



REPUBLIC OF THE MARSHALL ISLANDS  
MINISTRY OF INTERNAL AFFAIRS  
HISTORIC PRESERVATION OFFICE

*Archaeological Survey and Inventory of  
Submerged Cultural Resources in the Lagoon  
of Kwajalein Atoll:*

SITES ON THE SOUTH AND EASTERN SIDES OF KWAJALEIN ATOLL

Matthew B. Holly

HPO Report 2000/02

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Majuro Atoll, 2000

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SITES ON THE SOUTH AND EASTERN SIDES OF KWAJALEIN ATOLL

PREPARED FOR THE HISTORIC PRESERVATION OFFICE,  
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I must also credit Hideo Milne with the introductory story on the Zero lost at Kwajalein Site 9, his story was verified by 2 other divers, but unfortunately we could not located the exact site for this survey.

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Matthew B. Holly  
Majuro, Marshall Islands  
September 1999

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## INTRODUCTION

The following report is the result of survey work conducted between January 1, 1999 and June 5, 1999 in the lagoons of Majuro and Kwajalein Atolls, Republic of the Marshall Islands. The survey was done for the Historic Preservation Office, Ministry of Internal Affairs, Republic of the Marshall Islands. The U.S. National Park Service provided funding to the Historic Preservation Office through the Historic Preservation Fund grant. The survey, called the "Archaeological Survey and Inventory of Submerged Resources in the Lagoons of Majuro and Kwajalein Atoll," was a Phase II archaeological reconnaissance survey. Only known sites were recorded. No artifacts were collected. This report covers only the sites surveyed in Kwajalein Lagoon. See *Archaeological Survey and Inventory of Submerged Cultural Resources in the Lagoon of Majuro Atoll* (Holly 2000) for information concerning the other half of the project. The information collected is to be used by the Historic Preservation Office to develop and/or protect the sites, primarily, and obviously, for SCUBA diving and tourism. Additional archival research was done to supplement the author's own research into many of these and other sites. All field documents, including completed site survey forms, field notes, maps, photographs, and video tapes are housed at the Historic Preservation Office, Majuro Atoll, Republic of the Marshall Islands. As the survey was reconnaissance in nature no artifacts were collected.

My background in this field is detailed and overlapping. I have been a SCUBA Instructor since 1977, and have operated a SCUBA diving tourist business in the Marshall Islands since 1979. I found that a tourist visitor provided with complete information on any site was a much happier, and free spending visitor, so I began my research. I now have an extensive marine and military library, and a database of US losses in the Marshall Islands in World War Two that helped locate the remains of John W. Starmann in Mili Atoll in 1994.

As my business developed, the demand for underwater photographic work grew, both in still photography and videotape. The demand for commercial underwater services and repairs required even more equipment, and soon salvage was added to my resume. Aquaculture then demanded many of these skills, and I had a foray into the collection of marine aquarium fish, the growing of oysters and clams, and conducting professional surveys around the Marshall Islands for many different marine items, even depth surveys. A professional videotape produced on the underwater trash problem in Majuro expanded my film and computer abilities, and this survey has required the collection of all my skills and equipment into the building of a single report.

Considering the expense of conducting an underwater survey, not all submerged resources could be included in this survey. The underwater sites chosen were picked considering many factors. The site had to be over 50 years old, and had to have some form of cultural or archeological value. Cultural value

now also includes the tourism value of the site, as tourism impacts positively with income dollars to the country and negatively with the degradation of the site by the stripping of artifacts. This means a simple 50-year-old engine or cola bottle may not qualify, but a debris field of 50-year-old bottles or discarded military vehicles used as a popular tourism and photographic site does.

Obvious sites included World War II shipwrecks and aircraft, and these were the bulk of the survey items. The Marshall Islands was the site of many bases and battles, with items lost from both sides, before, during, and after World War II. The sites most endangered by the environment, time, and/or modern development were given highest priority. Sites were also chosen for case studies, to compare the impact of years of diving, and for some of the more inaccessible sites, to compare the lack of impact by divers. Any significant or molested artifacts were described for each site.

The survey work consisted of multiple SCUBA dives on the sites at both Majuro and Kwajalein Atolls. Most of the sites I had visited before, especially those at Majuro. The Majuro sites could therefore be studied with more detail, their parameters defined better, with better planning for photo and video work. Some of the Kwajalein sites I visited for the first time, and I was fortunate on most of these to have both wonderful dives as far as details and visibility.

Most of the sites were boat dives, primarily for ease of equipment use, but some were accessed by beach dives. Survey techniques on each site usually began with identifying its' exact location by GPS or reference points, and defining the sites parameters on the bottom. Video footage was taken on virtually every dive, with separate still photography on most of the sites. Some dives were exploratory in nature, to find an exact location, item or artifact. The more difficult sites, such as the Majuro Grumman "Duck" or the Kwajalein "Zero" took multiple search dives without camera gear. Large sites such as the Majuro "Parking Lot" and the Kwajalein "Prinz Eugen" would take months to properly identify and categorize, and required many more dives than listed in this report.

Some sites originally planned for the Kwajalein survey were omitted and replaced with other sites, as some sites could not be located or were difficult or dangerous to dive. They were replaced with other significant sites with similar features or goals to study. A site at Kwajalein was never found, the Deep Ebeye Zero, but was listed with expected site history. Two sites were added to the Majuro list, as during the survey the Majuro US Dock at Rita developed into its own unique site both underwater and by research, and the Val Dive Bomber was added so its unique history, if ever located again, would be recorded and not lost to time.

The Majuro work was done piecemeal over the survey period, and the Kwajalein survey required two separate SCUBA diving trips to Kwajalein Atoll to conduct underwater surveys of the sites. Additional archival research was

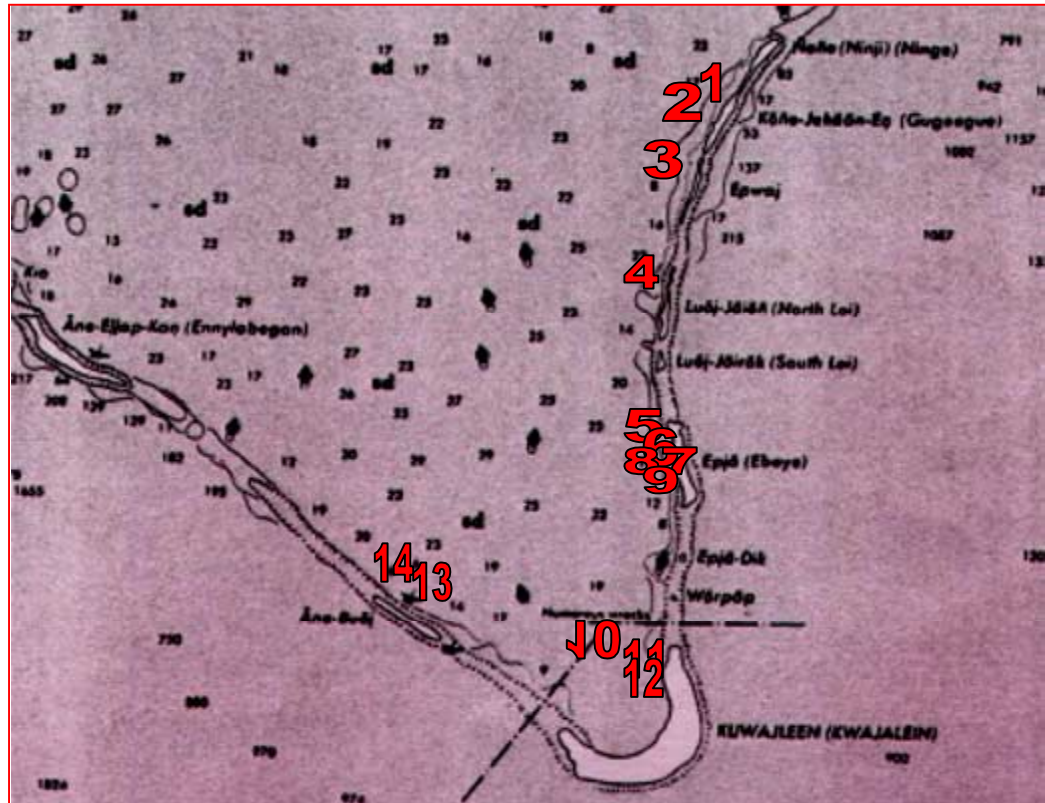
conducted to support these site histories. Information on these sites was also complemented by my own SCUBA diving in Kwajalein in the past, and research information acquired during my own studies of the Military History of World War Two in the Republic. My extensive diving on and research into the "Prinz Eugen" wreck as both a tour group operator and researcher may add some new information to this bit of history. And lastly, my experience in the commercial field of SCUBA diving and maritime work may add some details to some of the vessels that have gone unreported to the un-trained eye.

The RMI Historic Preservation Office was also involved in the survey process, providing a certified SCUBA diver on dives both in Majuro and Kwajalein. The office provided additional GPS equipment and software, besides reviewing this report before final draft.

Lastly, a number of appendices follow in this report. Appendices include a complete bibliography, index of references by site, and a list of equipment used for this survey.

MAP OF SOUTHRN KWAJALEIN WITH SITE POSITION  
SUMMARY

SITES 1 THROUGH 14



Map of Kwajalein. (Reprinted from: *U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL COASTAL RESOURCE ATLAS, 1989:115.*)

## KWAJALEIN SITE 1 REPORT

### NAME: NORTH GUGEGWE PIER WRECK

RMIHPO Site No. MI-KW-LA-001

### GENERAL DESCRIPTION AND LOCATION

The North Gugegwe Pier Wreck is a debris field of the remains of a Japanese vessel, located approximately 75 yards slightly Northwest of the existing Gugegwe main pier. It is located in 15 to 30 feet of water on a primarily sandy bottom with mixed small coral heads. The visibility on survey days was very good, due to the proximity to the Gugegwe channel. A map of the site, Map KS1, follows the Photo Section of this report.

GPS Position: N 08.50.000 x E 167.45.000

### DETAILS

The North Gugegwe Wreck has been listed as a 100-foot wooden trawler, probably sunk during the bombing and shelling of the atoll prior to the invasion of the atoll by American Forces in February 1944 (*Bailey, 1992:37*). The vessel was later blown up to clear the approach to the Gugegwe dock (*Miller, 1991:92*). From this demolition, artifact collectors, and the ocean energy from the nearby channel, very little remains of the wreck except larger metal debris around the site. (Photos KS1-1 through 3).

The metal debris is likely remains from hull sections, as many of these era vessels were partial wood and metal to re-enforce the sections that needed more strength to support the operations and utility type of the vessel. The metal can also be from engine room structure, as possibly the main propulsion was from a wood or coal-burning boiler. The debris is well scattered and buried in the sand, probably from the demolition, and presents no layout of the vessel, or indication of its' true type or design.

Additionally, riveted metal sections, if not hull or boilerplate, could have come from the many worn-out war era utility barges of either Japanese or American type, possibly also destroyed to make a clear path to the Gugegwe dock. This theory is re-enforced by the discovery of a large US type large anchor, over 3,000 pounds, which was well buried among the debris (Photo KS1-4). Thus, many wrecks of many types may be in the site. Numerous Coca-Cola bottles from the war years were also located underwater nearby; indicating US servicemen had frequented the pier area and tossed them into the lagoon (Photo KS1-5).



## COMMENTS AND CONCLUSIONS

The North Gugegwe Pier Wreck is basically a debris field of metal junk and debris, with a few notable artifacts, the Cola bottles being the only exception. Certain historical sites may not merit the same attention and protection as others, and this site is a prime example where development, being the functioning use of the Gugegwe Pier and transportation infrastructure, may have more long term merit to the Marshall Islands government than the protection of an underwater metal mess. In fact, the site may be of more tourist value cleared of the debris completely, letting the coral slowly re-create the beauty of the atoll. I do not propose this idea easily, but as future development is built upon the skeletons of history, this is one historical site that I could easily overlook from my experience as a tourist guide

## PHOTO SECTION OF KWAJALEIN SITE 1 REPORT



Photo KS1-1. Large Metal debris of unknown type in the north end of the debris field.



Photo KS1-2 Large Metal debris of unknown type in the west side of the debris field. Rivets and curved sections may represent boilerplate metal.



Photo KS1-3 Large Metal debris of unknown type in the south end of the debris field.

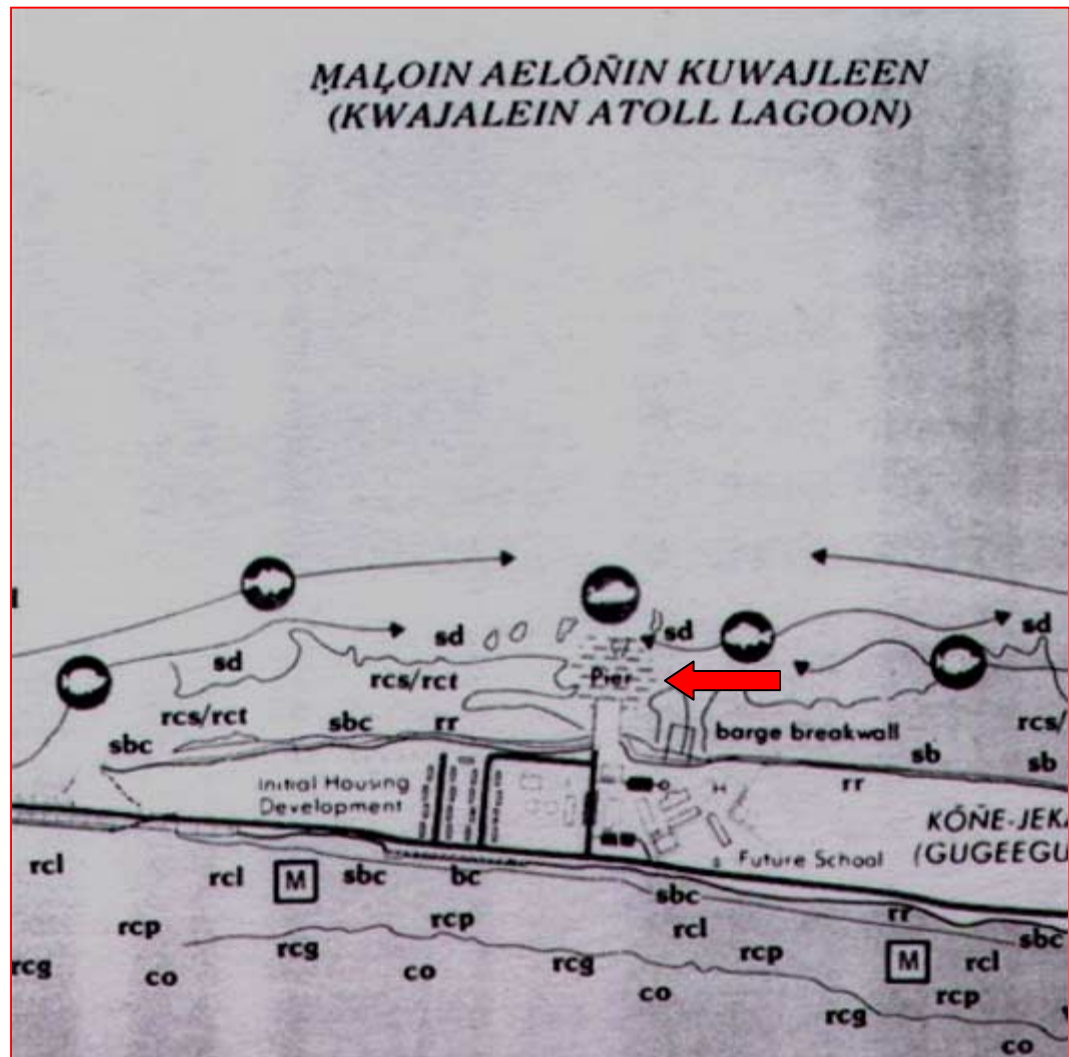


Photo KS1-4 Large anchor shaft end with shackle in debris field. This is probably an USN anchor and weights over 3000 pounds, and is well buried in the sand.



Photo KS1-5 Coca-Cola Bottle in the debris field area of the North Gugegwe Pier Wreck. Over 50 were seen in the area.

MAP OF KWAJALEIN SITE NUMBER 1. (Site is located at the red arrow.)  
Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL  
COASTAL RESOURCE ATLAS, 1989:17).



## KWAJALEIN SITE 2 REPORT

NAME: SOUTH GUGEGWE WRECK  
RMIHPO Site No. MI-KW-LA-002

### GENERAL DESCRIPTION AND LOCATION

The South Gugegwe Site is the wreckage of an approximately 100 foot long wooden hulled vessel, of unknown type and utility, sitting on a primarily sandy bottom. The site is located due west of the original south end of the island, approximately 200 yards from shore, starting on the edge of the lagoon-side drop-off. The bulk of the vessel sits in 50 to 65 feet of water with debris to nearly 90 feet deep. The site has meager marine life with excellent visibility. A map of the site, Map KS2, follows the Photo Section of this report.

GPS Position: N 08.50.000 x E 167.44.000

### DETAILS

The most prominent feature of the site is the main engine (Photo KS2-1), sitting well off the bottom on its' wooden hull. The main engine is a large unknown diesel unit surrounded by 2 large fuel tanks fallen away port and starboard. There is a mechanically coupled gearbox attached behind the main engine, with tail shaft extending through what remains of the stern of the vessel. The propeller has been removed, with no remaining rudder assembly.

The vessel was likely not a fishing vessel, as no fishing gear, support equipment, or fishing layout was observed. The bottom of the wooden hull of the vessel (Photo KS2-2) sits partially buried in the sandy bottom on the edge of the lagoon-side drop off. Ballast stones lay in the hull bottom between the frames and ribs, from bow to amidships (Photo KS2-3). The main keel strike, frames, ribs, and assorted fittings are visible, but little else remains above the chines. Little also remains of the bow except metal fasteners, chain, and possibly a windlass with fittings among a pile of debris. The main engine is host to an assortment of coral life (Photo KS2-4).

There is no indication of where the pilothouse was located, or any other layout of the vessel at the main deck level. I presume an explosion amidships removed most of this structure, as even a fire on deck would have left debris on top of the keel. The only trace of fire may be forward on the bow area, due to a pile of corroded metal debris.

The second most obvious item at the site is an abandoned airlift (Photo KS2-5), used by divers to vacuum clean the site to look for artifacts. An airlift uses compressed air injected by a surface air compressor and hoses or SCUBA tanks

into the bottom of piping, in this case 4" PVC pipe. The air then rises and expands and sucks the water and smaller sand, rubble and debris up the pipe. The pipe either dumps the material near the surface for sifting and viewing or discharges the material away from the site if the search is for larger items. This airlift is over 4 years old, determined from the coral growth visible. It extends from the deepest part of the wreck to nearly the surface. It is more evidence the Kwajalein Lagoon sites have been methodically stripped of artifacts in the past. Another airlift was located earlier at Kwajalein Site 10, the Japanese freighter Akibasan Maru.

I did not locate any artifacts or collectable items at the site, and am surprised even the ballast stones remain, as many people collect these for heating rocks for in-ground cooking ala island style.

### COMMENTS AND CONCLUSIONS

This site is a prime example of what determined collectors' can do to a site without any rules to protect it or means to enforce them. The site had been described (Miller, 1991: 92) 8 years ago with detailed cargo and artifacts, and now I couldn't find a single object worthy of any collection. The airlift and the divers searching the remains have truly stripped the site, leaving only the hull, heavy machinery and debris. The airlift proves the Kwajalein divers have been there and gone. The site is still an interesting dive, but has not much to offer besides the knowledge you are diving on a Japanese WW2 wreck.

### PHOTO SECTION OF KWAJALEIN SITE 2 REPORT



Photo KS2-1 is the vessels main engine viewed from the port side forward.



Photo KS2-2 shows the wooden keel section amidships looking towards the stern.



Photo KS2-3 shows the ballast stones in the forward hull section.



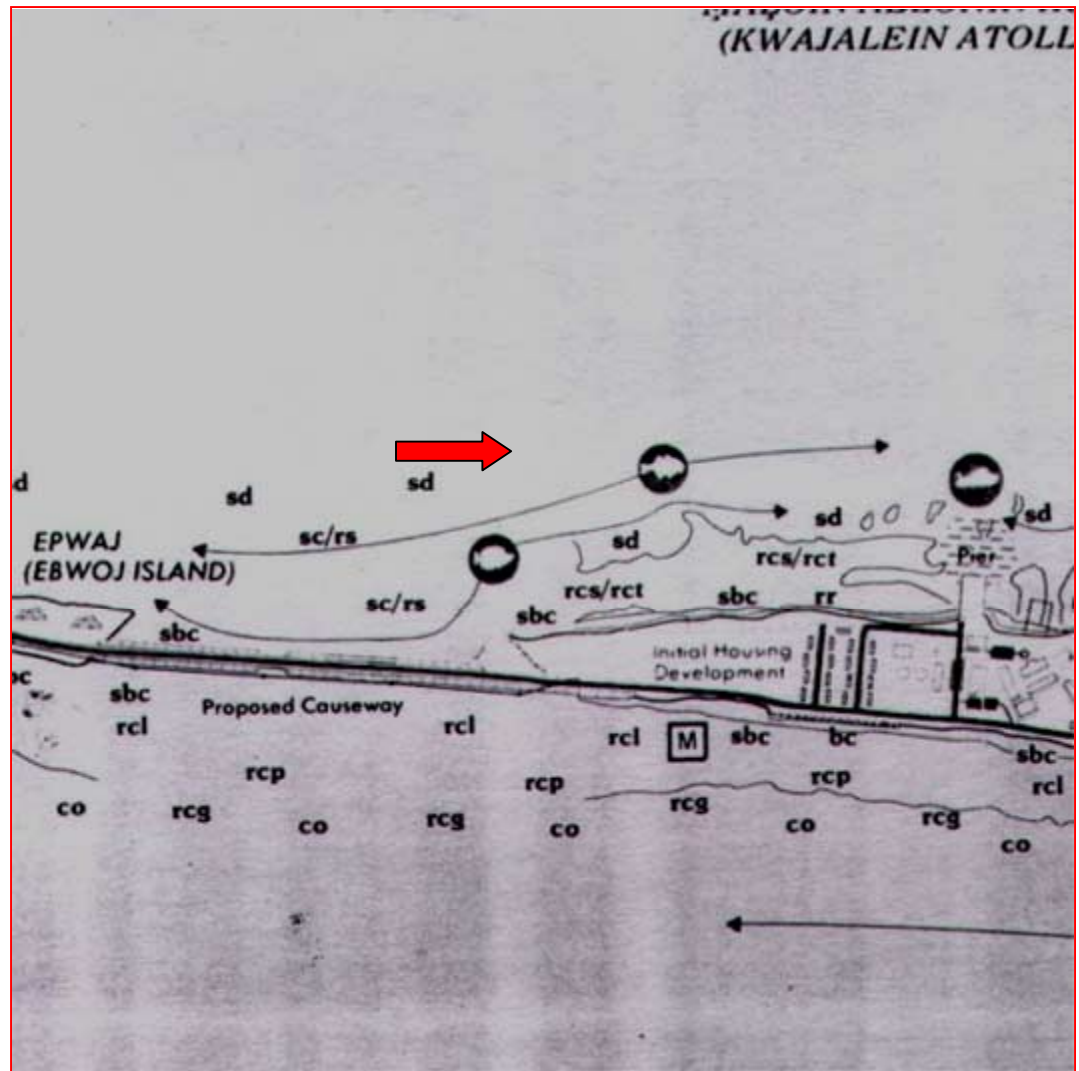
Photo KS2-4 shows coral growth on the vessels main engine.



Photo KS2-5 shows the remains of an airlift used to search the vessel and surrounding area for artifacts.



MAP OF KWAJALEIN SITE NUMBER 2. (Site is located at the red arrow).  
Map scanned from: (U.S ARMY CORP OF ENGINEER, KWAJALEIN ATOLL  
MARINE RESOURCE ATLAS, 1989:17).



## KWAJALEIN SITE 3 REPORT

NAME: SHELL ISLAND WRECK (Epwaj Island)  
RMIHPO Site No. MI-MJ-LA-003

### GENERAL DESCRIPTION AND LOCATION

The Shell Island wreck is an unknown named Japanese vessel located lagoon-side and just south of the old pier at Epwaj Island. The vessel sits upright on a sandy bottom in just over 100 feet of water approximately 200 yards out from shore. The visibility in the area is very good to excellent, and the site had typical but not abundant marine life. A map of the site, Map KS3, follows the Photo Section of this report.

GPS Position: N 08.49.000 x E 167.45.000.

### DETAILS

The vessel sunk fairly intact, as most of the hull from bow to stern, deck, railings and pilothouse are still viewable. The configuration of the vessel is confusing and mixed. It was most likely designed for fishing, with extended bow, center holds, bait tank layout and a stern roller, all typical of a fishing design (Photos KS3-1 through 4). It probably started as a pole and line fishing boat, was converted to a long liner, and then reconfigured to a supply and/or patrol craft. There was no gun mount or ammunition located, nor virtually anything else, as the vessel has been stripped of every collectable item.

The best clues come from an excellent National Archives Photo of the vessel just prior to its' sinking (See *photo in Miller, 1991: 90*), showing the vessel listing to starboard with only minor smoke. The vessel is fitted with an observation crows nest on the mainmast, and an observation platform above the pilothouse. Typically, these items would indicate the vessel was used for fishing, but during war the lookout probably indicates it was used as picket/patrol boat to intercept US submarines and ships, supply early warning information on approaching aircraft, and doubled as a supply vessel. An additional box had been built behind the pilothouse, possibly for extra crews quarters (but there is only one window), a storage room or a box for the miles of long line. The ship looks abandoned, and the stern boat davits are swung out, indicated a ships boat was launched. The vessel was not "schooner rigged", as stated in *Miller (1988: 89)*, as schooners have a taller mainmast in the center or last position, and the foremast is shorter (*Chapman, 1978:14*).

The vessel did not have "intense fires" as stated in *Miller*, (1991:89) and in *Bailey*, (1992:40). Any wood vessel with intense fires would burn to the waterline, eliminating hull, deck, rails and pilothouse, which are all still intact (Photos KS3-1 through 4). Most of the missing vessel is due to the wood eaten away by wood boring marine worms and time. It was also not seriously holed, at least to the engine room area, as it would have sunk rapidly to the stern, and not listed evenly as seen in the photo. I expect it was strafed and holed, abandoned, and slowly sank. Photo KS3-5 shows a hole in the hull below the waterline, but not necessarily from being attacked. The photo of the vessel (from *Miller*, 1991:90) is attached as Photo KS3-6 in the Photo Section.

The vessel has been completely stripped, with only some deck fittings and hardware remaining. I found no artifacts. The vessel did have some interesting photographic areas, as shown by the coral and marine growth at the stern (Photo KS3-7), but limited marine life during the survey.

#### COMMENTS AND CONCLUSIONS

The Shell Island wreck is a common Kwajalein tourist dive, has some interesting photographic spots, but is another well worn Kwajalein dive site. The vessel has an unknown history, which makes for limited interest for serious tourist divers. I found nothing in the form of artifacts, and the vessel, being at 100 feet, is usually a one time visit. Other Kwajalein dive sites have more to offer.

#### PHOTO SECTION OF KWAJALEIN SITE 3 REPORT



Photo KS3-1 Bow of Shell Island Wreck



Photo KS3-2 Tourist Diver Videotapes main deck of Shell Island Wreck.



Photo KS3-3 Main deck of Shell Island Wreck. Note mainmast circular boss in top of photo, and inner-connecting forward holds from the visible inner lighting.



Photo KS3-4 Wheelhouse of Shell Island Wreck with funnel in background.



Photo KS3-5 A hole located on the starboard side below the waterline.



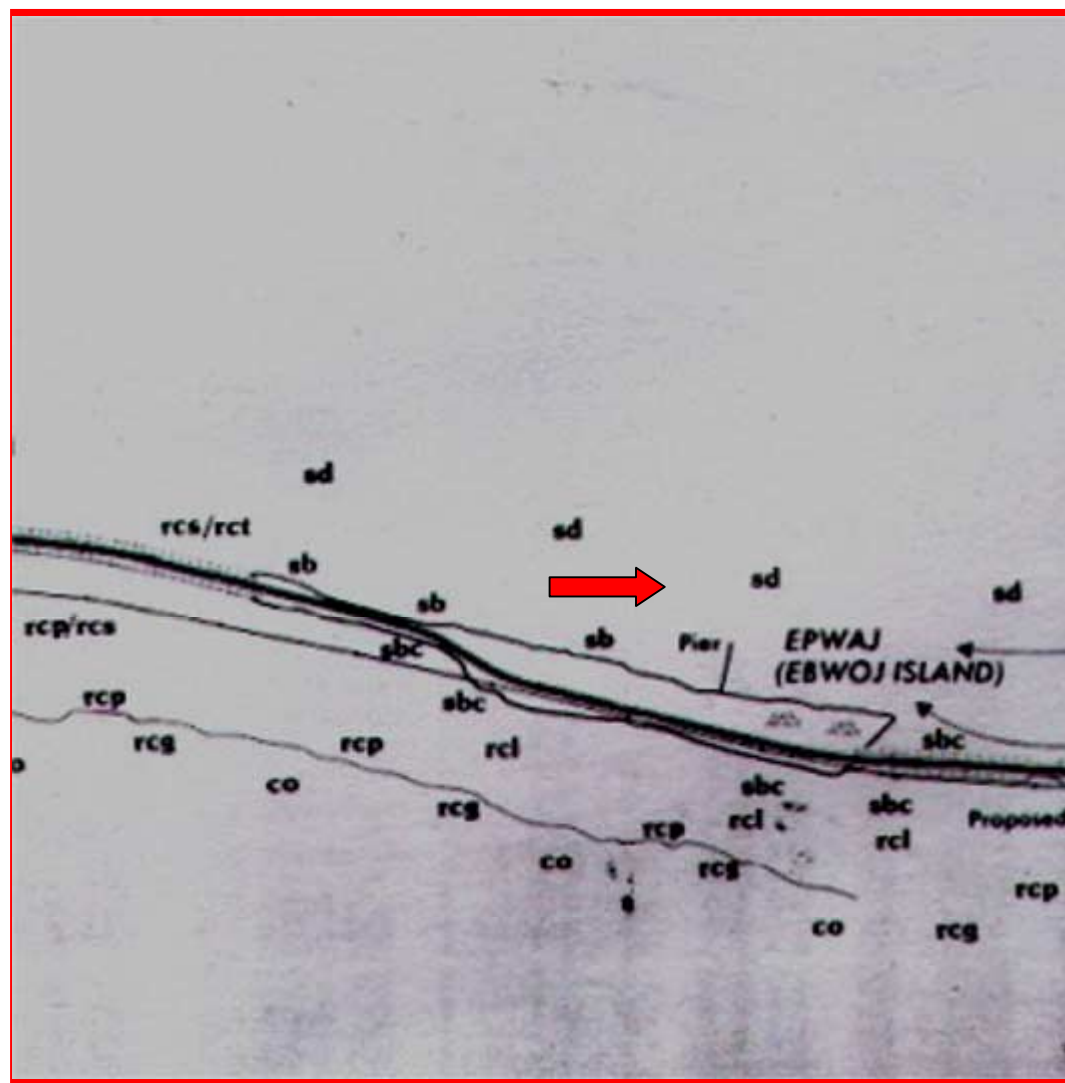
Photo KS3-6 Photo of the Shell Island Wreck, (From *Miller, 1991:90*).



Photo KS3-7 Stern near rudder at 100 feet deep. Note marine growth.

MAP OF KWAJALEIN SITE 3 (Site is located at the red arrow.)

Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL MARINE RESOURCE ATLAS, 1989:15).



## KWAJALEIN SITE 4 REPORT

NAME: North Loi Wreck

RMIHPO Site No. MI-KW-LA-004

### GENERAL DESCRIPTION AND LOCATION

The North Loi Site is the wreck of a Japanese fishing vessel sunk southwest of the original pier, approximately 200 yards out from the island. The vessel is upright, and sits against a coral head on its' port side bow in 70 to 75 feet of water. It measures approximately 100 feet long with an approximately 20 foot beam. It is of wood construction with reinforcing steel lower hull sheeting and various metal structures attached at other locations. Visibility on the survey day was very good, and the site had abundant marine life. A map of the site, Map KS4, follows the Photo Section of this report.

GPS Position: N 08.48.000 x E 167.43.800.

### DETAILS

The North Loi Wreck has been listed as a steel hulled trawler, (*Miller, 1991:108*), and is in a very deteriorated condition. It was originally designed for fishing, probably rigged as pole and line vessel, and later converted to wartime duties as a patrol/picket and supply boat.

Many of these pole and line vessels had the extended bow (Photo KS3-1), and had a deck layout with bait tanks on the perimeter with raised circular combings and hatch covers (Photos KS4-2 and 3). Fish storage tanks, usually keep with ice, were in the center of the boat, with square hatches. As the bait was used up, surplus catch was added to the empty bait tanks, as space or ballast was needed. The steel bait tank on the stern and extra crews quarters below are also typical of a pole and line boat. Bait is ladled into the water from tanks on the bow and stern to attract the fish into biting onto a bait looking hook, when the vessel is lucky enough to be in the center of a school of fish. Fish are seen by the lookouts in the crows' nest or over the bridge lookout post, who watch for birds over the school of fish. The same techniques are used by skipjack pole and line boats today.

The vessel did not burn, or at least seriously burn, as the pilothouse wood floor is intact (Photo KS4-4), as is the bow and overhanging wood stern (Photo KS4-5). Most of the vessels deterioration is from the marine environment, time, and from divers.

Divers hacksawed off one blade of the vessels 3 bladed propeller for whatever reason (Photo KS4-6). The steel hull sheeting (Photo KS4-7) has deteriorated but some sections on the port side were probably torn away upward by divers (Photo



KS4-8) to look for additional artifacts. Holes in the starboard sheeting allowed me to photograph the main engine and engine room (Photo KS4-9). No personal artifacts were found, all that remains is machinery and some spare parts such as cables and hoses in the forward compartment (Photo KS4-10).

The vessel, even well worn and stripped, housed a variety of marine life. The vessel was a great dive primarily from this marine life, which added some beauty to the site (Photo KS4-11).

#### COMMENTS AND CONCLUSIONS

The North Loi Wreck is yet another stripped Kwajalein vessel. No artifacts remain at the site, and no identification was possible. The vessel is tired, affected by time and recent dredging nearby, but still is a dive site I would enjoy visiting again. They should be buoyed and identified to avoid anchor damage and monitored against any further destruction by divers looking for artifacts.

#### PHOTO SECTION OF KWAJALEIN SITE NUMBER 4 REPORT.



Photo KS4-1 Bow of North Loi wreck, showing extended fishing vessel style bow. Object hanging on starboard side is the remains of steel reinforcing on the deck to support anchor and chain, and not an anchor. Coral head is visible on the right side of the vessel.



Photo KS4-2 Main deck of the North Loi Wreck.



Photo KS4-3 Typical round and raised bait tank combings of a fishing vessel.



Photo KS4-4 Pilothouse area of North Loi wreck. Notice wood flooring is still intact, and drive gear for ships steering forward of the missing wheel position.

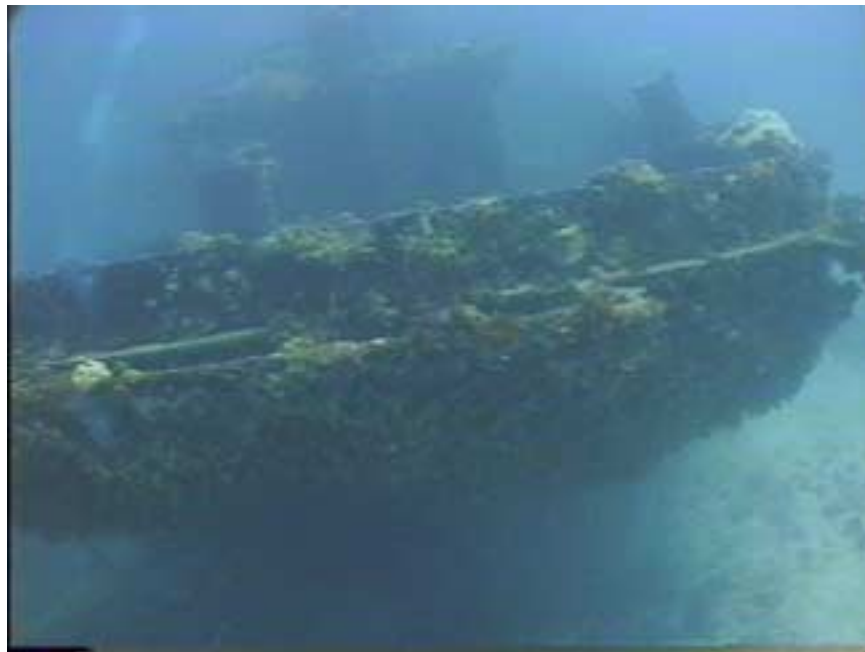


Photo KS4-5 Stern of the North Loi Wreck



Photo KS4-6 Propeller with missing blade. Note hacksaw cuts.



Photo KS4-7 Steel sheeting added to below the waterline. Note section fallen away at top left of photo which is next to the engine room.



Photo KS4-8 Starboard side metal sheeting at engine room with sections pulled upwards. Rust on edges indicates recent movement



Photo KS4-9 Engine room of North Lot wreck viewed from a hole in the hull starboard.

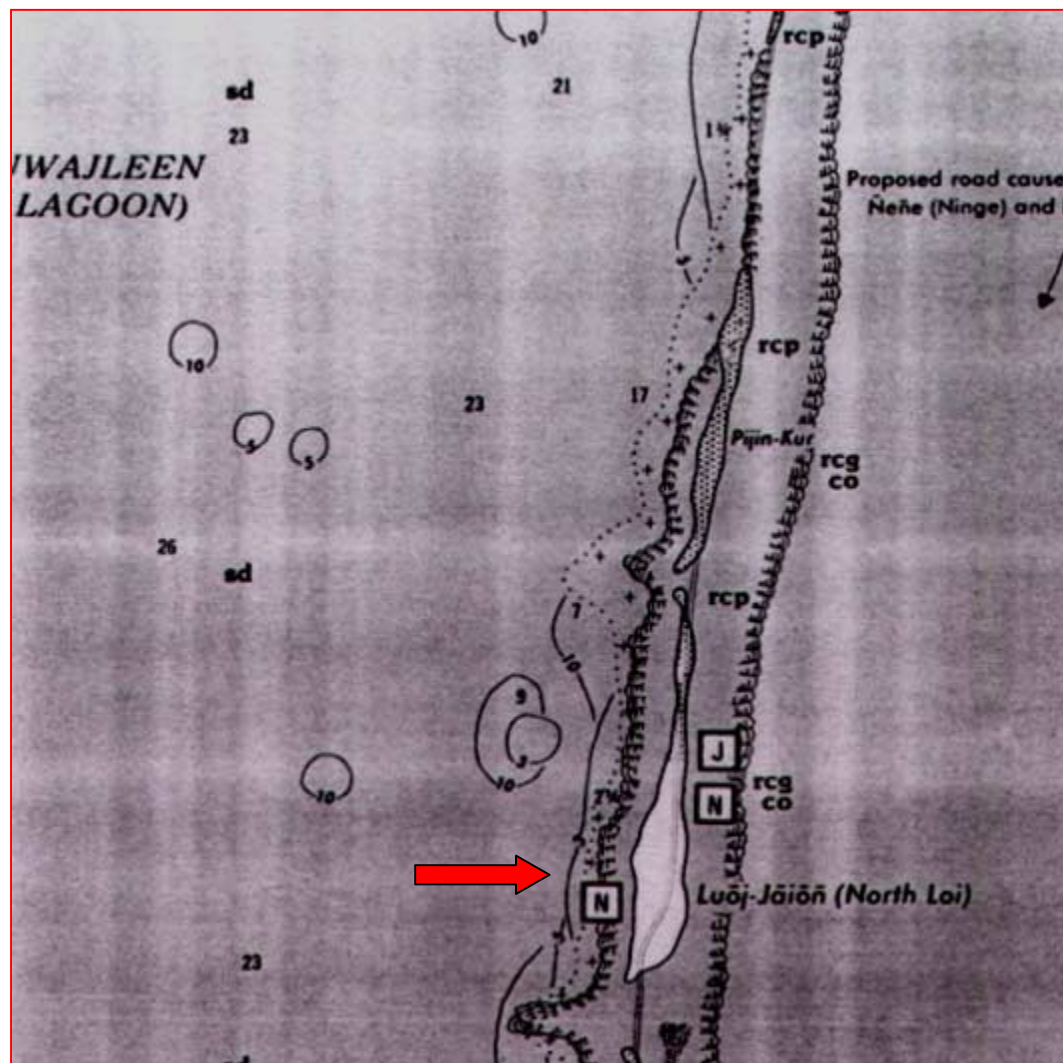


Photo KS4-10 Remaining spare cable and hose in bow of North Loi wreck.



PhotoKS4-11 Marine life near engine room skylight.

MAP OF KWAJALEIN SITE NUMBER 4. (Site is located at the red arrow.)  
Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL  
MARINE RESOURCE ATLAS, 1989:15).



## KWAJALEIN SITE 5 REPORT

NAME: NORTH MAVIS FLYING-BOAT WRECK  
RMIHPO Site No. MI-KW-LA-005

### GENERAL DESCRIPTION AND LOCATION

The Site 5 Report describes the wreckage of the remains of a Japanese H6K model flying-boat, code named "Mavis" by the allies during the war. The wreckage is in 60 to 90 feet of water lagoon-side of the Ebeye Seaplane ramp. The wreckage is approximately 300 yards WNW from the shoreline, and can easily be found by swimming straight out from the beach at the seaplane ramp until reaching the lagoon-side drop-off, continuing until approximately 70 feet deep, and changing course north and parallel to shore until remains are seen. The marine life is sparse and visibility generally poor to good, with human trash and debris everywhere. It should also be cautioned the Ebeye sewer system discharges in the lagoon nearby. A map of the site, Map KS5, follows the Photo Section of this report.

GPS Position: N 08.47.300 x E 167.44.000

### DETAILS

The North Mavis was a Japanese type H6K model 4 flying-boat, designed primarily for long range reconnaissance but also had bombing, transport and other military duties. It was a large aircraft, with 4 engines, over an 120 foot wingspan, and distinct features such as support wires and a parasol wing which makes it easy to identify ((KS5-1 Aircraft Drawing, (Francillon, 1995). The aircraft was listed as strafed, fired, and sunk by the February 1, 1942 US Carrier Enterprise (CV-6) raid (*Bailey, 1992:48-51*). The H6K4s probably belonged to the 9 aircraft designated to the Yokohama (Kokutais) Naval Air Group (*Francillon, 1995:301-307*). Two of these same aircraft of this group were also lost at Makin in the Gilberts and one more east of Jaluit on this day by the US Carrier Yorktown (CV-2) raid (*Lundstrom, 1996:61-66, 70-77*).

The aircraft is basically in 2 large sections, the nose and forward fuselage section (Photo KS5-2), which sits on the upside right wing section. The right wing has one engine attached with a second engine sitting on it (Photo KS5-3 and 4), a third engine lies northwest approximately 100 feet away, and the 4th engine is south nearly 200 feet away. The nose forward has an open gun position, identifying it as the H6K4 model, the H6K5 model having a forward power turret. There are fuselage and wing pieces scattered over a 200-foot square area (Photo KS5-5), with smaller pieces up to double the distance away (Photo KS5-6). Various parts are virtually lost in the silt and sand, and others easily identifiable, and were marked for reference by HPO diver Helmey Benjamin during one of the

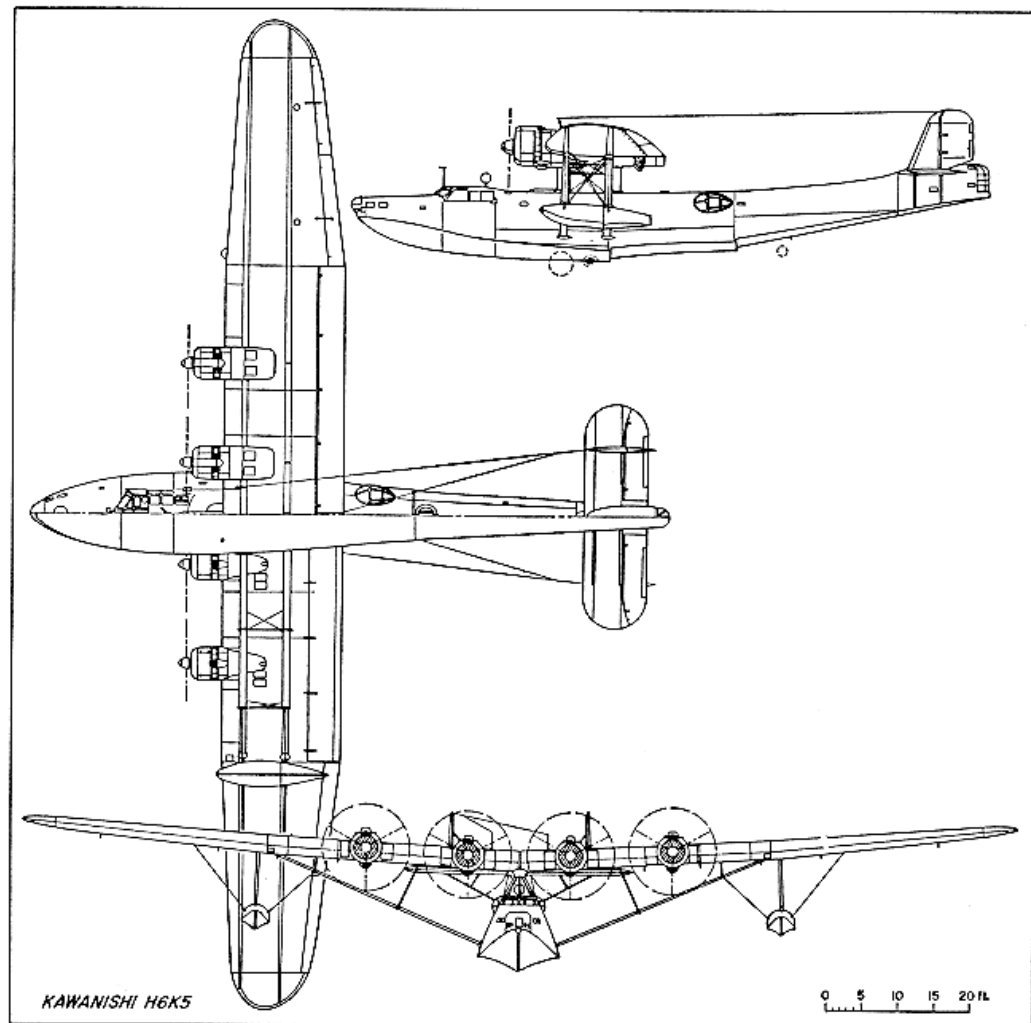


dives (Photo KS5-7). One of these is a mooring buoy used to tie up the flying-boat or other offshore visitors, seen in the KS5-8 photo, also seen by the author in Jaluit for the Kawanishi H8K models. Nothing of collectable value was seen during the survey, indicating divers and time had worn out the site, but one anemone stood out on the wreckage (Photo KS5-9).

### COMMENTS AND CONCLUSIONS

The North Mavis Flying-Boat is a very tired wreckage site, stripped of any collectable artifacts, and being slowly lost to silt, debris, and the environment. The wreckage is well scattered, but still identifiable as the H6K4 aircraft. The greatest danger to the site is now silt and trash, and there is very little immediate way to protect it. The only suggestion is to buoy the site to keep anchors away, and to inform and be informed of future dredging operations to avoid further destruction of the site.

### PHOTO SECTION OF KWAJALEIN SITE 5 REPORT



KS5-1 Drawing of Kawanishi H6K Seaplane. *Francillon, 1995.*



Photo KS5-2 Bottom of the nose of Northern "Mavis" Kawanishi H6K4 Model Flying-Boat in 70 feet of water off the Ebeye Seaplane ramp.



Photo KS5-3 The only engine still attached to a wing section on the North Mavis Flying-Boat wreck. Note 3 bladed propeller.



Photo KS5-4 Two engines of the North Mavis Flying-Boat with part of a wing section underneath.



Photo KS5-5 North Mavis Flying-Boat wing section, with outer parasol supports visible in right side of photo.



Photo KS5-6 North Mavis Flying-Boat bracing for pontoon.



Photo KS5-7 of Historic Preservation Office SCUBA Diver Helmey Benjamin marking a reference point on the North Mavis Flying-Boat wreckage during the Kwajalein portion of the survey. The 2 engines in the prior photos are behind him, and the fuselage section to his left.

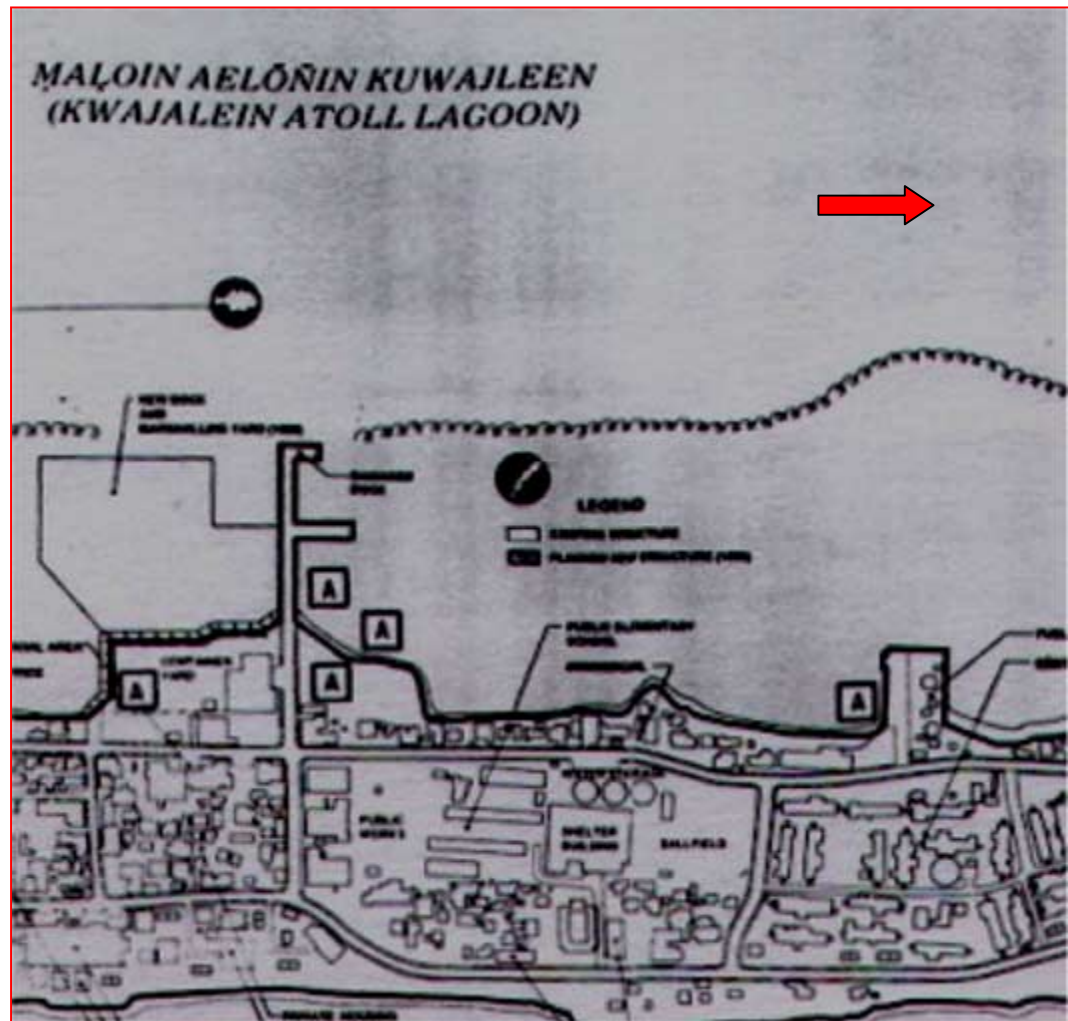


Photo KS5-8 A Japanese type mooring buoy used throughout the Marshall Islands to secure both flying-boats, seaplanes, and other floatplanes while at anchor.



Photo KS5-9 An anemone with cinnamon clownfish growing on the wreckage of the North Mavis Flying-Boat.

MAP OF KWAJALEIN SITE NUMBER 5 (Site is located at the red arrow.)  
Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL  
MARINE RESOURCE ATLAS, 1989:9).



## KWAJALEIN SITE 6 REPORT

NAME: MAIN EBEGE SEAPLANE RAMP  
RMIHPO Site No. MI-KW-LA-006

### GENERAL DESCRIPTION AND LOCATION

The Main Ebeye Seaplane Ramp is a concrete ramp structure designed to allow flying-boats and floatplanes to power themselves up onto dry land from the water for servicing those aircraft. It was built from concrete before World War 2 started and is located just north of the middle of Ebeye Island. There was a second smaller ramp approximately 200 yards south of this ramp, which has been dredged away and covered by rubble and time. A map of the site, Map KS6, follows the photo section of this report.

GPS Position: N 08.47.200 x E 167.44.500

### DETAILS

The Main Ebeye Seaplane Ramp was added to the list of Kwajalein Underwater Sites as its' commercial use combined with past and planned dredging operations is deteriorating or will deteriorate the original structure. The Main Ebeye Seaplane Ramp is now the current site of the Ebeye Mobil Oil Bulk Plant, and the underwater and wall sections are used for fueling small craft and for Mobil Oils' transfer of fuel.

I had hoped to locate through research the designer and/or builder of the underwater ramp section. Besides this structure, many other ramps and piers have been constructed extending well out into deeper water. I did not find this information during my research period. This may not seem important, but most of these were built in segments and installed without any heavy equipment and some completely by hand. This task of construction showed the determination of the builders and should not be lost with time. Many additional underwater structures were also constructed in the outer islands in similar fashion and possibly by the same builders, and still exist today.

The ramp site was first built up underwater with a base foundation of smaller rocks and rubble, collected by hand at lower tides and by skin divers in the shallow water adjacent to the ramp, as the area on both side of the ramp is clear of this sort of rubble and stones. Next, concrete sections were made formed with slots and notches creating a jigsaw puzzle locking mechanism. Each following section was lowered or pushed into place, moving out into deeper and deeper water, or building higher up along the walls. The concept was very clever and very strong, and made displacing the concrete sections very hard, except by direct bomb hit. Unfortunately for the Japanese, this system was difficult to repair due

to this design, and many of the bomb hits can still be seen today as an open hole or a concrete repair patch.

No acceptable photos were taken of the underwater section, due to very poor visibility on the survey days. An excellent aerial photo from the Naval Operational Archives, KS6-1, was scanned into the report, (Bailey, 1992:49, top) which shows the main and secondary ramps, and the main pier to the right. Photos were also taken of nearby un-exploded artillery rounds lying on the lagoon-side (Photos KS6-2 and 3), possibly aimed at the ramp or the numerous aircraft (Rufes and Jakes) listed during the pre-invasion bombing reports (Bailey, 1992:49-51).

### COMMENTS AND CONCLUSIONS

This site needs to be recognized as a historic site only because of the modern development on and around it. The site can be incorporated into modern development, instead of being lost or destroyed in future plans.

### PHOTO SECTION OF KWAJALEIN SITE 6 REPORT

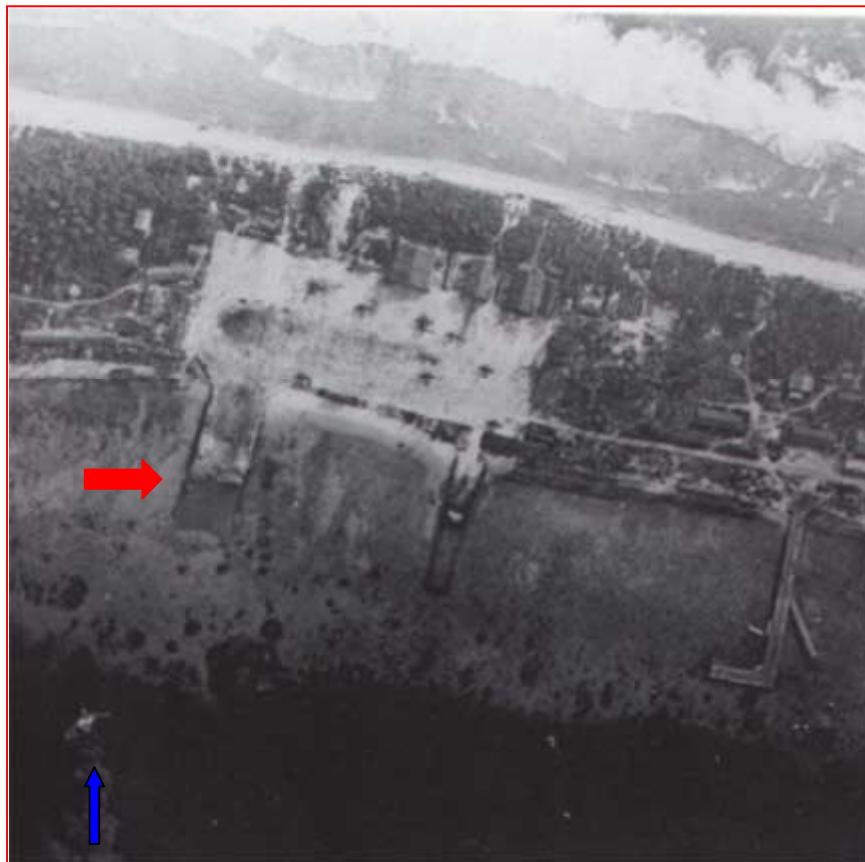


Photo KS6-1 Scanned photo from (Bailey, 1992:49 top), shows the Seaplane ramp and the KS5 site "Mavis" burning in the lower left of the photo.



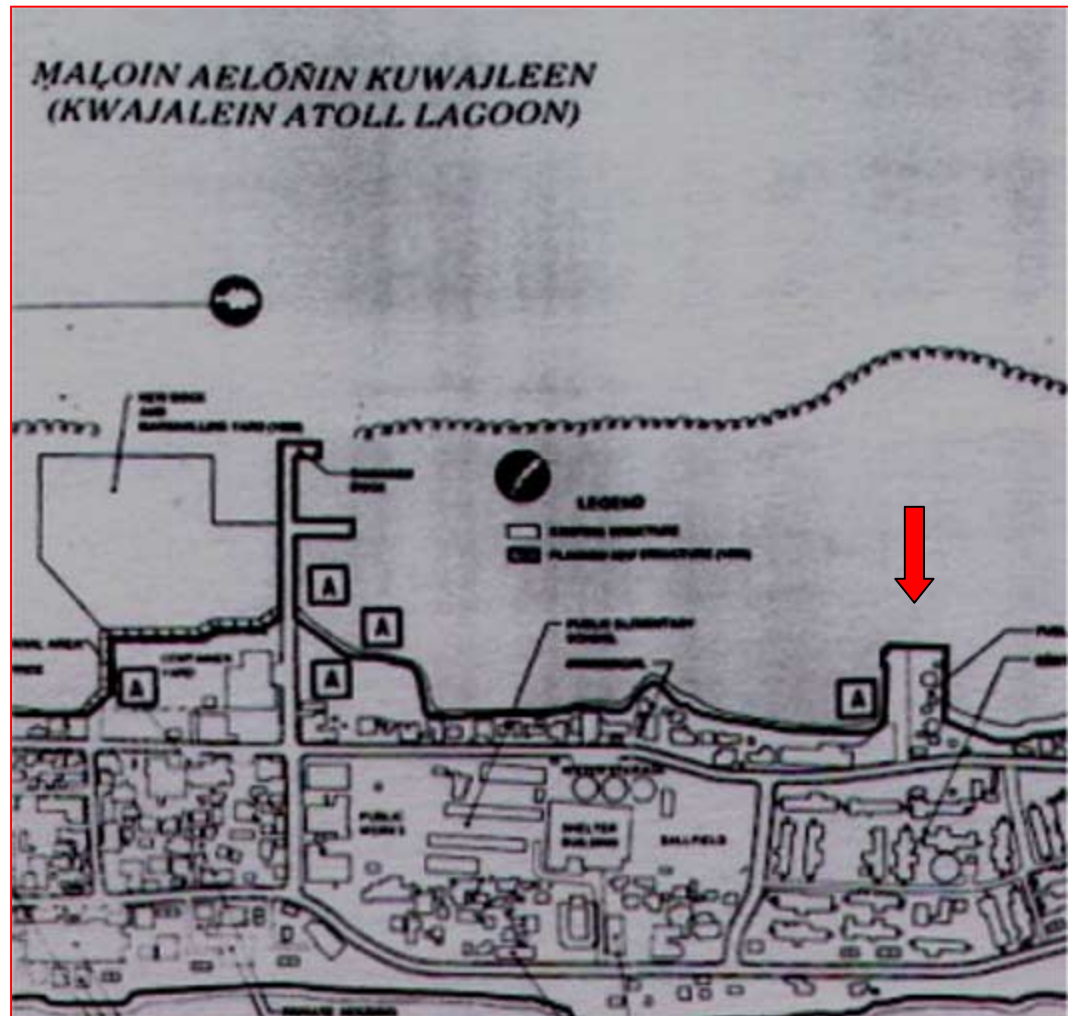


Photo KS6-2 Photo of unexploded artillery round near Ebeye Seaplane Ramp.



Photo KS6-3 The brass rifling on the artillery round.

MAP OF KWAJALEIN SITE NUMBER 6. (Site is located at the red arrow.)  
Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL  
MARINE RESOURCE ATLAS, 1989:9).



## KWAJALEIN SITE 7 REPORT

NAME: CENTRAL MAVIS SEAPLANE WRECK  
RMIHPO Site No. MI-KW-LA-007

### GENERAL DESCRIPTION AND LOCATION

The Kwajalein Site 7 Aircraft is another Kawanishi type H6K-4 model Flying-Boat. The wreckage is in better condition than at the Northern Mavis wreck site. This site is located approximately 200 yards north of the Ebeye Pier, out nearly 300 yards from the shoreline. The wreckage starts at the bottom of the drop off in approximately 55 feet of water and is scattered to almost 75 feet deep. It is easier to swim to the site from the Ebeye Main dock, continuing out to approximately 60 feet of water and swimming along the drop off north and parallel to shore until it is sighted. The swim from the Main Ebeye Seaplane ramp to the site is approximately 500 yards, as it was mis-described as mid-way between the Seaplane ramp and the Main pier. The underwater visibility is good to excellent, the area getting more clear water, and the site has marine life and some beautiful coral growth. A map of the site, Map KS7, follows the photo section of this report.

GPS Position: N 08.46.900 x E 167.44.300

### DETAILS

The Central Mavis Flying-Boat wreck is a Kawanishi H6K4 model (KS7-1 Drawing) and was also listed as strafed, fired, and sunk during the February 1, 1942 US Carrier Enterprise (CV-6) raid (*Bailey, 1992:48-51.*). The aircraft was also easily identifiable from the nose, wing with supports and floats, and 3 blade propeller engines, and belonged to the same Yokohama Naval Air Group.

The aircraft is torn apart into 3 larger sections, the fuselage forward (Photo KS7-2), and the wing left and right sections, which are in close proximity but still cover a large area of the bottom, and are at right angles to each other but upside down. There are bullet holes everywhere (Photo KS7-3).

It rests at the base of the drop off on a fairly clean sandy bottom. I located an anchor nearby, possibly used for the mooring of the aircraft, but more likely a lost US LCU model.

Close inspection of the wreckage shows very little typical artifact remains, as this site has also been well picked over by collectors. Photo KS7-4 is inside the nose of the aircraft. Very little was found of the rear of the plane, or its' contents. The right side pontoon float lies nearby and most of the hull to wing supports and float supports for both wings can be found (Photo KS7-5). The engines are still

attached to the port side wing that is upside down in the sand (Photos KS7-6 and 7).

The aircraft was supposed to have torpedo or bomb mounting hard points on these supports but I did not locate any, but did locate a pulley on one that may have been for a bomb release. No armament or ammunition or even their mounting points were located. Very little remains of the flight deck, basically an open hull forward of the bulkhead. A seat is still attached, but well hidden in sand. No other items were noted.

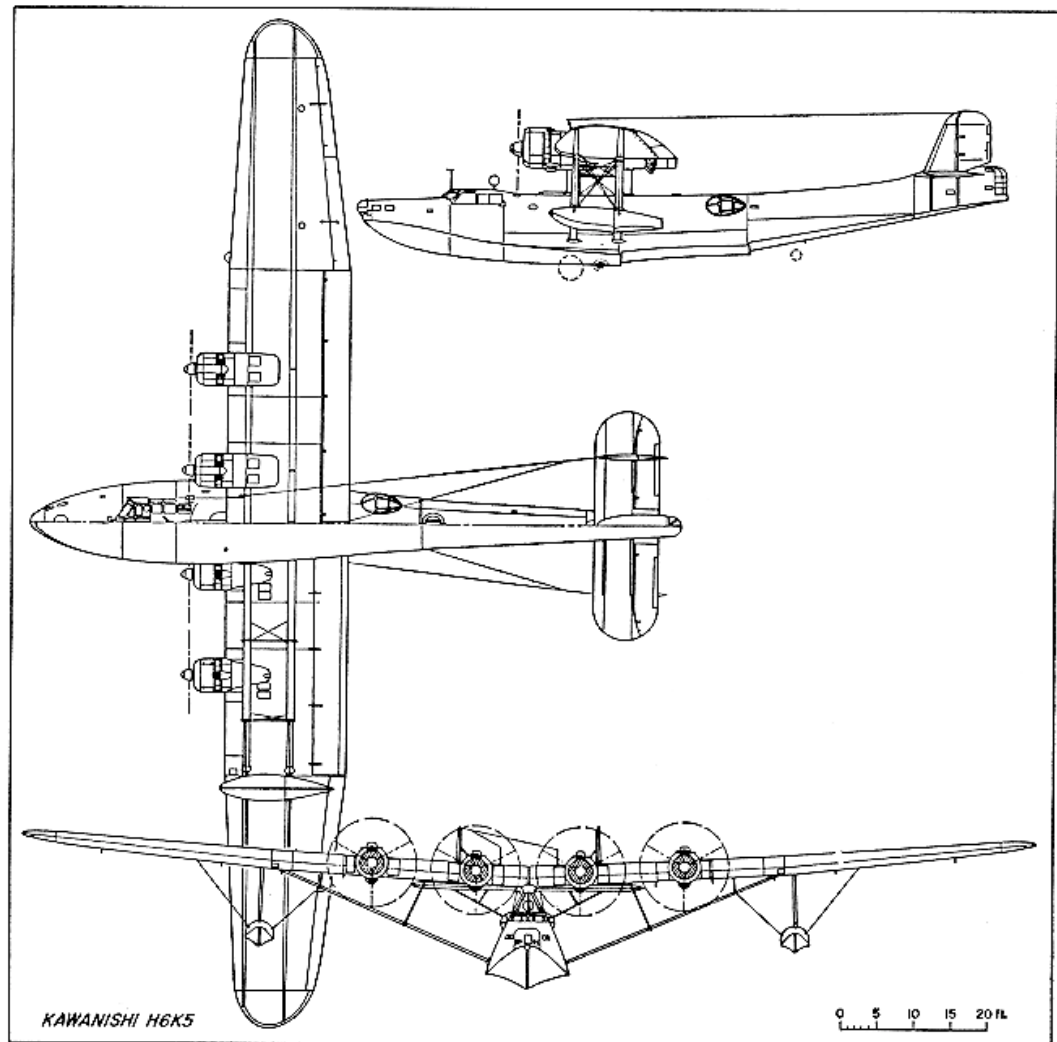
I also identify this site aircraft wreckage as the Central Mavis Flying-Boat wreck because there is a third aircraft identified as a Flying-Boat located at the south end of Ebeye Island at the lagoon-side drop-off out from the current power station. This site is described as only a debris field in 60 to 70 feet of water but I wanted to be able to call it the South Ebeye Flying-Boat wreck. It is either a Kawanishi H6K or H8K model, presumable lost in the late 1943 pre-invasion air raids. I did not survey this site.

#### COMMENTS AND CONCLUSIONS

The Central Mavis Flying-Boat is also a well worn dive site, but an interesting one to visit due to the marine life and excellent photo opportunities, due to the coral growth on the wreckage (Photos KS7-8 and 9). The major aircraft parts are recognizable and interesting to study, and the site is an easy swim from the dock.

The site also has additional risks indicated by a fresh nearby anchor drag mark from a large modern ship (Photos KS7-10 and 11) that has carved a large track in the bottom rubble. A piece of aircraft aluminum was in photo 10, possibly from the deck flooring of this Mavis aircraft. This indicates the site is also being attacked from unknown and unsuspecting ships from the surface, and makes the marking, buoying and education of these sites important for their future preservation.

PHOTO SECTION OF KWAJALEIN SITE 7 REPORT



KS7-1 Drawing of Kawanishi H6K model aircraft.



Photo KS7-2 is the top of nose of "Mavis" H6K4 Flying-Boat, with open gun position and still has glass ports intact.



Photo KS7-3 Bullet hole in nose of "Mavis" H6K4 Flying-Boat.



Photo KS7-4 Inside the nose of the Central Mavis Flying-Boat. Left side is partially burned away, but forward gun position remains and is open.



Photo KS7-5 Pontoon on remains of wing, with partial support structure.



KS7-6 Photo of the number 1 engine of the Central H6K4 Mavis Flying-Boat.



KS7-7 Photo of the number 1 and 2 engines of the Central H6K4 Mavis Flying-Boat. Fuselage debris is center and right in the photo, including parasol wing braces.





Photo KS7-8 shows some incredible coral growth on the wreckage, in this case behind the torn off number 3 engine.



Photo KS7-9 Shows more coral growth on the Flying-Boat remains.

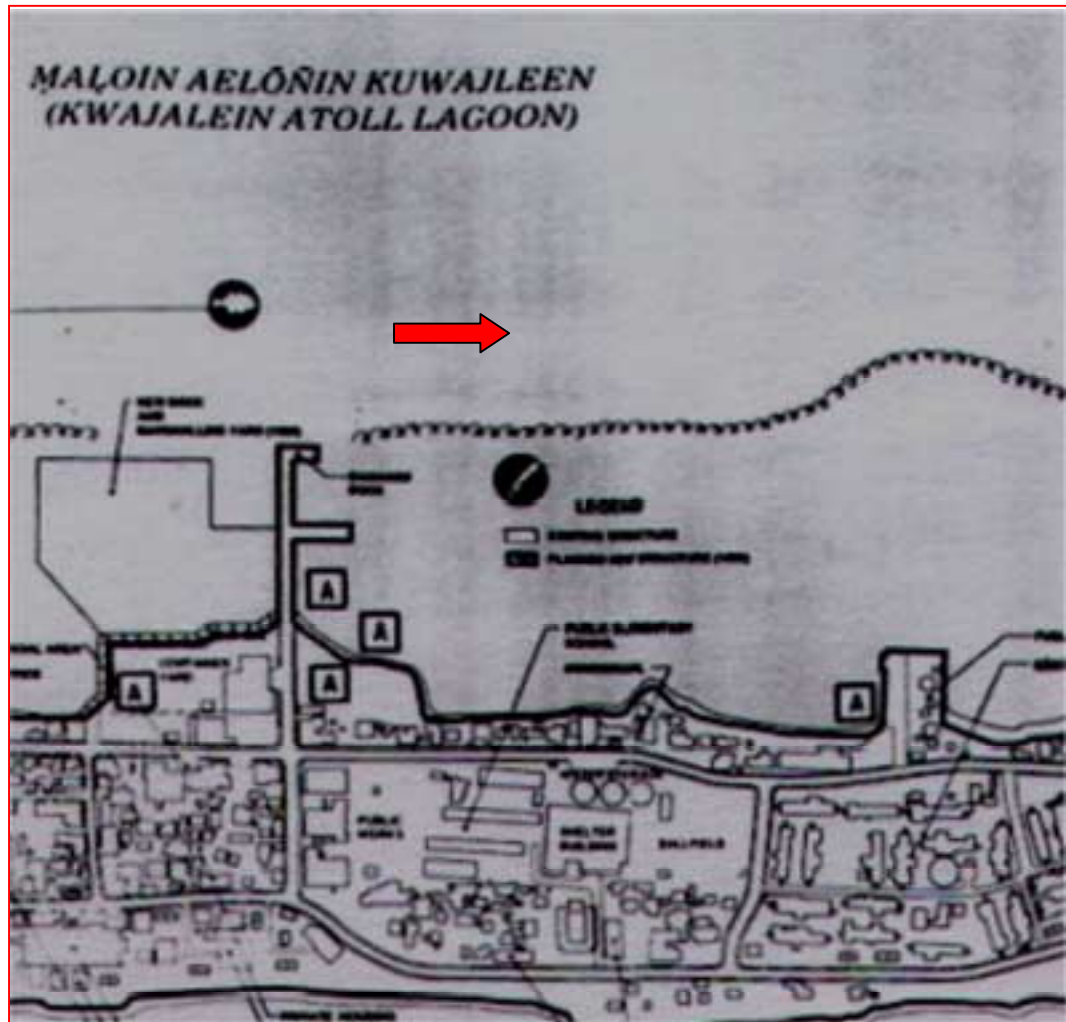


Photo KS7-10 Fresh anchor drag mark through coral rubble with aluminum aircraft piece in its path.



Photo KS7-11 Fresh anchor drag mark continues into the deep, easily over 150 feet long.

MAP OF KWAJALEIN SITE NUMBER 7. (Site is located at the red arrow.)  
Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL  
MARINE RESOURCE ATLAS, 1989:9).



## KWAJALEIN SITE 8 REPORT

NAME: EBEYE FLOATPLANE WRECK

RMIHPO Site No. MI-KW-LA-008

### GENERAL DESCRIPTION AND LOCATION

The Site listed and previously documented by photographs and text in research (*Bailey, 1992:51*) no longer exists. This site has been covered over by debris and rubble from the construction of the new Ebeye dock. The aircraft was identified in that research as a Mitsubishi A6M2-N, a floatplane version of the A6M "Zero" aircraft. A scanned photo, KS8-1, shows the aircraft (From *Bailey, 1992:51*). A map of the site, Map KS9, follows the photo section of this report.

GPS Position: N 08.46.725 x E 167.44.140

### DETAILS

The general spot determined to be where the wreckage originally lay is now under 10 to 15 feet of rubble (Photo KS8-2). Complete underwater surveys over every item within the general spot revealed only a partial aircraft part (Photo KS8-3), determined to be part of an aircraft float strut. The site is now within yards of the sheet-piled dock face, which was additionally dredged to deepen the immediate area, and covered with newer dock debris (Photo KS8-4). Additionally material also shifted deeper, filling in the immediate area and rolling debris into the deep. The aircraft remains are gone or covered, and no longer exist.

Additional historical research revealed numerous other claims of additional floatplane aircraft lost in the area, numbering over 10 lost on 3 different days of the war (*Bailey, 1992:18*). Based on this information, I found a large number of the "Jakes", the Aichi model E13A floatplane, listed as losses and their profile better matches the photo (*see photo in Bailey, 1992:51*). "Jakes" have an extended front fuselage, taller triangular side window, no gun slots or holes through the top of the firewall for machine guns (in the photo), and lastly, the seemingly more straightforward edge of the wing. Thus, the photo may match the profile of a "Jake" rather than a "Rufe". But without any wreckage, this is a dead issue.

Underwater searches across the entire drop-off area off the center of Ebeye Island found no other aircraft, and only un-distinguishable small aircraft parts and pieces.

Research into whether anyone knew of this wreckage before the dock was built turned up no information. No historical preservation or RMIEPA permits were located, and it seems the need for the development of the Ebeye Dock after the

old dock was partially damaged in the 1980s probably lead to an accelerated construction process, with ignorance of this asset. The site is gone.

#### COMMENTS AND RECOMMENDATIONS

This site of a sunken Japanese floatplane is now forever lost simply because no one knew it existed, or inquired of anyone if there was an asset to protect. This is another reason why additional surveys and permits to the appropriate offices should be required to save future sites as development continues.

#### PHOTO SECTION OF KWAJALEIN SITE 8 REPORT



Photo KS8-1 Photo of Ebeye Floatplane (From *Bailey, 1992:51*). Claim of being a "Rufe" may be incorrect as there are no machine gun ports in top of fuselage.



Photo KS8-2 Rubble at the location of the Japanese Floatplane site.

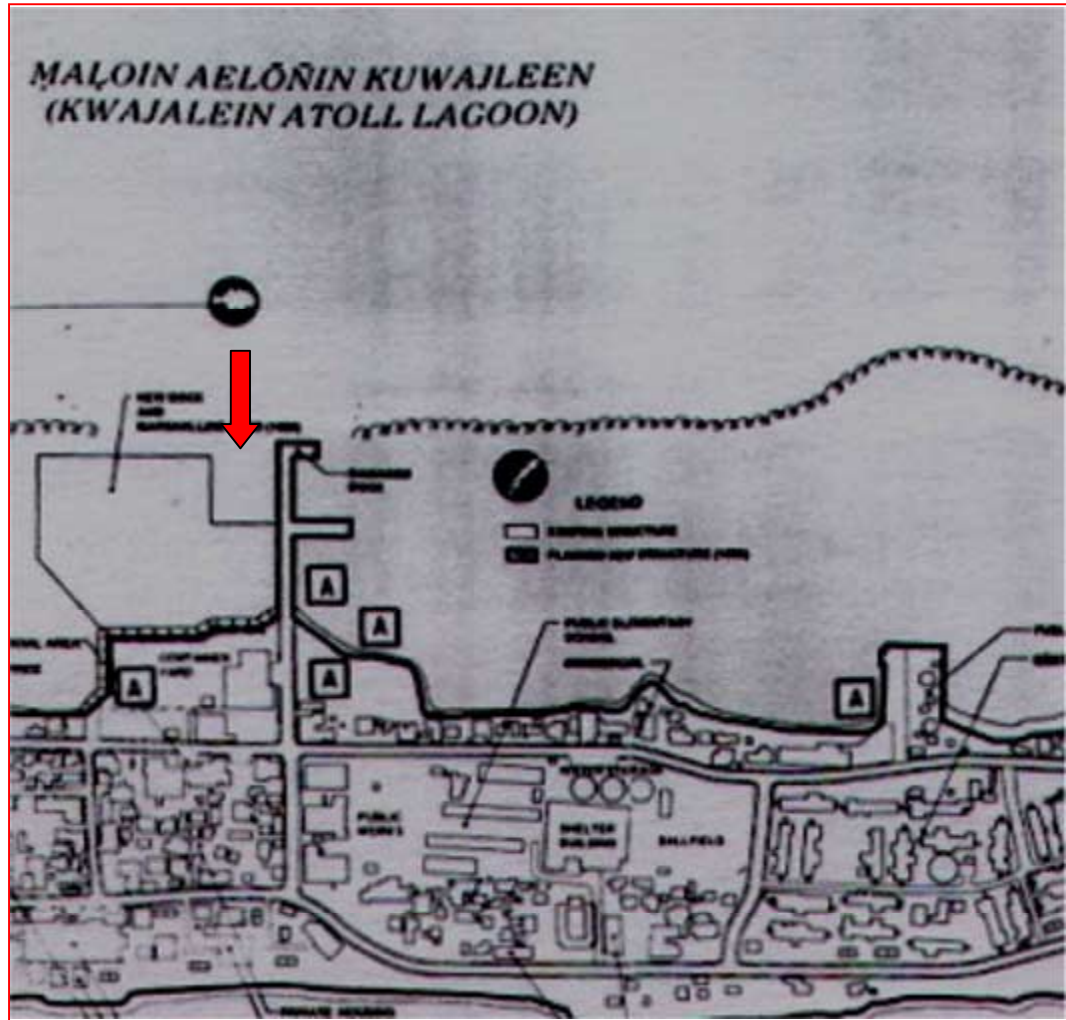


Photo KS8-3 Aluminum strut piece near Japanese Floatplane site is possibly all that remains of the aircraft today.



Photo KS8-4 New Ebeye Dock debris at old Japanese floatplane site. Debris is primarily large rubber fenders that have been torn off the dock face.

MAP OF KWAJALEIN SITE NUMBER 8. (Site is located at the red arrow.)  
Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL  
MARINE RESOURCE ATLAS, 1989:9).





## KWAJALEIN SITE 9 REPORT

NAME: EBEYE DEEP ZERO  
RMIHPO Site No. MI-KW-LG-009

### GENERAL DESCRIPTION AND LOCATION

The Ebeye Aircraft is described as a single engine fighter, probably an A6M Zero (Drawing KS9-1 in Photo Section). It reportedly lies upside down in the sand in 90 feet of water, with a single bomb still attached under its' belly. It is possible it is a drop fuel tank, but 2 experienced divers claim it is a bomb. The cockpit is reportedly buried in the sand, closing all access to the pilot's area, so presumably the pilot's remains are still inside. The site is located approximately 500 yards west of the south end of the Ebeye Dock, unfortunately within the boundary of the "Water Highway" which carries boat traffic to and from Kwajalein and Ebeye. Water visibility in the area is good to excellent depending on the day, and marine life unknown. A map of the general area, Map KS9, follows this report.

GPS Position is unknown.

### DETAILS

This aircraft was not located during my survey, as divers knowledgeable of the site were not on island. The area is relatively vast for a deeper water search, and the dives I made were not successfully in finding the aircraft. The site is also near the passage of boat traffic between Kwajalein and the Ebeye docks, which makes searching difficult and dangerous. In any case, divers with exact GPS coordinates are very closed lip about the site, and I will have to search again for the aircraft in the future, probably without their assistance.

The aircraft was probably lost from the Japanese Air Group No. 281, based in Roi with 39 A6M aircraft (all probably model 21 fighters), (*I. Hata, and Y Izawa, 1989*). They were part of the 24<sup>th</sup> Air Flotilla, replacing the 22<sup>nd</sup> Air Flotilla. They arrived in 2 groups on December 2<sup>nd</sup> and 6<sup>th</sup> 1943. Unfortunately, Roi was attacked on December 5 and many of the first group was destroyed both on the ground and in the air.

Two other Air Groups had fought actions in the Kwajalein area in the predicted loss period, including Japanese Air Group 252 (I), based in Roi, Kwajalein during this period of the war. They flew Model 21 Zeros, and had 16 Zeros assigned to Roi late in 1943, but moved their entire group to Taroa, Maloelap in late December 1943. They last saw air combat 30 January 1944. Surviving pilots were evacuated by night to Truk and then Japan.

The other Roi Air Group, the 1st Carrier Division, attached from the Aircraft Carriers Shokaku and Zuikaku, saw heavy losses on the December 5, 1943 raid and was withdrawn to Truk a few days later.

The primary use of the A6M Zero was for interception purposes, so the use of it as a bomber, if there is in fact a bomb attached, shows the plane was probably lost in the December 5<sup>th</sup> raids hunting out a ship, or in the final days of the Japanese defense of Kwajalein, in both cases where the Japanese defenders knew US ships were nearby. This is the most logical conclusion, but without locating the plane and ID, it is just a best guess. Air Group 281 was completely without operable planes by February 1, 1944, and transformed themselves into a naval infantry unit and perished during the Kwajalein invasion, taking with them all their aviation records, and probably the history of this lost aircraft.

### COMMENTS AND CONCLUSIONS

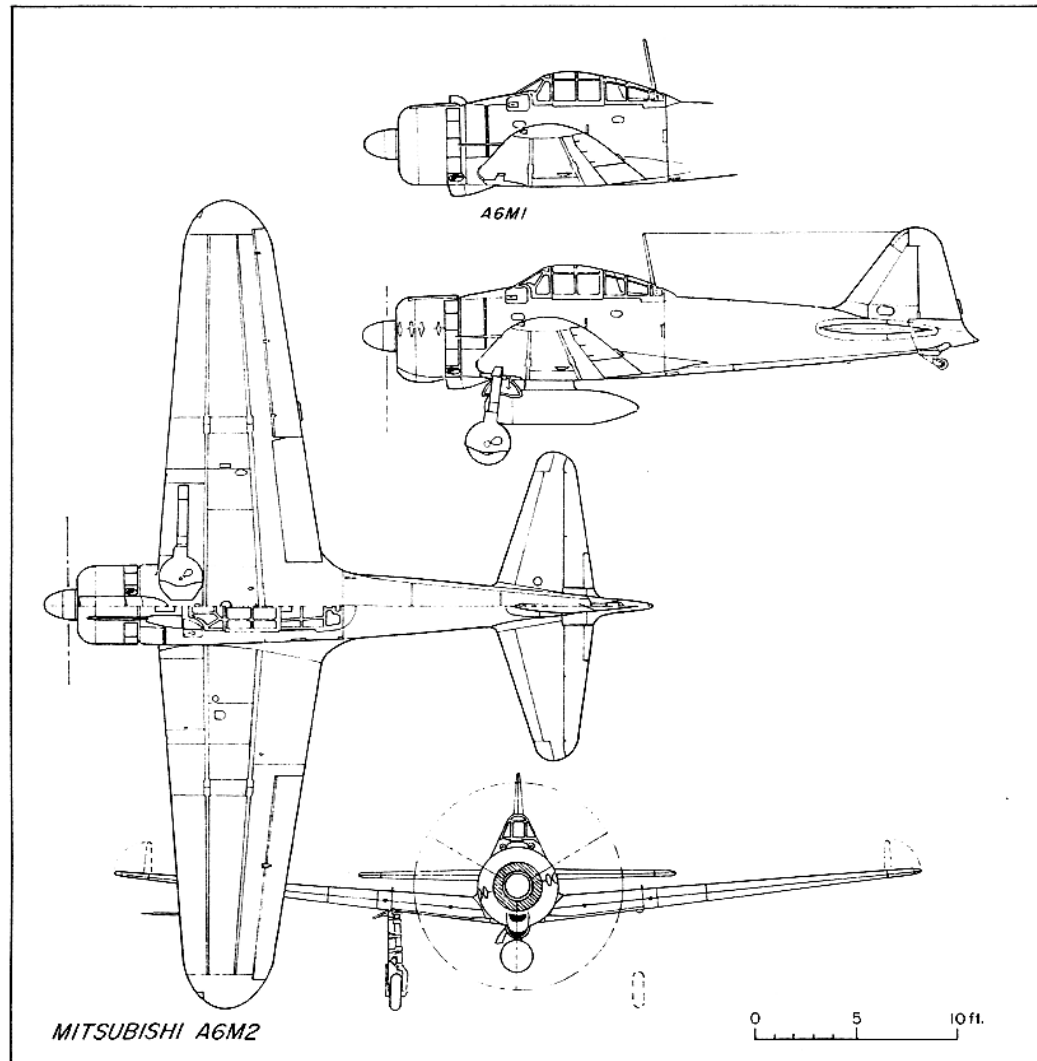
The discovery of a new site, an untouched site, with possible human remains and military artifacts, is the dream of many divers, and the specific goal of some of the old time Kwajalein divers. I was specifically told of plans by Kwajalein divers to remove the bomb, turn over the aircraft, and remove any collectable items, including the human remains, for their own collections. This violates the regulations of the Historic Preservation Office and the rules agreed to by Kwajalein divers when they acquired a diving permit from KalGov, and these sorts of diving operations should be stopped and prosecuted. Restrictions placed upon Kwajalein divers, such as the including of a local diver with every dive group as a watchdog, should be considered, as done in Truk. The value of such a site for tourism purposes for the Republic of the Marshall Islands vastly outweighs the collection value to a few divers.

New information from a Kwajalein diver, Gordon Jones, indicates from his description that the aircraft is not a "Rufe," but is most likely an E13A "Jake." This was determined from the fact that the aircraft has a live bomb attached to the center of its belly mount, an impossibility for the "Rufe" model. The "Rufe" had a single float, this plane has two floats, both shot or torn off. This plane is also missing its' tail. The single bomb was usually 250Kg type.

The aircraft shows signs of bullet holes, indicating that it was shot down or sunk during take-off or landing. The aircraft is in 135 feet of water approximately 500 yards from shore. This aircraft had a crew of three and so it is possible that their remains are still in the aircraft. The aircraft is upside down, closing the crews' compartment against the sand.

There was a squadron of these aircraft based in Ebeye, possibly from the 19<sup>th</sup> Kotutai, and some were listed as lost lagoon side of Ebeye.

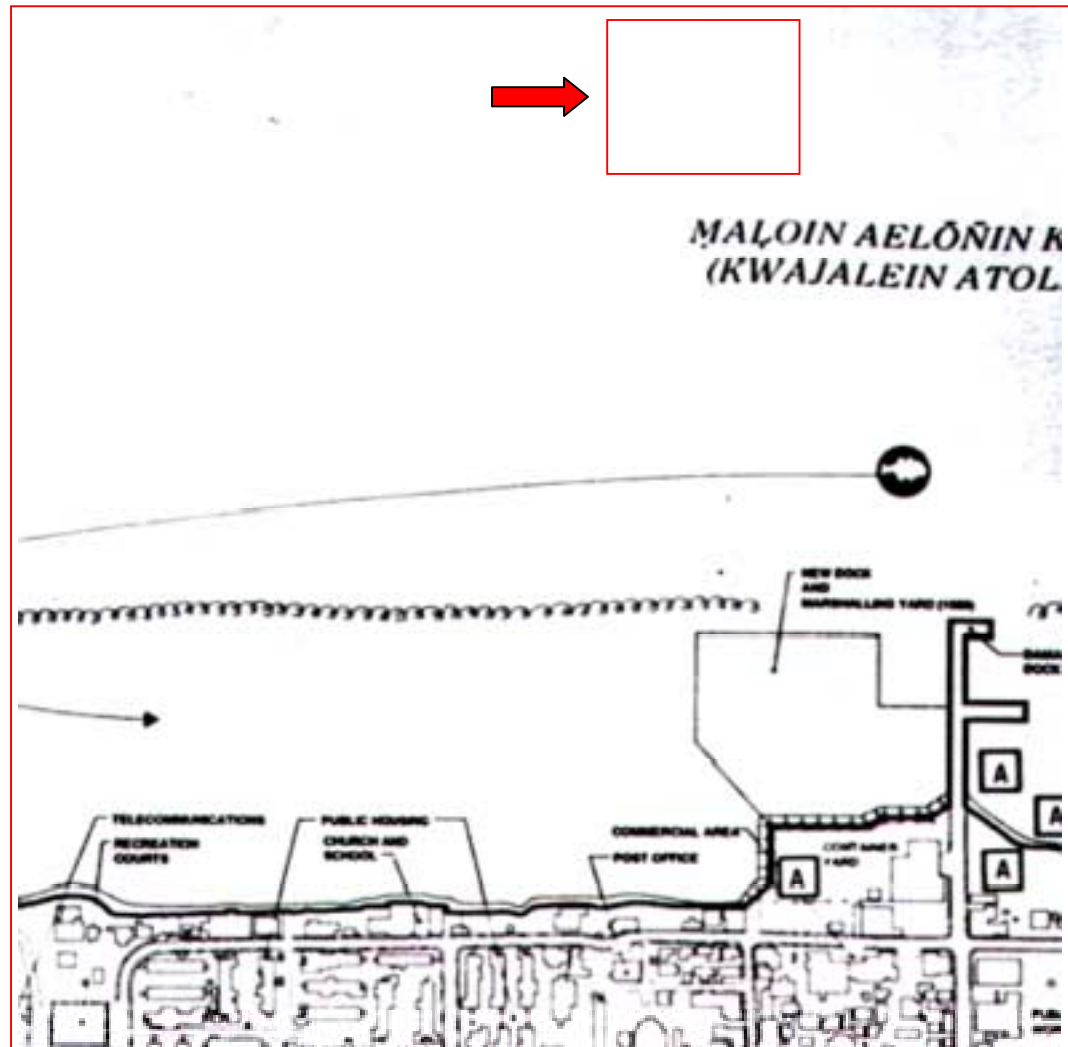
PHOTO SECTION OF KWAJALEIN SITE 9 REPORT



Drawing KS9-1 Mitsubishi A6M2 Model Zero. (From *Francillon, 1995*)

MAP OF KWAJALEIN SITE 9 (Site is located approximately in the box at the red arrow.)

Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL MARINE RESOURCE ATLAS, 1989:9).



## KWAJALEIN SITE 10 REPORT

### NAME: WRECK OF VESSEL AKIBASAN MARU

Also known locally as "P Buoy" Wreck

RMIHPO Site No. MI-KW-LA-010

### GENERAL DESCRIPTION AND LOCATION:

The vessel sunk at this site is the Japanese freighter Akibasan Maru, measuring 389 feet long with a 50-foot beam and 24-foot draft, and displaced 4,607 Gross Tons (*Bailey, 1992:23-24*). It was sunk upright in 150 to 160 feet of water on a mixed sand, rubble, and coral bottom. The ship is near the "P" buoy, and on the west side of the boat highway between Kwajalein and Ebeye, and marked with a small float attached to its' stern mast top (Photo KS10-1). I verified compass courses from the buoy to shore of 30 degrees to the first island south of Ebeye (Ebjapik), 45 degrees to the next island (Worbab), and 135 degrees to the crane on the Kwajalein dock. The vessel is a spectacular dive, with generally poor to good visibility, but on my survey day the visibility was excellent and had abundant marine life. A map of the site, Map KS10, follows the Photo Section of this report.

GPS Position: N 08.44.667 x E 167.43.477

### DETAILS

The Akibasan Maru was sunk by US Navy Aircraft on January 30, 1944, as part of the pre-invasion bombardment of the atoll (*Miller, 1991:23-28*). The Japanese did not expect an invasion of Kwajalein, the center of their Marshall Islands fortifications, but expected one or more of the outer islands, such as Jaluit or Mili to be invaded first. Thus, many aircraft and ships were stationed at Kwajalein to support these outer islands, and were caught by surprise and destroyed by the American forces.

The ship was listed as hit with multiple direct or near miss bomb hits (*Bailey, 1992:23*), but my survey of the ship showed only 1 near miss bomb hit outside of the starboard side of the number 4 hold, and possibly a smaller bomb hit directly on the center of the pilothouse. An unexploded bomb was also found mid-ship and later removed. This was apparently enough, as the damage immediately flooded the number 4 and 5 holds on this mid-engine ship and sunk the vessel to the stern. I am sure the stern touched bottom before the bow had gone under, stabilizing the vessel and allowing it to sink upright. Any other serious damage forward would have usually caused a ship to list, and laid it on the bottom on one side or the other.

The vessel was inspected from the stern, up the starboard side to bow, then back down the port side to the stern, over the stern to the rudder and propeller, and back into the number 5 hold.

The bow showed the portside anchor away (Photo KS10-2), at 120 feet. The excellent visibility also allowed a submarine cable to be seen on the bottom running north-south between Kwajalein and northern islands just forward of the ship. Spotted Eagle rays also "flew" over the bow, which had supported a 75mm deck gun, now missing (Photo KS10-3). Ammunition ready boxes stand open with a few remaining shells (Photo KS10-4).

The holds are all open and are just over 150 feet to their bottoms (Photo KS10-5). The ship has a reputation for relics, especially bottles, and had become a "test" to new divers to return from the depths of the holds alive and with a bottle in hand. Fortunately no divers have died from this ritual, but many have gotten decompression sickness and restrictions on these divers and collecting has been made by the Kwajalein authorities in the past. It apparently did not cover more commercial stripping of the vessel, as an "Air Lift" was discovered in the number 2 hold (Photos KS10-6 & 7). The airlift is used to vacuum clean through the muck and silt in the bottom of the holds to discovery artifacts. It takes divers with skill, equipment, and good luck to perform this kind of operation at this depth, as the 150 foot working depth can easily cause mistakes of all sorts and a horrible survival if unfortunate or even death. This equipment should not be available on Kwajalein or used by local divers on this or any other historic site.

Moving past the center of the vessel showed the framework remains of the pilothouse, the funnel (Photo KS10-8) and engine room skylight area (Photo KS10-9), the ship being mid-engine. A small number 3 hold was located behind the pilothouse/cabin area.

The number 4 hold was then inspected starboard side showing the damage which sank the vessel (Photo KS10-10), and up on the stern quarters (Photo KS10-11) which even had a teak deck surviving with caulking between the lumber planks (Photo KS10-12).

Diving over the stern showed the immense size of the rudder and propeller (Photo KS10-13), and the excellent visibility showed a US LST style anchor sitting on the sand near the starboard stern of the vessel. The last few moments of my survey were in the number 5 hold, which was bare except a few aircraft parts on the port mezzanine deck, probably for the Kawanishi H6K4 models in the Marshall Islands (Photo KS10-14).

No loose artifacts or collectable items were discovered on the survey dive, as this vessel has also been well picked over. The discovery of a second airlift during my survey of Kwajalein on this vessel verifies the serious nature of the diving collectors on Kwajalein.

## COMMENTS AND CONCLUSIONS

The vessel is an impressive dive, and was spectacular on the excellent visibility day that I had for my survey. The ship has clean lines and with its' size makes for great photo opportunities. The ship does not have an abundance of soft corals typical of heavy current areas, but is covered with hard coral growth. I am surprised at the barren hull, so possibly the depth and restricted light penetration has caused the lack of flamboyant growth on the vessel. I also may have dove on an exceptional visibility day, not the norm for the site.

The discovery of the airlift further proves the stripping of the Kwajalein historic sites continues. The airlift was not that old, by the coral growth on the pipes. Besides this kind of activity being extremely dangerous, it destroys one of the only assets the Republic can develop, tourism. I can only recommend that KalGov, KADA, or the RMI Government Agencies responsible strive harder to control the destruction of their historic sites, as Kwajalein Lagoon and its' sites are truly world class.

I would recommend the Akibasan Maru be permanently marked with underwater and surface buoys, the airlift removed, and airlift equipment banned from Kwajalein. The Kwajalein SCUBA Club should be informed of this activity, the Kwajalein authorities additionally informed, and any further violations of the Historic Preservation Regulations be prosecuted to the fullest to set an example.

PHOTO SECTION OF KWAJALEIN SITE 10 REPORT



Photo KS10-1 Start of dive at stern mast, located between number 4 and 5 holds. Line goes to a small surfaces float marking the wreck.



Photo KS10-2 Bow of Akibasan Maru, with port side anchor played out.





Photo KS10-3 Empty gun mount on bow of Akibasan Maru. Gun was a 75mm model.



Photo KS10-4 Ready ammo boxes for forward gun mount with a few remaining 75mm shells.



Photo KS10-5 Holds 1 and 2 of Akibasan Maru.



Photo KS10-6 Airlift for artifact collection in Number 2 hold of Akibasan Maru.



Photo KS10-7 Airlift showing aluminum piping, couplings, and back of number 2 hold on the Akibasan Maru.



Photo KS10-8 Shows front of funnel and vent on the rear of the pilothouse of the Akibasan Maru.



Photo KS10-9 Ships engine room skylights and number 3 hold to the far right.



Photo KS10-10 Number 4 hold with damage through hull and at deck level. This damage is what sunk the vessel.

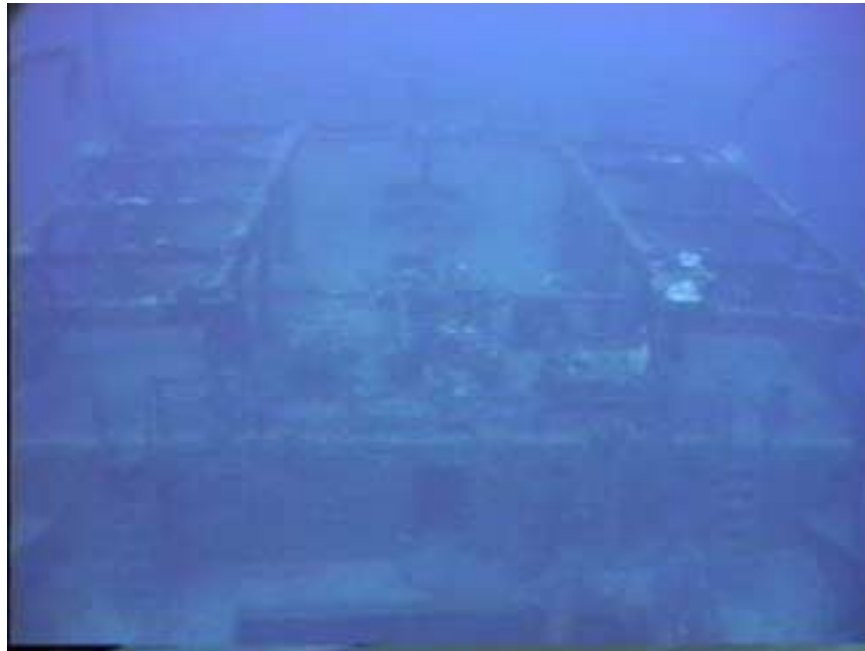


Photo KS10-11 A distant shot of the entire remaining stern framework. Number 5 hold is in the bottom foreground of the picture.



Photo KS10-12 Wood deck, probably teak, with caulking, still surviving after over 50 years of underwater exposure.

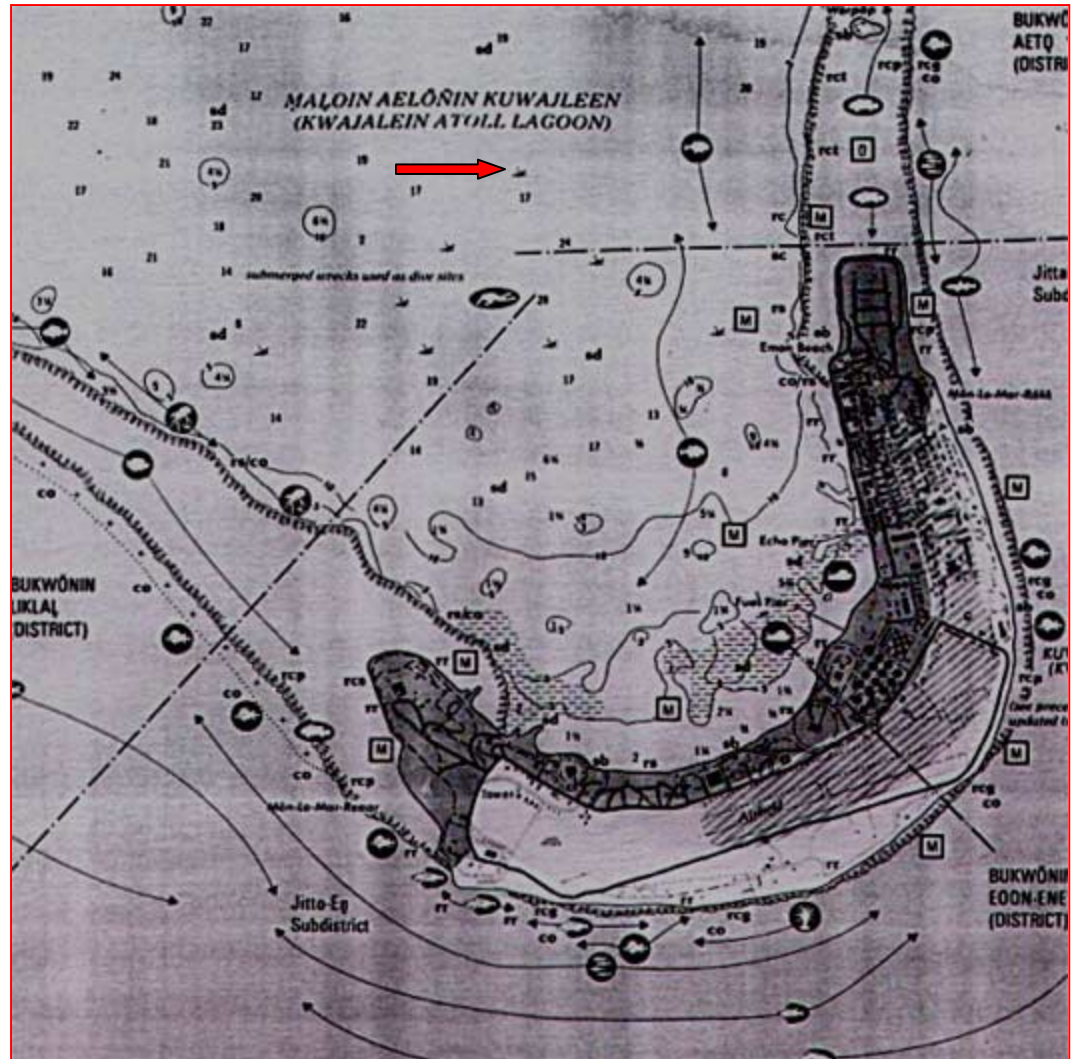


Photo KS10-13 The massive rudder and propeller of Akibasan Maru sitting on a 150-foot bottom. A US Navy LST style anchor also sits on the sand nearly below me at this point in the photograph.



Photo KS10-14 Aircraft parts in the port side of the number 5 hold are probably for the Kawanishi H6K4 model Mavis Flying-Boats used in the Marshall Islands.

MAP OF KWAJALEIN SURVEY SITE 10 (Site is located at the red arrow.)  
Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL  
COASTAL RESOURCE ATLAS, 1989:7).



# KWAJALEIN SITE 11 REPORT

NAME: KWAJALEIN SKI AREA WRECK No. 1  
RMIHPO Site No. MI-KW-LA-011

## GENERAL DESCRIPTION AND LOCATION

The Kwajalein Ski Area Wreck No.1 is one of 7 reported wrecks or debris fields of remaining wrecks within the Kwajalein Ski Area. This site was just east, approximately 100 feet, of the 1<sup>st</sup> mooring dolphin buoy, in approximately 40 feet of water. This is the closest mooring buoy to the Kwajalein dock, currently used to tie up the US Army Kwajalein water barges. The site is on a sand and rubble bottom, with virtually no marine life with fair to good visibility. A map of the site, Map KS11, follows the Photo Section of this report.

GPS Position: N 08.44.285 x E 167.44.015

## DETAILS

The Kwajalein Ski Area Wreck No.1 is the remains of a small, approximately 80 foot long wood vessel of unknown type or design. The main engine (Photos KS11-1 and 2) is sitting upright with various machinery in-line or nearby. The propeller (Photo KS11-3) is still in place, with a gearbox between it and the main engine. One of the fuel tanks is shown in Photo KS11-4 and a pile of debris sits where the stern fell away into slightly deeper water (Photo KS11-5).

There are no remaining hull sections at all, and no remains of a bow, chain, anchor, or any other equipment that could identify the wreckage. Being a wood hull, it could have burned to the waterline, or simply been eaten away by marine creatures over time. The vessel, unless otherwise noted in some earlier survey or research (Bailey, 1992:35-36), is without a history.

## COMMENTS AND CONCLUSIONS

This site, as virtually all of the Kwajalein Ski Area Wrecks, have deteriorated seriously due to the effects of the shallow water and storms, dredging, and divers collecting artifacts. I was hoping when I choose these sites I would find more protected wrecks due to the restrictions on diving at the ski area. Instead, thousands of dives have been made in this area in the last 30 years, and virtually every nook and cranny has been looked into for collectable items. Dredging has physically removed some of the inshore sites at the ski area, and removed 2 additional sites within the current harbor, south of the Ski Area. These sites are hard to protect, and little hope for them exists in the future as Kwajalein keeps developing. I would only suggest they be marked and buoyed to avoid accident damage from anchors and un-educated development.



PHOTO SECTION OF KWAJALEIN SITE 11 REPORT



Photo KS11-1 Flywheel side of main engine on Ski Area Wreck No. 1.



Photo KS11-2 Main engine of Ski Area Wreck no. 1.



Photo KS11-3 Propeller of Ski Area Wreck No. 1.



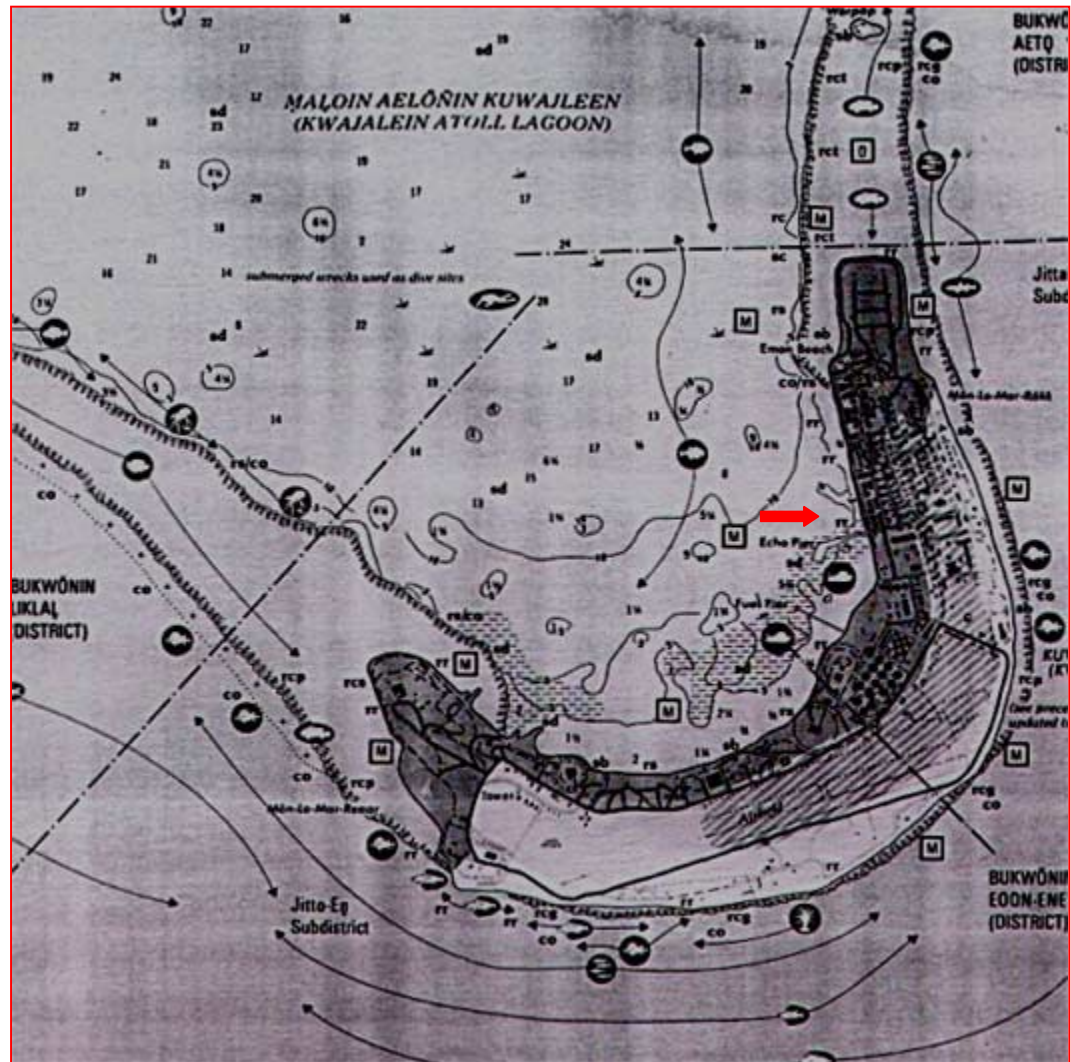
Photo KS11-4 Fuel tank of Ski Area Wreck No. 1.



Photo KS11-5 Stern Debris of Ski Area Wreck No. 1.

MAP OF KWAJALEIN SITE 11 (Site is located at the red arrow.)

Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL COASTAL RESOURCE ATLAS, 1989:7).



## KWAJALEIN SITE 12 REPORT

NAME: KWAJALEIN SKI AREA WORK-BOAT WRECK  
RMIHPO Site No. MI-KW-LA-012

### GENERAL DESCRIPTION AND LOCATION

The Kwajalein Ski Area Work-Boat Wreck is the limited remains of a wood hulled work-boat, estimated to be 40 feet in length. It is located behind of and north of the Ski Area Wreck No. 1, in 45 feet of water. The visibility at the site is poor to good, with virtually no marine life. A map of the site, Map KS12, follows the photo section of this report.

GPS Position: N 8.44.300 x E 167.44.000

### DETAILS

All that remains are and metal fittings, fasteners and small wood sections. The only identifiable piece was a section used for steering the work-boat, and another was possible the metal fore-deck in which a mast stood (Photo KS12-1). The wood pieces are scattered and mixed in with the KS11 wreckage (Photo KS12-2). The work-boat was probably sunk by strafing, as numerous vessels were reported sunk during the pre-invasion bombing and naval bombardment (Bailey, *1992:18-20*), and could have been tied off the stern of the KS11 wreck when attacked. Many smaller vessels were lost without identification in Kwajalein Lagoon.

### COMMENTS AND CONCLUSIONS

It would be hard to include a pile of debris as a historical site, but the ski area has a number of these piles. A simple survey of the complete area should be done and list them for future reference before they disappear completely, or confuse the next surveyor.

Additionally, an US naval anchor (Photo KS12-3) was also located nearby, as were 2 additional anchors and hundreds of feet of ships anchor chain throughout the area. These have been used by USAKA. The entire area is a mix of old and new, and I doubt if anyone has knowledge of all the details of the entire Ski Area site.

PHOTO SECTION OF KWAJALEIN SITE 12 REPORT

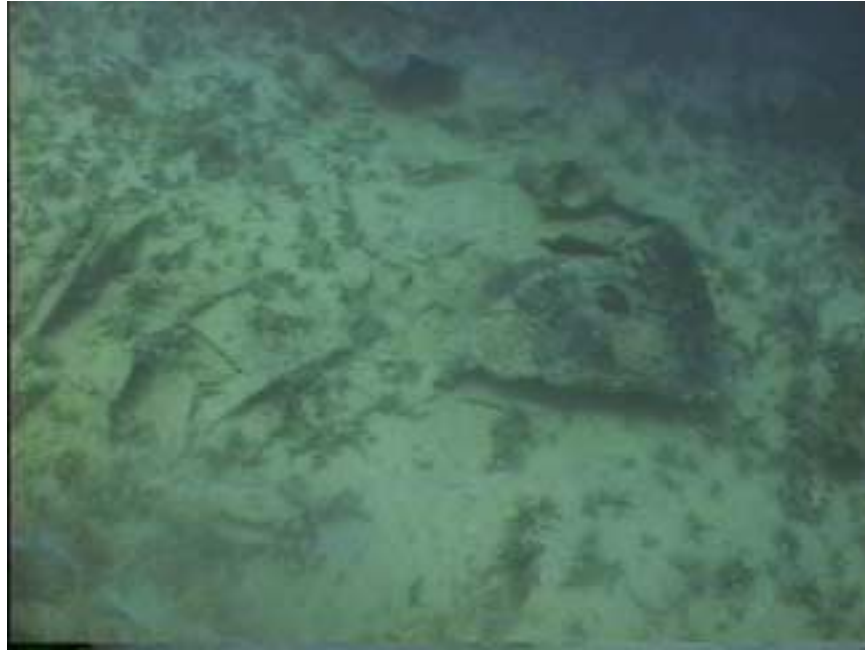


Photo KS12-1 Kwajalein Ski Area Work-boat, unknown wreckage, possible from bow section.

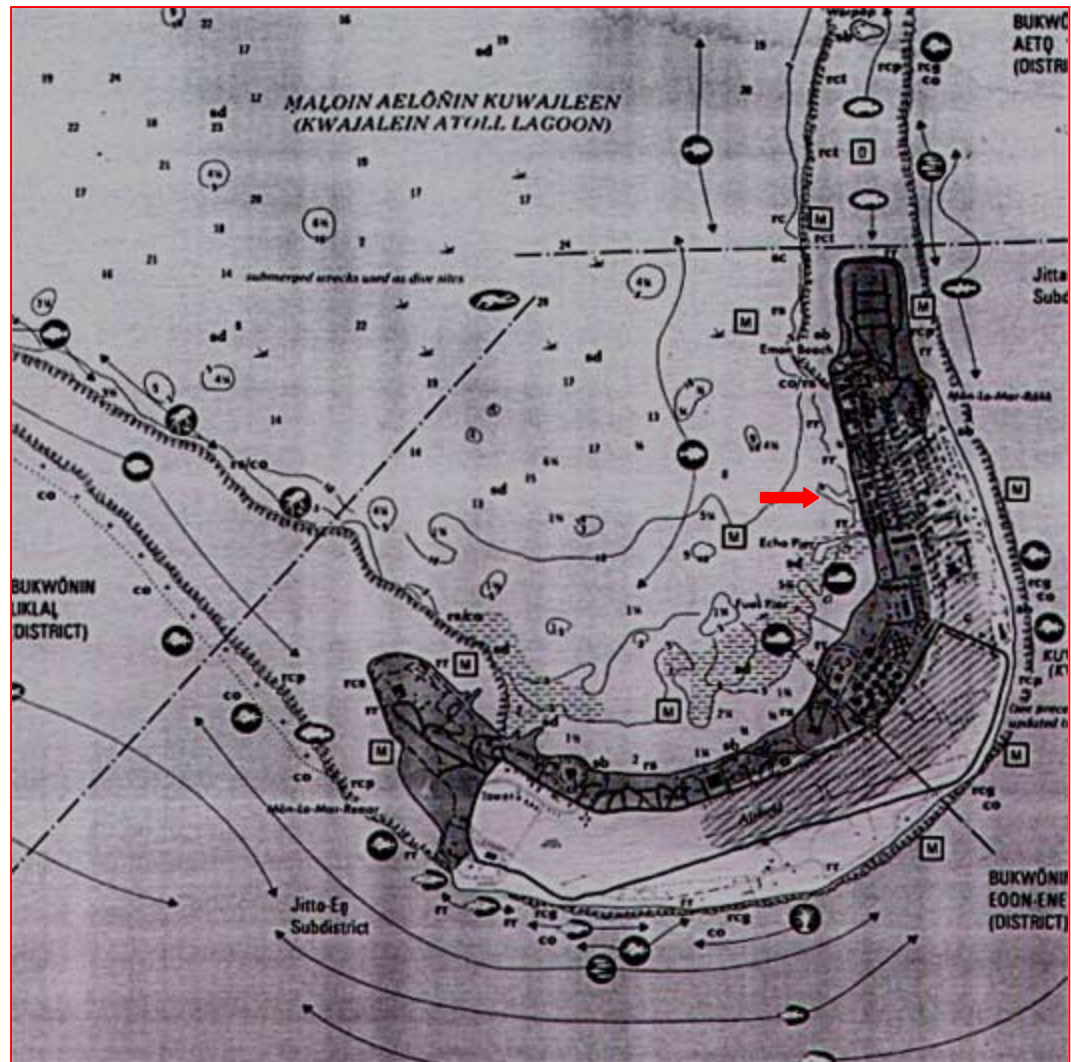


Photo KS12-2 Wood from hull of Ski Area Workboat.



Photo KS12-3 Anchor imbedded in the rubble nearby the Ski Area Work-Boat debris.

MAP OF KWAJALEIN SITE 11 (Site is located at the red arrow.)  
Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL  
COASTAL RESOURCE ATLAS, 1989:7).





# KWAJALEIN SITE 13 REPORT

NAME: THE "PRINZ EUGEN" WRECK  
RMIHPO Site No. MI-KW-LA-013

## GENERAL DESCRIPTION AND LOCATION

The "Prinz Eugen" was a WW2 German Heavy Cruiser given to the United States after the war and used as a target vessel during the "Able" and "Baker" Atomic bomb tests at Bikini Atoll. It survived the tests and was later towed to Kwajalein for study and storage, as it was too radioactive to deal with. It eventually capsized and sank lagoon side of Enebuj Island (Carlson), the next island northwest of Kwajalein.

The vessel, being 654 feet long with a 71-foot beam, is a massive sight to behold underwater, with just the last 100 or so feet of the stern exposed above the water line at low tide (Photo KS13-1). Even with the stern exposed, the bow is 110 feet deep, extending well out onto the sandy bottom of the lagoon floor. It is obvious to locate offshore of Enebuj Island, and has poor to excellent visibility depending on the wind, waves and tides. A safe harbor is created for small boats behind the exposed stern, but many divers anchor off the hull forward to save the swimming time if dives are planned to the bow. Marine life is large, small, abundant and excellent. A map of the site, Map KS13, follows the Photo Section of this report.

GPS Position: N 08.45.000 x E 167.40.800

## DETAILS

The "Prinz Eugen" has had volumes of articles and reports written on it; reviewing its war service, the atomic testing program (Delgado, et al. 1991), radioactivity, the capsizing and sinking, and past and current damage. I have been fortunate to make nearly 80 dives on the vessel, but have heard stories of an old time Kwajalein diver who has made 2,000 dives on the Prinz Eugen, equal to nearly 2 months of time, 24 hours a day, on the vessel. It has probably been the largest vessel dove on by the largest number of divers in the world. With this in mind, my focus of this survey was to address areas that have not been explained, and give a current day survey of the vessel.

First, the vessel is a Heavy Cruiser of the "Hipper" Class, and not a battleship or "Sister" ship to the Battleship Bismark, as many proclaim since they fought together in battle against the British in which the HMS Hood was violently sunk. This is a minor point that has often been erroneously repeated.

The capsizing and sinking of the vessel on December 22, 1946, was explained away as to the growth of "controllable small leaks" (*Bailey, 1992:31*). This has never been explained adequately in any report I have ever read. A true sister ship, the Heavy Cruiser *Blucher*, was torpedoed 2 times and struck 5 times with 6 inch gunfire all along one side within a few minute period (she passed through a fiord defended with a concealed torpedo and gun battery while invading north to Oslo, complete with 900 extra troops) and took the day to capsize and sink with this massive damage. The *Prinz Eugen* was not badly damaged from the Bikini tests, so many believe she was "allowed" to founder by her crew, as they wanted to be rid of her and go home for Christmas. I tend to agree. By merely closing every watertight door on the vessel, it should have taken days or months to sink. A faulty sea chest valve (Photo KS13-2) could be easily repaired or covered from the outside, there being lots of Navy divers and ships in the area during the testing program.

I have seen a water pump hose down through a turret passage in the stern, which is completely isolated from the hull, meaning, if the hose was removed and the turret access door closed, another large area of the ship would be watertight. I think only a few know the truth, and we will never know for sure, but in my opinion, the vessel became a great dive site without official justification.

Next, there is a massive amount of damage on the hull on the port side from the keel up (Photo KS13-3) (or currently swimming down) through the main deck, inward into the ship through the armor plate (Photo KS13-4), and over an 100 foot width from bow to stern. This damage is extensive in the fact that it has ripped open an 80 mm hardened steel armor plate (Photo KS13-5), leaving nearly a 12 foot by 33 foot section, weighting 60,000 pounds, attached only at one end. The 20mm hull skin, walls, floors, bulkheads, doors, have been torn open or off (Photo KS13-6). A massive piece of hull skin hangs down nearly 50 feet, attached only by the anti-submarine cable incorporated into the hull (Photo KS13-7), and other sections lie on the bottom nearby.

The ship has not decayed naturally to this point, as many surveys seem to indicate, but was damaged as the result of some Navy team, officially or unofficially, blowing up the 3, 21 inch torpedoes in the port side stern torpedo launcher. With whatever demolition charges were used, this blast totaled over 3,000 pounds of high explosive. This was done after the late 1940s' survey and before another official survey in the early 1970s'. The port side forward torpedo launcher is shown in Photo KS13-8 for comparison. The energy of this explosion, being under the ship at this point, caused the damage to amplify, resulting in damage in all directions. The armor plate protected the ship from greater blast damage internally, but tore open all the compartments between the plate and the hull, forward and aft, from the bottom of the ship through 2 decks above the main deck. This blast, not the natural deterioration of the vessel, has caused all of this damage.

While this damage has detracted from the expected lines of the vessel, it has created many wonderful opportunities for divers to more safely enter and explore the vessel. It has also allowed them to more easily strip the vessel, as piles of debris dumped out of these broken rooms lies in piles around and below the exit points. On many of my guided tourist dives on the vessel we would locate and clean some artifact for photography, only to find it missing on the next dive. It then became a custom to "dirty up" our site after filming it, to see it remain for later dives.

The Prinz Eugen has many areas to explore, and even today has artifacts within the hull and excellent photographic sites. The bridge was crushed against the bottom when the vessel capsized (Photo KS13-9). The Twin 88 guns (Photo KS13-10) stand out, and many miss the life-raft remains in the aircraft hold (KS-13-11) hanging by the ships davits, with only a propeller shaft as a hint.

The classic items are easy to visit, such as the main turrets (Photo KS13-12 of turret number 4) and the propellers (Photo KS13-13 and 14). The propellers have years of graffiti carved and written on them, and small-hacksawed chunks removed by collectors. The only outstanding renewable item is the marine life surrounding the vessel (Photos KS13-15 and 16). Coral grows on the hull bottom, fish of all types live in and around the hull, turtles and sharks visit on a regular basis, and even a bad day is usually interesting or exciting while diving on the Prinz Eugen.

#### COMMENTS AND CONCLUSIONS

The Prinz Eugen is a wonderful diving location, representing the most classic and noble merits of SCUBA diving and tourism. Yet it has probably had the greatest number of divers stripping artifacts from any site of its size in the world. The ship probably could hold records for diving. Instead, the vessel has never had any protection except when 2 divers died and the USAKA authorities banned diving. The ship, and the rest of Kwajalein lagoon for that matter, has been the un-supervised playground for primarily visiting Kwajalein divers who have no ties to the Marshall Islands, and have stripped these non-renewable resources for the last 35 years. Somebody in the Marshall Islands government should figure out that tourism and the protection of these assets is in their best interest for the future.

PHOTO SECTION OF KWAJALEIN SITE 13 REPORT



Photo KS13-1 Stern of Prinz Eugen wreck showing rudder and center propeller above the waterline with RMIHPO diver Hemley Benjamin plotting GPS coordinates for this report.



Photo KS13-2 Bottom hull of Prinz Eugen showing port side bilge keel on right of photo and sea chest intake in bottom of photo.



Photo KS13-3 Hole in hull bottom on port side near the end of the bilge keel. Divers can drop straight down through this hole into the shadows of the ship for excellent photos of marine life in open water below.



Photo KS13-4 Hull damage from triple torpedo mount explosion.



Photo KS13-5 Damaged 80mm armor plate, torn apart from explosion.



Photo KS13-6 Hull damage from explosion, main deck on right of photo, keel at edge of light at top of photo, with a missing or collapsed sections in between.



Photo KS13-7 Hanging hull section from damage site. Section is attached to anti-submarine cable and extends almost to the sand.



Photo KS13-8 Triple 21 inch torpedo launcher forward on port side.



Photo KS13-9 The rear of the fighting bridge at approximately 80 feet. It was crushed over flat against the bottom by the capsizing of the vessel. A large coral mountain rises up to the right of the photo, and a lost anchor and line are visible in the photo.



Photo KS13-10 Twin 88 Gun mount on Prinz Eugen.





Photo KS13-11 Airplane hold with remains of lifeboat still hanging in its' davits.



Photo KS13-12 Number 4 turret lying on the bottom.



Photo KS13-13 Starboard side propeller of the Prinz Eugen.



Photo KS13-14 Close up of starboard propeller.

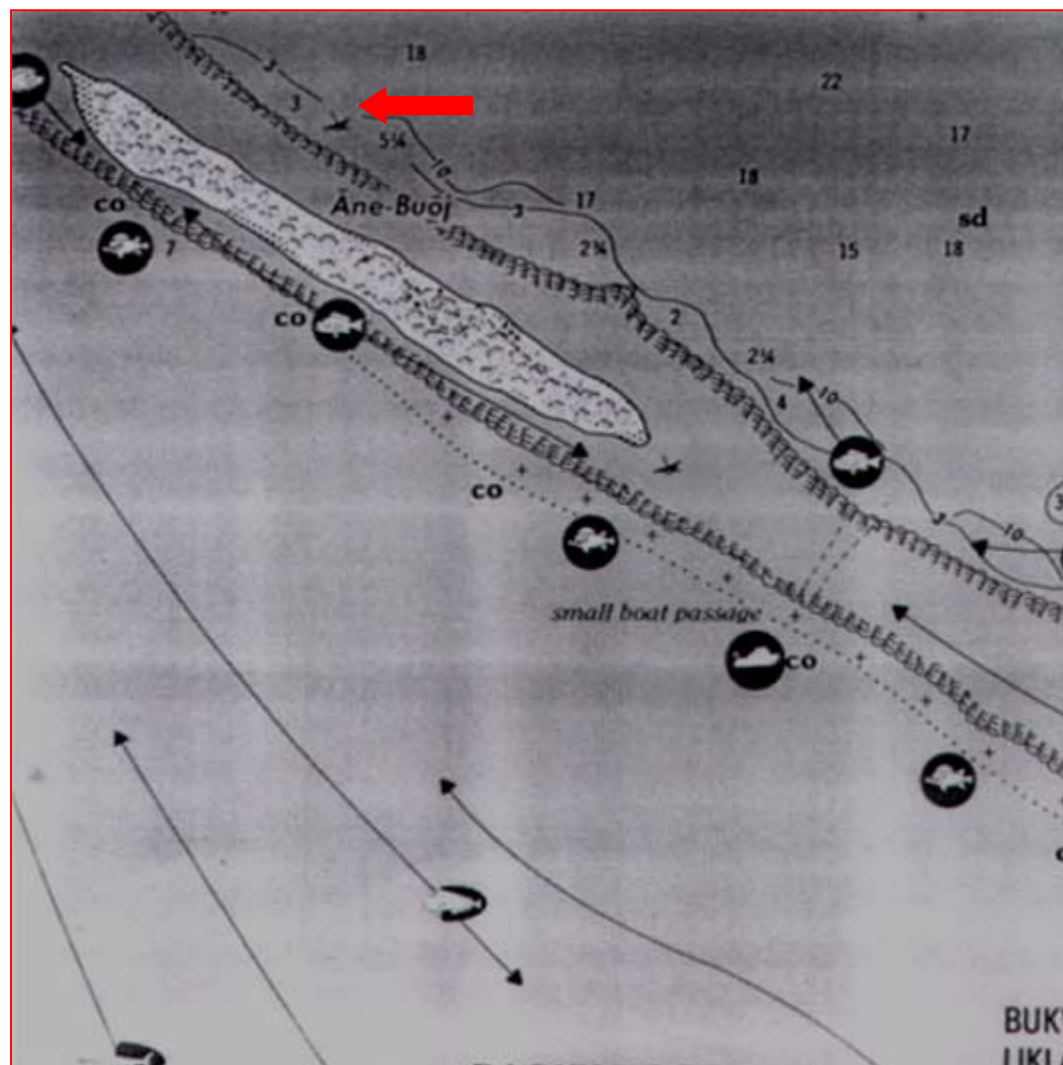


Photo KS13-15 Fish life on the windy side of the vessel, looking towards the stern. Note the anti-submarine cable housing in the top right of the photo.



Photo KS13-16 Fish life in open water south of the Prinz Eugen wreck.

MAP OF KWAJALEIN SITE 13. (Site is located at the red arrow.)  
Next to Ane-buoj (Enebuoj) (US Military - Carlson) Island, Kwajalein  
Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL  
COASTAL RESOURCE ATLAS, 1989:7).



# KWAJALEIN SITE 14 REPORT

NAME: AINEMMAN WRECK

RMIHPO Site No. MI-KW-LA-014

## GENERAL DESCRIPTION AND LOCATION

The Ainemann wreck is located just yards north of and next to the stern of the Prinz Eugen wreck. It is in 30 to 40 feet of water, and is basically the remains of an approximately 50 foot wooden hulled vessel from the keel down. It can be seen from the surface, but has little artifacts or marine life. A map of the site, Map KS14, follows the conclusion of this report.

## DETAILS

The wreck of the Ainemann was always interesting to me as I thought it must have been a work-boat lost when the Prinz Eugen possibly rolled over on it when it capsized, dating it over 50 years old. Current research states it as belonging to the KITCO trading company (Kwajalein Atoll Trading Company), lost in the 1960s (Miller, *1991:110*). My dives only revealed it was not a "Mike Boat", as these are usually defined as military steel landing craft, usually 50 to 56 feet long, and do not resemble a typical wood cargo vessel in any way. (See Majuro Survey Report, Site 7, photo 6). Additionally, the propeller is still attached, and is Japanese in design, possibly verifying his story that the vessel was a Japanese gift after the war.

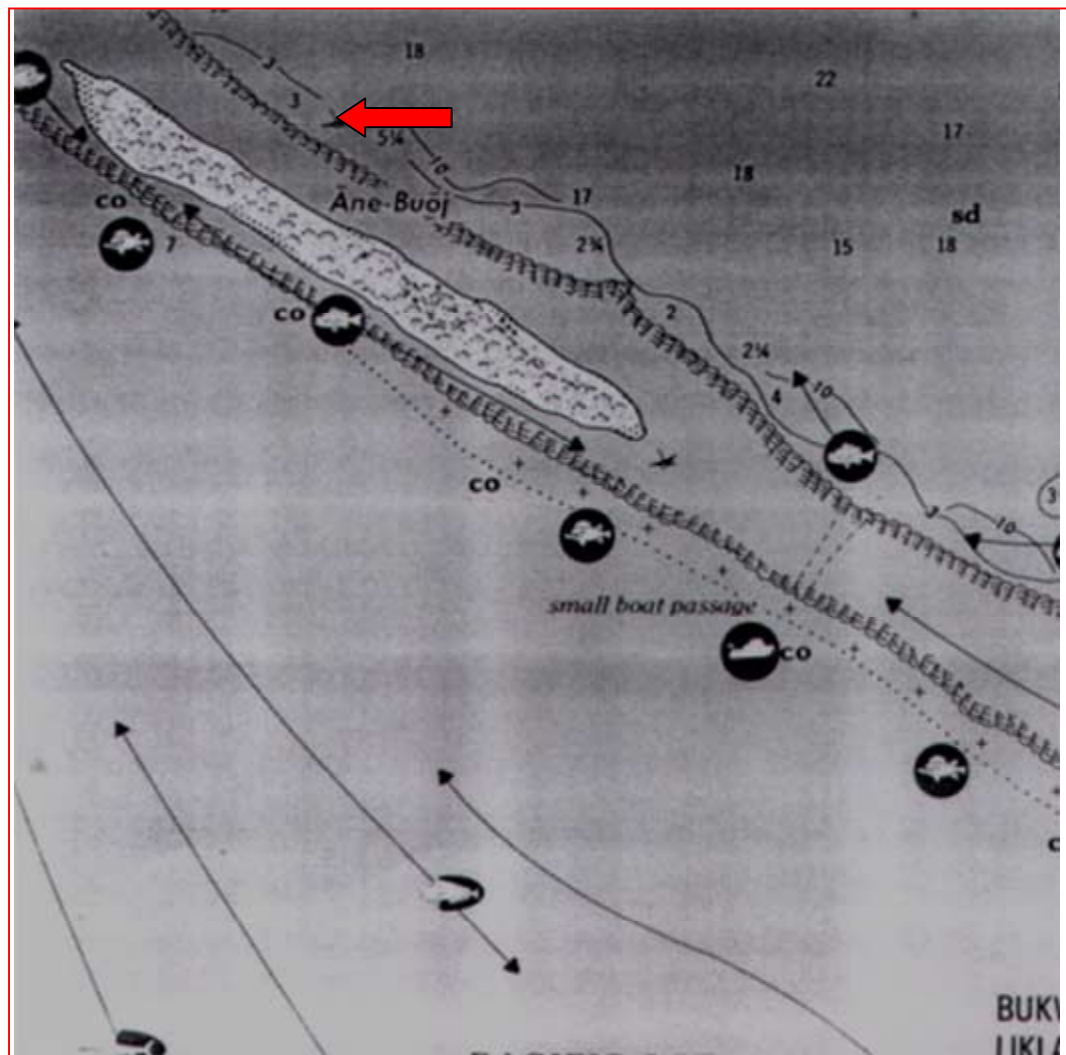
## COMMENTS AND CONCLUSIONS

The Ainemann wreck is a great teaser for those diving on the Prinz Eugen, as we always wondered why it was there. It is not much of a dive, but provides a great mooring point if diving in heavier seas or winds on the Prinz Eugen. There is nothing of value or any artifacts on the wreck.

## PHOTO SECTION

No quality photos were taken of the Ainemann wreck site.

MAP OF KWAJALEIN SITE NUMBER 14. (Site is located at the red arrow.)  
Map scanned from: (U.S. ARMY CORP OF ENGINEERS, KWAJALEIN ATOLL  
COASTAL RESOURCE ATLAS, 1989:7).



# KWAJALEIN REPORT

## CONCLUSION

The first thing to be said to any reader about Kwajalein Atoll, is the SCUBA Diving is First Class, period. Even with the years of artifact collectors, the underwater assets provide sites that cannot be seen elsewhere in such a close proximity, with excellent visibility, weather, and potential tourism infrastructure.

Yet when all is said and done, the Kwajalein portion of this survey also shows the impact of unregulated and unrestrained diving on historical sites after a measurable period of time. Since 1965, the start of sport diving on Kwajalein, these wrecks and sites have been methodically sought and found out, explored, culled, sifted, and stripped of the best. Then stripped of the second best. And then the stripped of the common and virtually anything else to prove themselves collectors, even if it wasn't collectable. Only the power of mother nature, and the use of dredging and landfilling operations, has done additional measurable damage to the sites, but even this is generally limited to the more shallow urban sites.

I can give many specific recommendations to protect each site, but the issue has become basically political and legal. If the Marshall Islands Government wants to develop Kwajalein as a First Class Dive Resort, which it easily can become with the assets in the lagoon, it must first find a way to control the Kwajalein divers, monitor and protect the sites, and prosecute the offenders. It is that simple. Development plans and proposals by any developer or investor into the tourism business field would need to know their underwater assets are being protected by law and have the support of the RMI agencies involved.

I also would love to see a museum of sorts develop to preserve some of these assets on land. This may also be a way to protect some of the assets before they disappear, and bring attention to their plight.

Current worldwide Tourism has changed its' focus to photography, and avoids the collection of artifacts. Even though most of the newer Kwajalein divers are avid explorers and photographers, they are still tainted by Kwajalein collectors, who still remove items to this day. Until this attitude is changed, the sites will continue to diminish in value.

I hope this survey provides those who need this information the ability to make decisions and changes to preserve the resources of Kwajalein Lagoon.

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APPENDIX 1  
Index of References by Site

SITE NUMBER WITH REFERENCES

KS-1 NORTH GUGEGWE PIER WRECK.  
RMIHPO No. MI-KW-LG-001

1. Bailey, D.E., 1992. Page 37
2. Miller, M.S., 1991. Pages 92-93.

KS-2 SOUTH GUGEGWE WRECK  
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1. Bailey, D.E., 1992. Page 38
2. Miller, M.S., 1991. Pages 92-94. Photos on pages 93 & 94.

KS-3 SHELL ISLAND WRECK

1. Bailey, D.E., 1992. Pages 39-40
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KS-4 NORTH LOI WRECK

1. Bailey, D.E., 1992 Pages 22 & 40
2. Miller, M.S., 1991 Page 108

KS-5 NORTH MAVIS FLYING-BOAT WRECK

1. Bailey, D.E., 1992 Pages 48-51 Photos on pages 49 & 50.
2. Francillon, R.J., 1995 Pages 301-307
3. Lundstrom, J.B., 1990 Pages 61-66, 70-77
4. Miller, M.S., 1991 Pages 113-114

KS-6 MAIN EBEYE SEAPLANE RAMP

1. Bailey, D.E., 1992 Pages 49-51 Photo on page 49.
2. Miller, M.S., 1991 Pages 113-114

KS-7 CENTRAL MAVIS FLYING-BOAT WRECK

1. Bailey, D.E., 1992 Pages 48-51 Photo on page 49.
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1. Bailey, D.E., 1992 Page 51
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1. Bailey, D.E., 1992      Pages 23-24      Photo on page 35.
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KS-11 SKI AREA WRECK

1. Bailey, D.E., 1992      Pages 35-36
2. Miller, M.S., 1991      Pages 77-80      Photos on pages 78 & 79.

KS-12 SKI AREA WORKBOAT

1. Bailey, D.E., 1992      Pages 35-36
2. Miller, M.S., 1991      Pages 77-80

KS-13 PRINZ EUGEN

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KS-14 AINEMMAN

1. Miller, M.S., 1991      Page 110



## APPENDIX 2 Equipment List

This is a list of personal equipment used to dive on, film, edit, and create this survey report for the RMI Historical Preservation Office.

### SCUBA EQUIPMENT

Aluminum 80 and steel 95 SCUBA tanks, normal breathing air. Scubapro MK5/MK10 -G250 regulator with standard gauges, or a Oceanic Delta/Omega Piston regulator with Oceanic Prodigy computer with standard gauges, with additional oceanic compass and extra Scubapro LS1 hand-held compass. Seatec Manta Buoyancy Compensator with standard power inflator or Scubapro Air 2 system. Back-up Sherwood Pony bottle and regulator as needed. Scubapro web pocket weight belt, with Scubapro mask, snorkel, fins, boots.

### BOATS AND EQUIPMENT

20 foot open fiberglass boat with 40HP motor, Raytheon Color Depth Finder, Scubapro hand held personal dive sonar. Japanese style plastic floats and miles of 6mm tarred dacron line. Rolls of PVC 100 yard colored disposable survey tape. Kwajalein additionally required the use of rental boats and tanks, and some support equipment, and a guide for some sites.

### CAMERA AND VIDEO EQUIPMENT

Nikon VN760 Hi8 Video Camera in a Bentley Marine Housing with monitor, Underwater Kinetics 1200 Video lights, Underwater Kinetics R800 Flashlight, Oceanic 101 Flashlight, Toshiba 132 Flashlight. Sea and Sea Motor Marine 35mm UW Camera with flash, close-up kit.

Sony MaviCap Digital Still Image Capture system. JVC Character Generator. Vidicraft Video enhancer/editor. JVC Color Monitor and JVC VHS video recorder.

### COMPUTER EQUIPMENT

Compaq Presario Pentium with 200mhz , 40MB Ram, 8MB Video Ram, 6.5 HD. HP CD Disc writer, Visioneer Paper Port Scanner, Umax Flat Scanner, Lexmark Z51 Printer. (Report printed B&W on HP Laser Printer) Microsoft Word, Picture It, Cakewalk Audio and OCR Software.