U.S. Maritime Zones and the Determination of the National Baseline

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ABSTRACT

With a greater shift toward conserving and managing our resources, more restrictions are placed on ocean activities. Predictability in locating the bounds of a particular regulatory area will help with compliance and improve enforcement. The United States, pursuant to international law, has established maritime zones in which various activities are controlled or restricted. The limits of these zones, among a host of other information, have for years been depicted on the National Oceanic and Atmospheric Administration's (NOAA's) paper nautical charts. NOAA is responsible for depicting on its nautical charts the limits of the 12 nautical mile Territorial Sea, 24 nautical mile Contiguous Zone, and 200 nautical mile Exclusive Economic Zone (EEZ). Additionally, NOAA also charts a Three Nautical Mile Line and a Natural Resources Boundary at 9 nautical miles, which may serve as the inner limit of federal fisheries jurisdiction as well as the outer limit of the states' jurisdiction for certain laws. The ambulatory baseline from which these zones are projected is precisely determined through an analysis of NOAA's nautical charts and supplemental source information, including hydrographic and topographic surveys, via an interagency process called the U.S. Baseline Committee. This paper details an ongoing project to create a digital national baseline and maritime zones in accordance with articles set forth in the United Nations Convention on the Law of the Sea.

INTRODUCTION

Pursuant to international law, the United States depicts on its nautical charts the official limits of national jurisdiction. Those maritime limits are the territorial sea at 12 nautical miles (nm), contiguous zone at 24nm, and Exclusive Economic Zone (EEZ) at 200nm (see Figure 1). Adopting the principles set forth in the United Nations Convention on the Law of the Sea (UNCLOS), the maritime limits are not only depicted on nautical charts, but nautical charts serve as the basis from which the limits are measured. The nautical chart is derived from multiple sources including hydrographic and topographic surveys from various vintages ranging from the mid-1800s to the present. As a compiled document, the nautical chart represents the best available information and is the officially-recognized source for determining the baseline from which the breadth of the territorial sea and other maritime zones are measured.

In 2002, NOAA began project to re-evaluate the United States (U.S.) baseline with other federal agency partners via the U.S. Baseline Committee to create digital maritime limits. The focus of the project, which is ongoing, was NOAA's largest scale, most recent edition nautical charts as well as supplemental source materials. This paper will address some basic observations as a result of the digital maritime limits project.

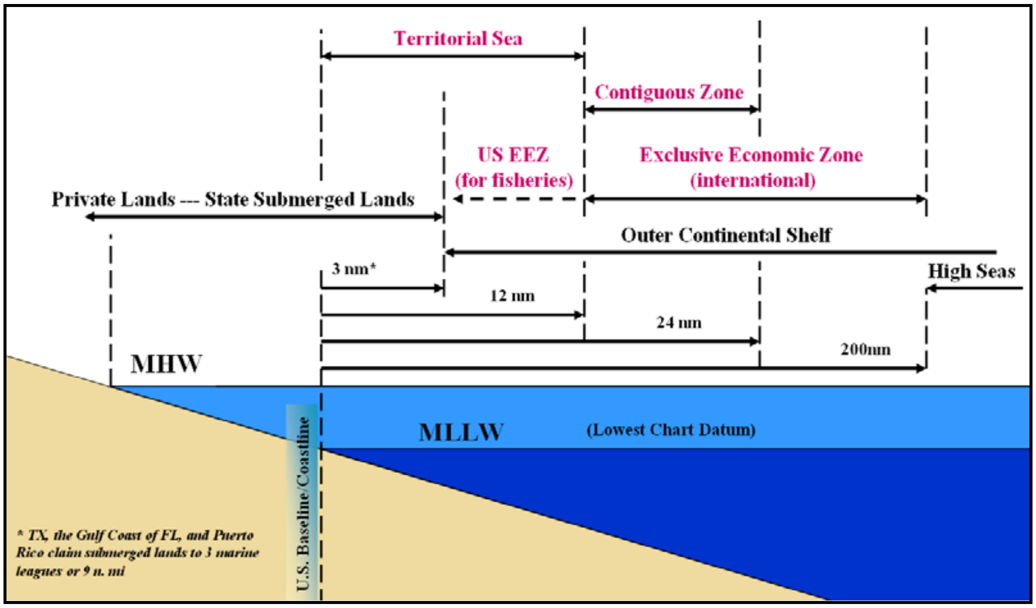


Figure 1. The U.S. maritime zones (in magenta) relative to charted tidal datums and the U.S. baseline.

THE U.S. AND UNCLOS

A. Background

Recognizing a need to precisely define the location and nature of its coastline, the United States established an interagency committee referred to today as the U.S. Baseline Committee in 1970. The Committee, chaired by the U.S. Department of State, established that the baseline shall be determined in accordance with the 1958 Convention on the Territorial Sea and Contiguous Zone. As set forth in the 1958 Convention, the Committee adopted that the low-water line, specifically the lowest charted datum at Mean Lower Low Water (MLLW) on NOAA's nautical charts, would be the basis for determining the baseline. Additionally, the Committee established that if there was any uncertainty as to whether or not a particular charted feature met the criteria set forth in the 1958 Convention, the feature would not be used in the baseline from which the territorial sea and other maritime zones are measured. These general and somewhat conservative guidelines were established to aid enforcement.

Today, the rules for determining the baseline under 1982 UNCLOS are substantively the same as those under the 1958 Convention; therefore, despite not being a party to the Convention, the U.S. Baseline Committee adheres to the baseline principles set forth in UNCLOS as customary international law.

B. UNCLOS Articles and the U.S. Baseline

In accordance with Article 5 of UNCLOS, the U.S. applies the normal baseline method for measuring the breadth of the territorial sea and other maritime zones. A normal baseline is defined as "the low-water line along the coast as marked on large-scale charts officially recognized by the coastal State" (23). Since the term "low-water line" is ambiguous, its precise definition may vary depending upon the tidal datum used to depict the land-sea interface on a coastal State's nautical charts. Many coastal States reference Lowest Astronomical Tide or even Mean Sea Level; however, standard practice in the U.S. is to reference MLLW as the lowest tidal datum shown on NOAA's nautical charts. It is for that reason that the tidal datum MLLW as shown on NOAA's nautical charts serves as the basis for the U.S. normal baseline.

Generally speaking, a normal baseline consists of the mainland low-water line and any offshore islands (see Figure 2.A); however, Articles 9, 10, 11 and 13 of UNCLOS identify additional features that are applicable to the U.S. coast and may be included in the baseline from which the breadth of the territorial sea is measured. Article 9 (Mouths of rivers) describes that "if a river flows directly into the sea, the baseline shall be a straight line across the mouth of the river between points on the low-water line of its banks" (24). Article 10 (Bays) describes that a straight line may be drawn between the natural entrance points of a well-marked indentation along the coast of a single State, if certain additional criteria are met. To establish a legal bay under UNCLOS, a line drawn across the mouth of the well-marked indentation must not exceed 24nm in length and the area of a semi-circle whose diameter is the length of that line must not exceed the area of the proposed bay (24-25). Figure 2.B illustrates the effect of a river and/or bay closing line on the inner and outer limit of the territorial sea.

Article 11 (Ports) of UNCLOS states that "the outermost permanent harbour works which form an integral part of the harbour system are regarded as forming part of the coast" with the exception of offshore installations and artificial islands, which cannot be included in the baseline (25). Generally, the U.S. interprets the article to mean that if a structure, such as a jetty, groin, or breakwater, was built to impede the flow of water and protect a harbor, it can be considered a part of the baseline as set forth in Article 11. Furthermore, the harbor area formed by the extension of a jetty, groin, or breakwater may qualify as a legal bay under Article 10. In the U.S., piers are often considered exceptions to Article 11 because many piers are built on open piles for recreational purposes, such as the promenade piers in California, and they do not serve to protect the coast. Figure 2.C illustrates the effect of a port on the inner and outer limit of the territorial sea.

Article 13 (Low-tide elevations) of UNCLOS states that "a low-tide elevation is a naturally formed area of land which is surrounded by and above water at low tide but submerged at high tide" (25). To qualify as a part of the baseline, a low-tide elevation must be naturally formed and must be wholly or partly situated at a distance not exceeding the breadth of the territorial sea from the mainland or an island. As outlined earlier, the ambiguous terms "low tide" and "high tide" are interpreted to apply to the lowest and highest charted datums. Low-tide elevations in the U.S. are naturally-formed features within 12 nm of the mainland or island that are bare at MLLW and submerged at Mean High Water (MHW) as depicted on NOAA's nautical charts. Figure 2.D illustrates the effect of a low-tide elevation on the outer limit of the territorial sea.

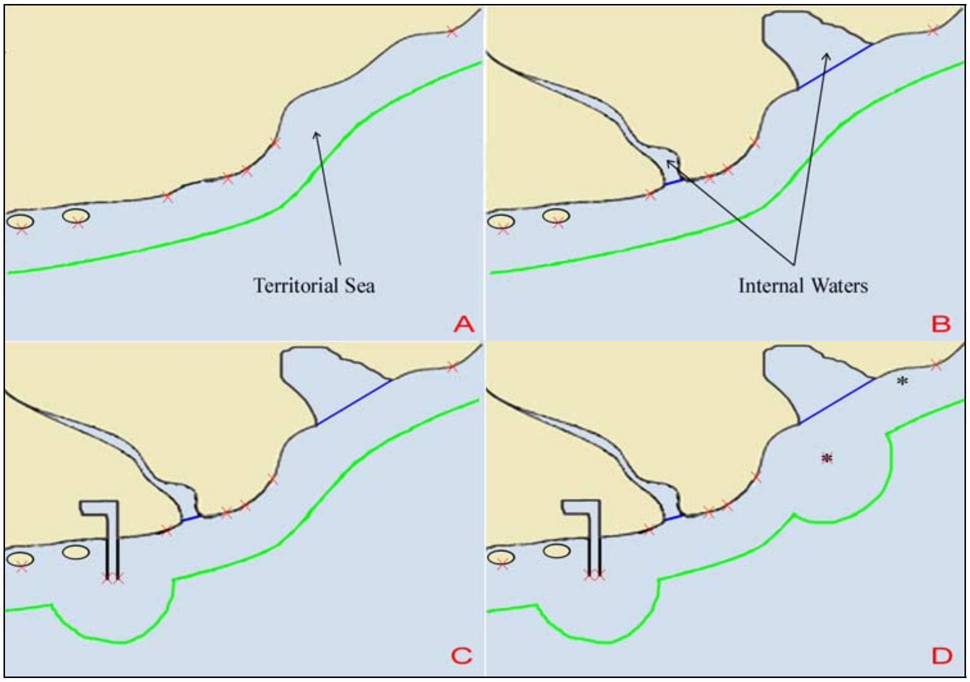


Figure 2. The territorial sea is measured from a normal baseline, which generally consists of the mainland low-water line and offshore islands (A), plus any closing lines across the mouths of rivers or legal bays (B), the outermost points of permanent harbor works (C), and low-tide elevations wholly situated at a distance not exceeding the breadth of the territorial sea from the mainland (D). Contributing baseline points, which are used to generate the maritime limits, are denoted as red Xs.

CHART SYMBOLOGY AND UNCLOS ARTICLES

The nautical chart is constructed to support safe navigation; its general purpose is to inform the mariner of hazards and aids to navigation as well as the limits of certain regulatory areas. For various reasons, often relating to safe navigation, data from hydrographic and topographic surveys, which serve as the primary data layers on nautical charts, are collected at much higher resolutions than what appears in the final chart product. Frequently, features collected through hydrographic or topographic surveys are simplified by using a standard set of symbols when applied to the nautical chart. These symbols can often cause uncertainty as to whether or not a particular feature meets the articles set forth in UNCLOS. As observed through the digital maritime limits project, ports under Article 11 and low-tide elevations under Article 13 are two items that often require additional research to determine if they qualify as a part of the baseline.

ARTICLE 11— PORTS

As previously described, jetties, groins, and breakwaters are considered permanent harbor works for purposes of establishing the U.S. baseline as set forth in UNCLOS; however, open pile piers are typically not included in the baseline. Depending upon scale, jetties, groins, breakwaters, and piers are often not labeled and may all be shown with the same symbol (see Figure 3). In order to discern whether or not the symbology describes a jetty, groin, breakwater, or pier, further research may be conducted to locate the feature on a hydrographic or topographic survey or a text-based description may be sought from NOAA's Coast Pilot publication. Additionally, if the vintage of the source information is such that determination is still difficult, the U.S. may consult remotely sensed data, such as online satellite imagery. In this scenario, jetties, groins, and breakwaters are distinguished from open pile piers by the deflection of waves around the structure in question. Jetties and groins often have sand built up along one side of the structure, so that may also be considered in the evaluation for establishing its use in the baseline.

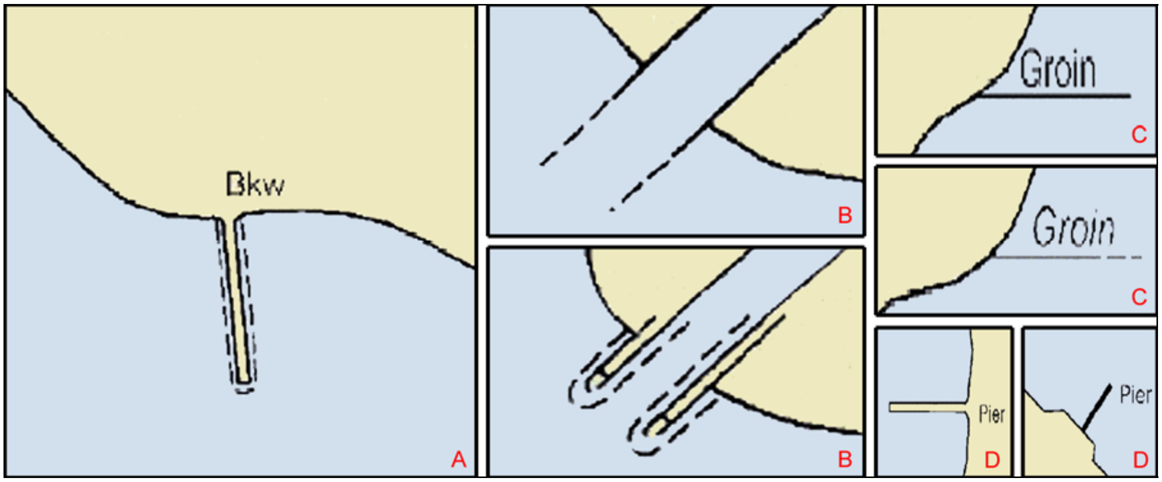


Figure 3. Sample chart symbology for breakwaters (A), jetties (B), groins (C), and piers (D) as shown in Chart No. 1. Note that to reduce chart clutter and ensure that critical navigation information is legible on the nautical charts, labels are rarely depicted.

A. Case Examples of Port Issues

1) Shark River Inlet, New Jersey

As observed during the evaluation of the low-water lines off Rhode Island, New York, and New Jersey for the digital maritime limits project, there is a significant amount of mixed use oceanfront along this densely populated area of the northeast U.S. Many areas have wide beaches due to the construction of groins; however, adjacent to these beaches, there are entrances to harbors with structures such as piers and jetties. One example is the area near Shark River Inlet in New Jersey. According to Coast Pilot 3, the Shark River Inlet is one of approximately five principle shallow-draft entrances between New York Bay and Delaware Bay (179). Inside the inlet, there are excellent small-craft and fishing vessel facilities (182).

To determine which features outside of the Shark River Inlet qualified as a part of the baseline under Article 11, additional research was required by investigating sources of information that were supplemental to the nautical chart. As shown in the left panel of Figure 4, the nautical chart depicts several port-like structures, but distinguishing a pier from a groin or jetty can be difficult without supplemental information. NOAA sought additional information by investigating the source hydrographic survey and the Coast Pilot. In this example, the hydrographic survey provided some additional information (see center panel of Figure 4), but the Coast Pilot provided a small photograph (see Figure 5) and described the area as "protected by jetties, each marked by a light near its outer end." Between the hydrographic survey and the Coast Pilot, NOAA was able to determine which features qualified as a part of the baseline; however, on some occasions, it was necessary to go one step further and seek non-NOAA sources of information. To get a clear picture of all of the features, including those beyond the scope of the photograph in Coast Pilot 3, one can also view online satellite imagery. As noted in right panel of Figure 4, the pier at the lower right corner becomes more evident after noting the wave action in online satellite imagery.

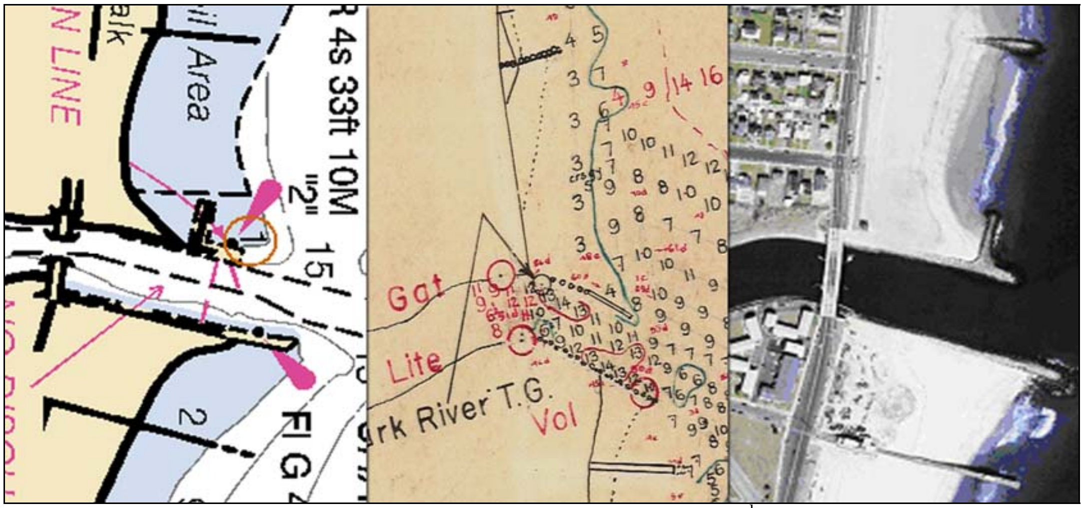


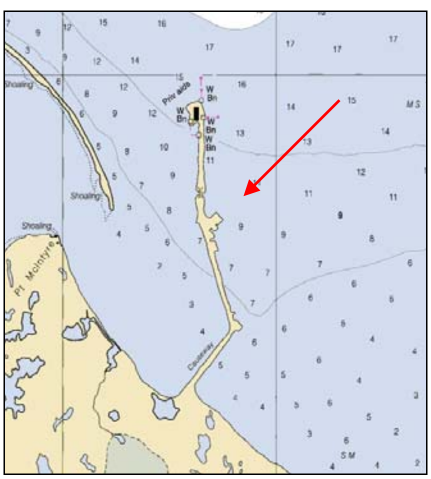
Figure 4. Shark River Inlet, NJ as shown on NOS Chart 12324_2, 32[nd] ed., 03/2006 with source hydrographic survey H05638 and online satellite imagery from Google maps.

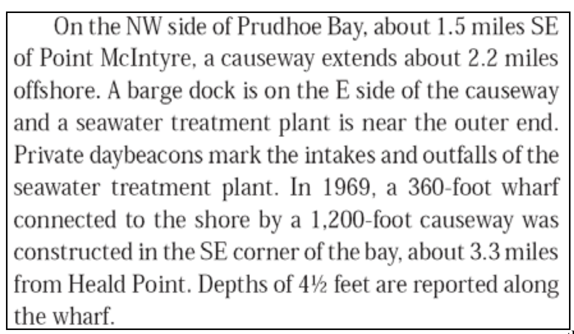
Figure 5. Photograph of Shark River Inlet by Waterway Images (Coast Pilot 3, 181).

2) ARCO Pier, Alaska

A second example requiring additional research was along the north coast of Alaska, an area of significant infrastructure to support oil and gas exploitation and distribution. In 2006, the area was evaluated to determine which features qualified as a part of the baseline from which the territorial sea is measured as outlined under Article 11. One challenging feature was a long causeway shown on NOAA's nautical charts and referred to locally as ARCO Pier. This feature was also the subject of domestic litigation to determine the extent of the state of Alaska's claims to submerged lands in U.S. v. Alaska, Supreme Court Original No. 84.

As shown in Figure 6, other than the label "causeway," the exact nature of the feature is unclear; therefore, additional research was required to determine if the feature was considered a permanent harbor work. NOAA's Coast Pilot 9 described the feature as a causeway with a barge dock on its east side and a seawater treatment plant on its outer end (see right panel of Figure 6). Additionally, with regard to the issue of permanence, the Special Master for U.S. v. Alaska reported that the "ARCO pier extension undisputedly does have a low-water line . . . composed of gravel fill, in volume about 300,000 cubic yards . . . rising above water depths of 5 to 12 feet" (Mann, 316). Since docks are considered port facilities and the test of permanence was met, it was determined that the barge dock met Article 11 criteria for the purposes of extending the breadth of the territorial sea as well as extending Alaska's jurisdiction. With regard to the rest of the causeway terminating at the seawater treatment facility, it was determined that it did not qualify and was removed from baseline contention.





On the NW side of Prudhoe Bay, about 1.5 miles SE of Point McIntyre, a causeway extends about 2.2 miles offshore. A barge dock is on the E side of the causeway and a seawater treatment plant is near the outer end. Private daybeacons mark the intakes and outfalls of the seawater treatment plant. In 1969, a 360-foot wharf connected to the shore by a 1,200-foot causeway was constructed in the SE corner of the bay, about 3.3 miles from Heald Point. Depths of 4½ feet are reported along the wharf.

Figure 6. Depiction of a causeway adjacent to Prudhoe Bay, Alaska on NOS Chart 16061, 8th ed., 01/2001 and additional information from Coast Pilot 9, p. 493. Barge dock (noted with a red arrow) meets Article 11 criteria, but the seawater treatment facility at the end of the causeway does not.

ARTICLE 13- LOW-TIDE ELEVATIONS

As charted, low-tide elevations are probably the most difficult features to discern and are often controversial in domestic law applications as well as for determining usage in the baseline as set forth in UNCLOS. Most of the controversy stems from the common use of a chart symbol called a rock awash which is symbolized with an asterisk (*). By definition, a rock awash is a feature that is exposed, or nearly so, between the chart sounding datum (typically MLLW) and MHW. Sometimes the symbol on a nautical chart is accompanied by height information, but more often, the measurement information is intentionally removed from the nautical chart for the purposes of safe navigation. Depending upon the scale of the chart, the asterisk symbol by itself may describe a single feature or it may describe a rocky area that should be avoided; therefore, height information is typically removed to prevent a mariner from using that feature as a navigational aid. In order to determine whether or not a rock awash qualifies as a low-tide elevation and is dry at MLLW, additional research is typically required by looking through various vintages of source hydrographic and topographic surveys.

Figure 7 highlights one example off of Kikaua Point, Hawaii. As shown, the most detailed nautical chart of this area is at 1:80,000 scale; however, the source hydrographic survey is at 1:10,000 scale. As a result, several offshore features are simplified by the use of the rock awash symbol (*). In this example, additional information exists for the seaward most charted rock awash symbol (see green arrow, left panel of Figure 7). Because the source hydrographic survey indicates that the rock is 2 ft above MLLW, it is likely that it would qualify as a low-tide elevation.

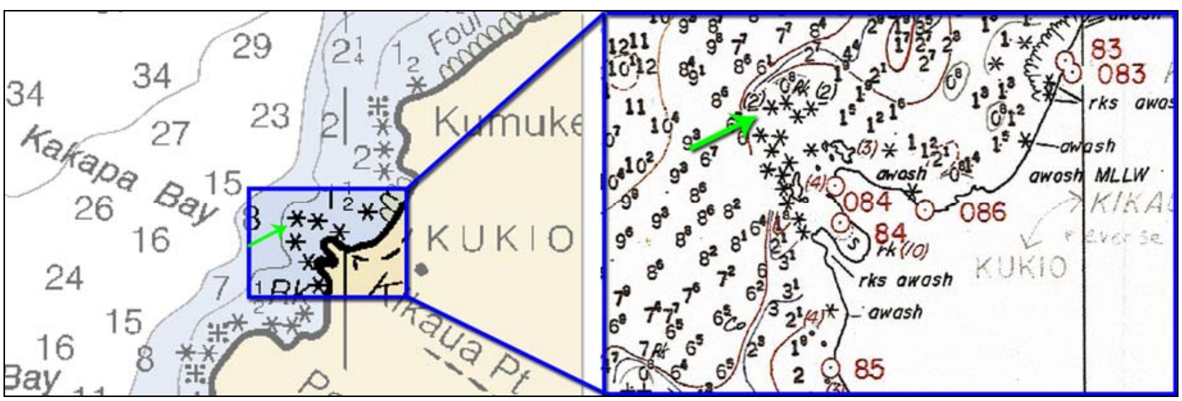


Figure 7. Rocky area off of Kikaua Point, Hawaii as shown on NOS Chart 19327_1, 11th ed., 06/2005 (1:80,000) and corresponding large-scale, source hydrographic survey H09132 (1:10,000) with more detailed information. The green arrows highlight a charted rock awash symbol that is 2 ft above MLLW on H09132.

Through the digital maritime limits project, NOAA has identified several regions off of the United States that have been subject of additional scrutiny due to an abundance of charted rock awash symbols that are unlabeled with precise measurements. Over the years, NOAA has compiled a list of various symbols and phrases that are typically found on nautical charts and/or hydrographic surveys and identified which symbols and phrases are likely to contribute to the baseline, subject to additional provisions in Article 13, such as “the features must be naturally formed”(25).

Table 1 identifies those rock awash symbols that may be used in the baseline and those that are not considered under Article 13. As source hydrographic or topographic surveys are researched, unlabeled rock awash symbols on the chart may be denoted with a height or depth measurement as an underlined number in parentheses [* (#)]. This symbol and label indicates that the feature is a certain height above the sounding datum, which is often MLLW in the U.S., but may vary depending upon location and vintage of a particular survey. If drying height information is provided in text format, such as "Awash 2 ft MLLW" or "Bares 4 ft at MLLW," the feature is included in the baseline. If this height information is lacking and the hydrographic survey instead notes that a feature is "Awash MLLW," then the feature does not qualify as a low-tide elevation, and it is not included in the baseline. Also, a feature that is covered or submerged at any depth below MLLW is not included. One must pay close attention to the geographic location of the feature in question as well. The rock awash asterisk symbol on charts of the Atlantic and Gulf Coasts of the U.S. represents a feature that is somewhere between 1 foot above MHW and 1 foot below MLLW (Nautical Chart Manual, 4-82). In contrast, the same symbol on charts of the Pacific Coast and Alaska represents a feature that is somewhere between 2 feet above MHW and 2 feet below MLLW (Nautical Chart Manual, 4-86). Conclusive evidence must exist that a feature is above water at MLLW before it can be considered for use in the baseline to extend the breadth of the territorial sea and other maritime zones.

Table 1. Measurement terminology for rocks awash (*) that are deemed applicable to Article 13 of UNCLOS and not applicable. Note that in the U.S., features that are tinted green on the nautical charts, such as reef and ledges, are often features that are dry at MLLW and submerged at MHW.

Applicable	**Not Applicable**
* (#)	* (0)
Awash # ft MLLW	* (rock awash)
Awash ¼ tide or T, etc.	+ (submerged rock)
Bares ¼ tide or T, etc.	⁜ (rock awash at datum)
Bares at LW	Awash MLLW (was used prior to 02/25/2004)
Bares # ft	Awash LW, LLW, LT
Bares # ft at MLLW	Awash extreme LT or LW
Bares # ft at LW or LT	Awash minus tide
Bares # ft at HW or HT	Awash ¾ flood, etc. (verify with hydro survey)
Breaks # ft	Breaks in heavy seas or swell
Breaker, rock bare LW	Breaks, Breakers, or Breaking
Uncovers # ft	Cov # ft MLLW
Uncovers # ft MLLW	Cov ½ tide, etc.
	Covered x ft MLLW
	Rk (underwater rock)
	Rock awash
	Rock awash at all stages of tide
	Sunken # ft MLLW
	# ft below MLLW

A. Case Examples of Low-tide Elevations Issues

The near shore nature of low-tide elevations makes them of significant interest to the states of the U.S. Since most of the individual states can claim jurisdiction out to 3nm and the basis of their claim begins with the application of UNCLOS, through customary international law, there have been several instances where U.S. Baseline Committee recommendations have influenced U.S. domestic decisions. Two relatively recent cases at Dinkum Sands, Alaska and Nantucket Sound, Massachusetts highlight a few of the issues and the occasional need for reconnaissance surveys.

1) Dinkum Sands, Alaska

According to Coast Pilot 9, Dinkum Sands is a gravel reef that lies in the middle of a four mile long shoal between Cross Island and Narwhal Island in the Beaufort Sea off the coast of Alaska (492). The feature is located approximately 4.2 nm southeast of Bartlett Island in an area known for having the largest petroleum reservoir yet discovered in the U.S. near Prudhoe Bay. As shown in Figure 8, Dinkum Sands is currently depicted on NOAA's nautical charts as a feature that is between 2 feet above MHW and 2 feet below MLLW. The exact nature of this feature, which was previously an island, was the subject of a lengthy dispute between the U.S. and the state of Alaska from 1979 to 1997. Since Dinkum Sands is located beyond 3 nm from the nearest island, Bartlett Island, the issue became whether or not Dinkum Sands was also an island, which could have a territorial sea of its own and would extend Alaska's claim to submerged lands. If the status of the feature was such that it was submerged at high water, its status would be something less than an island and it could not be used to extend Alaska's jurisdiction. Under the Submerged Lands Act of 1953 (SLA), Alaska was granted a 3nm belt of water as projected from the coastline.

As recent as 1977, Dinkum Sands was depicted on NOAA's nautical charts as an island with a 3 nm line around it; however, the depiction of the feature had changed significantly over several decades prior to 1977 between a feature that was submerged, awash, or even bare. Subsequently, in 1981, the U.S. questioned whether or not Dinkum Sands actually qualified as an island and could be claimed by Alaska to extend its jurisdiction. In his book Shore and Sea Boundaries, Mike Reed provided a synopsis of the history and issues as they evolved through nearly 20 years of litigation between the U.S. and Alaska. Mike Reed described that two visits were made to the location of Dinkum Sands in 1955 and 1976, and the findings of these expeditions were identical; the feature could not be found. Due to these discrepancies, the U.S. and Alaska agreed to conduct a joint scientific survey of the area in 1981, the results of which indicated that Dinkum Sands is composed of up to 50 percent ice that melts throughout the summer months. This melting causes the feature to sink below water level during the fall, and refreezing during the winter promotes the rebuilding of Dinkum Sands above the water level. The Supreme Court's Special Master on the case concluded that Article 10 of 1958 Convention on the Territorial Sea and Contiguous Zone required that a feature be "generally, normally, or usually" above water at high tide to qualify as an island (Reed, 133-140). As a result, the Supreme Court ruled in 1997 that Alaska could not claim extended jurisdiction at Dinkum Sands. With regard to international application and implications to the U.S. baseline, since Dinkum Sands is located within 12 nm of an island, it may be used in the baseline to extend the breadth of the 12 nm territorial sea.

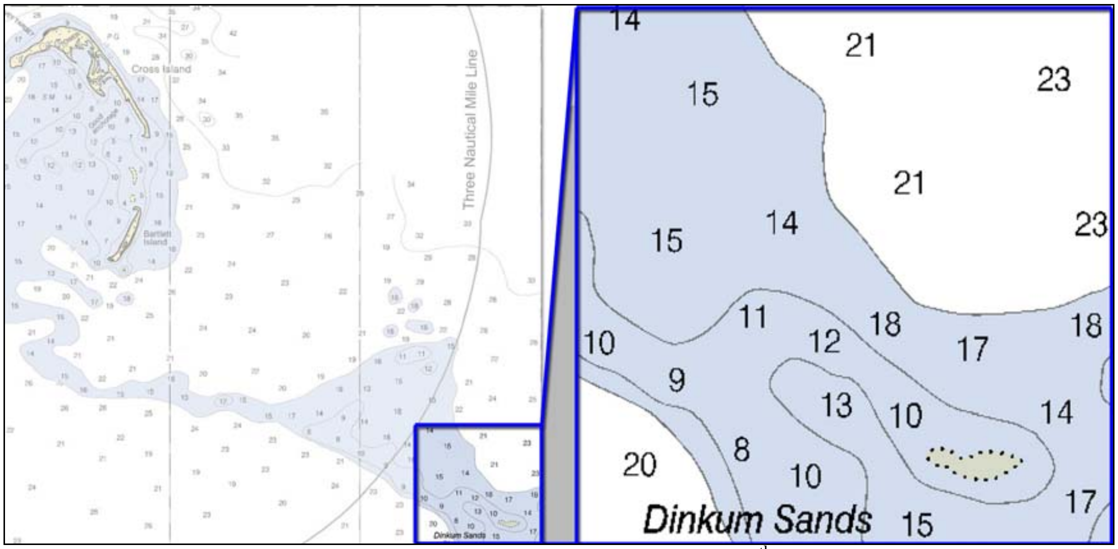


Figure 8. Current depiction of Dinkum Sands on NOS Chart 16061, 8th edition, 01/2002. Note that Dinkum Sands is seaward of the Three Nautical Mile Line as projected from Bartlett Island.

2) Nantucket Sound, Massachusetts

In 2003, as part of the digital maritime limits project, NOAA began to re-evaluate the baseline off of the states of New Hampshire and Massachusetts and encountered an issue relating to how the baseline was used to determine the limits of Massachusetts' jurisdiction offshore. During the baseline review process, NOAA learned that a company had applied for a Corps of Engineers permit to affix tall wind turbines to the floor of Nantucket Sound. The company had consulted the NOAA nautical chart of the Sound, which depicted the Three Nautical Mile Line, and assumed that the limit represented the federal/state boundary under the SLA. Based on that assumption, the company further assumed that the proposed project site was entirely within federal waters. When it was later discovered that the charted Three Nautical Mile Line, the assumed SLA boundary, represented the old territorial sea as determined from the U.S. baseline, it was also discovered that there was no agreement between the U.S. and the state of Massachusetts on the exact location of the SLA boundary.

While re-evaluating the chart symbology in preparation for updating the U.S. baseline, several rocks awash without height notations were discovered and additional research was required. One area in particular was identified as critical by the Minerals Management Service (MMS) due to confusion surrounding the proposed wind farm project in Nantucket Sound and a lack of agreement between the U.S. and Massachusetts over the exact location of the federal/state boundary for SLA purposes. The area called Bishop and Clerks was located approximately 2.2 nm south of Point Gammon, and if the feature qualified as a low-tide elevation, it would potentially extend the state of Massachusetts' jurisdiction an extra 2.2 nm into Nantucket Sound, placing at least part of the proposed wind farm in Massachusetts state waters. The issue was that the area of interest was charted with several rock awash symbols (*) and no height or depth information. After looking back into supplemental information, it was discovered that NOAA's hydrographic survey information for this area of the Sound dated back to the mid-1800s and previously depicted the area as an island. To the contrary, current textual descriptions of the area in the Coast Pilot 2 described it as "an extensive shoal area . . . [with] several rocks awash at low water . . . [A] rock, covered 5 feet, is 0.7 mile south-southeastward of the light. The rest of the shoal is covered 8 to 18 feet" (203).

In order to identify whether or not any of the rocks were low-tide elevations and if the proposed wind farm project was within state or federal waters, MMS and the state of Massachusetts required a reconnaissance survey. Using the same principles as those used to generate the U.S. baseline, MMS worked with the state of Massachusetts to precisely determine whether or not the questionable charted features were naturally formed and dry at low water. In addition, NOAA conducted an aerial survey of the features to ensure that the charting was accurate. A year later, the issue concluded that a rock just seaward of Bishop and Clerks and approximately 2.5 nm south of Point Gammon (see left panel of Figure 9) was dry at the time of the field observation during a predicted low tide cycle (see right panel of Figure 9). This rock, known locally as Bull Rock, was also determined to be naturally formed. In the end, NOAA's nautical charts remain unchanged because the results of the reconnaissance survey confirmed that the charted rock awash symbol appropriately described the feature as between 1 foot above MHW and 1 foot below MLLW and its position was consistent with the aerial survey; however, MMS and Massachusetts agreed to extend the state's jurisdiction under the SLA. In the future, the Baseline Committee may adopt the results of the reconnaissance survey as best evidence of a low-tide elevation that would extend the charted Three Nautical Mile Line, previously the territorial sea, farther into Nantucket Sound.

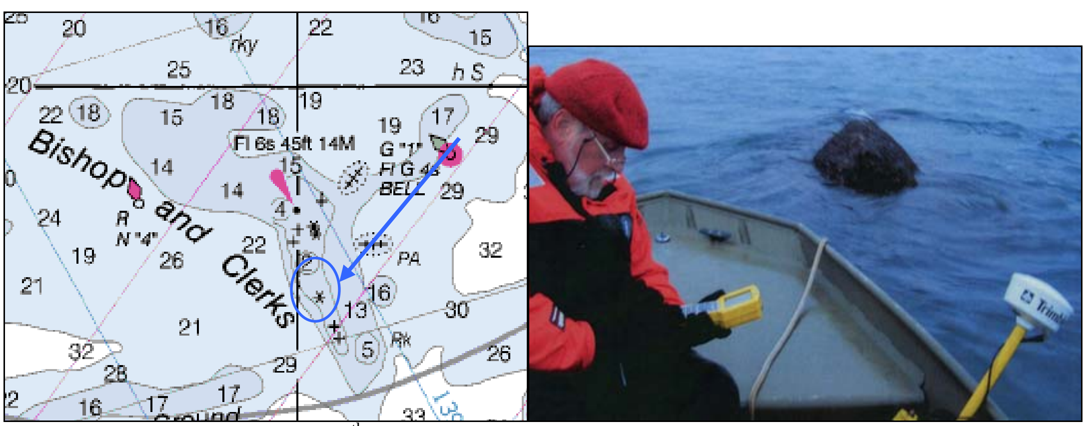


Figure 9. NOS Chart 13237, 39th ed., 05/2003 depiction of Bishop and Clerks and the rock awash used to extend Massachusetts jurisdiction under the Submerged Lands Act (denoted with blue arrow and encircled), as well as a photograph of charted rock awash during the joint federal/state reconnaissance survey conducted in 2004.

CONCLUSION

Since the nautical chart is a document compiled from many sources of information and is designed for safe and efficient navigation, supplemental information, such as a hydrographic or topographic survey, is critical to precisely determine the baseline from which the U.S. maritime limits are measured. Adopting articles within UNCLOS as customary international law, the U.S. Baseline Committee interprets the information as depicted on largest scale, most recent edition nautical charts to identify those features that qualify as a part of the normal baseline. Additionally, the nautical charts are a mechanism by which the U.S. informs the international community of the limits of national jurisdiction. Not only are baseline features used to determine the breadth of the territorial sea, contiguous zone, and EEZ, they may also be considered by the Supreme Court in U.S. domestic law applications, such as the limits of state jurisdiction under the SLA. Baseline issues as they relate to the determination of the federal/state boundary under the SLA can be heated and highlight that standard sources of information used to compile a nautical chart are sometimes insufficient to negotiate an agreement between the U.S. and a particular state. Through the examples described in this paper, the authors wish to note the advantages of anticipating such controversial issues while conducting near shore surveys.

ACKNOWLEDGEMENTS

Since 2002, several people have worked on the digital maritime limits project and have contributed hundreds of hours to ensure that the baseline was as precise as possible for the purpose of improved enforcement of the U.S. maritime zones. Each of these project participants were interns employed through the Environmental Careers Organization and their work is reflected in this paper. Vivian Matter, who currently works for NOAA's Fisheries Service in Florida, helped to define the process as she started at the beginning of the project with the Hawaiian Islands and continued to evaluate the baseline at Puerto Rico and the U.S. Virgin Islands and along the Atlantic Coast. As we changed our area of focus and needed to re-evaluate the baseline process, Brian Killen picked up the mid-Atlantic Coast and continued through the Gulf Coast and Pacific Coast of the continental U.S. Elizabeth Kamp worked on baseline issues along the Gulf Coast. Candace Nachman, who currently works at NOAA's Fisheries Service in Maryland, joined Brian Killen in evaluating the baseline along the Pacific Coast, and with assistance from Katarina S. Hamrin, concluded with Alaska, an area of shoreline that is greater than the continental U.S.

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