC	Side of vessel, crumbled wreckage, 55-gallon drum, top of barge, mooring bit, anchor
GOPR4645	Target 14	7	5/9/2023	CM	Tracks, collapsed boom, cabin, controls
GX011275	Target 14	7	5/9/2023	MN	Tracks, collapsed boom, cabin, controls
GX012431	Target 16	5	5/11/2023	JN	Pilot house, mooring bit, open engine room, open bed, corrugated flooring, detached ramp
GX012432	Target 16	5	5/11/2023	JN	Side, marine growth
GX012579	Target 18	4	5/12/2023	MN	Coral reef

File #	Target #	Location	Date	Recorder	Description
GX011281	Target 23	3	5/10/2023	AC	Debris field of wreck, substantial metal framing, engine mechanics, prop, propeller, shaft, anchor
GX011933	Target 23	3	5/11/2023	MN	Propellers, prop
GX011985	Target 23	3	5/11/2023	MN	Metal radiators/crates, scale
GX012031	Target 23	3	5/11/2023	MN	Engine details, scale
GX012045	Target 23	3	5/11/2023	MN	Engine details
GX012046	Target 23	3	5/11/2023	MN	Small wing nut
GOPR5101	Target 24	3	5/11/2023	CM	Debris field of shipwreck, AC documenting anchor
GOPR5254	Target 25	4	5/11/2023	JN	Rub rail and torn mooring bit
GOPR5329	Target 25	4	5/12/2023	MN	Seawall along sea bottom
GOPR5346	Target 25	4	5/12/2023	CM	Top deck, engine room, cabin, top of cabin, AC and MN documenting wreck
GX012541	Target 26	1	5/12/2023	AC	Prop, engine metal debris