

# Maritime Boundaries on National Ocean Service Nautical Charts

The National Ocean Service (NOS) is responsible for charting the Nation's coastal waters and, therefore, is the lead Agency for the portrayal of maritime limits of the United States of America. The 1958 Geneva Convention on the Territorial Sea and the Contiguous Zone states "...the normal baseline for measuring the breadth of the territorial sea is the low waterline along the coast as marked on large-scale charts officially recognized by the coastal state." In 1976, NOS was requested to show various maritime limits on its regular issue of nautical charts. The paper presents the history of maritime boundaries on National Ocean Service (NOS) charts, methods used in constructing the various maritime limits, the definition of the limits, the push for lateral seaward boundaries, and the technical aspects of maritime limits.

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In the past two decades, there has been an increasing interest in coastal zone management, offshore oil and gas exploration, fisheries and maritime environmental conservation, and development of natural resources. These elements have placed pressure on Federal and State Governments to define their maritime limits. Many coastal states have not defined their maritime limits with their adjacent state or states. As of 1980, 10 out of 18 maritime coastal state boundaries, or portions thereof, remained unresolved. On the Federal level, "The United States may have to negotiate nearly 30 maritime boundaries that will account for approximately 10 percent of the total maritime boundaries of the world" (Smith 1981:397). As a result of the increased interest in the offshore areas of the United States, The National Ocean Service (NOS) has had to take a leading role in portraying maritime limits on its nautical charts.

## INTRODUCTION

NOS began showing maritime limits on nautical charts in 1976. At the request of the Ad Hoc Committee on the Delimitation of the United States Coastline (commonly referred to as the Baseline Committee [BC]<sup>1</sup> and the U.S. Coast Guard, NOS began mapping the territorial sea and contiguous zone limits of "3-nautical miles" and "12-nautical miles" on its charts. The Territorial Sea is a band of sea adjacent to a state's coast, beyond its land territory and its internal waters, on which it has complete sovereignty. This sovereignty also extends to the air space over the territorial sea as well as to its bed and subsoil. This sovereignty is exercised subject to the provisions of the Conventions of the Law of the Sea adopted by the United Nation's Conference at Geneva, 1958, and to other rules of international law. The limit of the territorial sea for the United States is now 12 nautical miles. The Contiguous Zone is a zone of the high seas contiguous

## HISTORY

<sup>1</sup> The BC was established in 1970 as a spin-off from the Law of the Sea Task Force to review questions relating to boundary demarcation of the United States, and to identify the baseline from which the offshore boundaries of the United States can be delineated. The BC consists of representatives from the DOC, Department of Interior, Department of Justice, Department of State (DOS), and the Department of Transportation. The BC meets on an as-needed basis. Since its inception, the BC has met an average of 6 times a year.

to the territorial sea of a state. The coastal state may exercise control to: 1) prevent infringement of its customs, fiscal, immigration, or sanitary regulations within its territory or territorial sea; and/or 2) punish infringement of the above regulations committed within its territory or territorial

sea. The contiguous zone limit is 12-nautical miles from the baseline from which the breadth of the territorial sea is measured.

From 1970 to 1976, NOS was portraying the 3- and 12-nautical mile limits on black-and-white 50 percent reductions of its nautical charts (see Figure 1). The changeover to portray the limits on the regular issue charts was not immediate. The limits were added to nautical charts as they came up

for printing on their normal printing schedules. The printing schedules varied from 6 months for charts covering the busier and ever-changing harbors to 12 years for those charts on the North Slope of Alaska. After nearly 16 years, all the 50 percent reductions have been phased out.

The 200-nautical mile limit began appearing on NOS nautical charts around 1977 after the enactment of the Fishery Conservation and Management Act (FCMA) of 1976, which took effect March 1, 1977. The limit was originally labeled on the charts as the Fishery Conservation Zone (FCZ). Shortly after President Reagan signed the Exclusive Economic

Zone Proclamation of March 10, 1983, the 200-nautical mile limit label was changed to the Fishery Conservation Zone-Exclusive Economic Zone (EEZ). The EEZ is a zone of the high seas contiguous to the high seas over which a coastal state may assert certain sovereign rights over natural resources. This limit is 200 nautical miles from the baseline from which the breadth of the territorial sea is measured (see Figure 2).

The change in labeling was done at the request of the National Marine Fisheries Service (NMFS) because so many of the current regulations were written under the title of the FCMA. Since then, the

regulations have been revised and the FCZ label is being removed, with just the EEZ label being shown.

In 1982, NMFS requested NOS to depict a 3-marine league Natural Resources Limit (see Figure 3) for domestic fishery enforcement purposes on its nautical charts. The Natural Resources Limit is an area extending seaward from the U.S. coastline in which Puerto Rico, Texas, and Florida (Gulf of Mexico side only) are entitled to all lands, minerals, and other natural resources. The limit of this area is 3-marine leagues (9-nautical miles) from the baseline from which the breadth of the territorial sea is measured. The request was passed down to NOS, and was brought before the BC for discussion. Although the issue is completely under the



Figure 1: 3- and 12-nautical mile limits on a black-and-white 50 percent reduction nautical chart. (Lines have been widened and darkened for illustration purposes.)

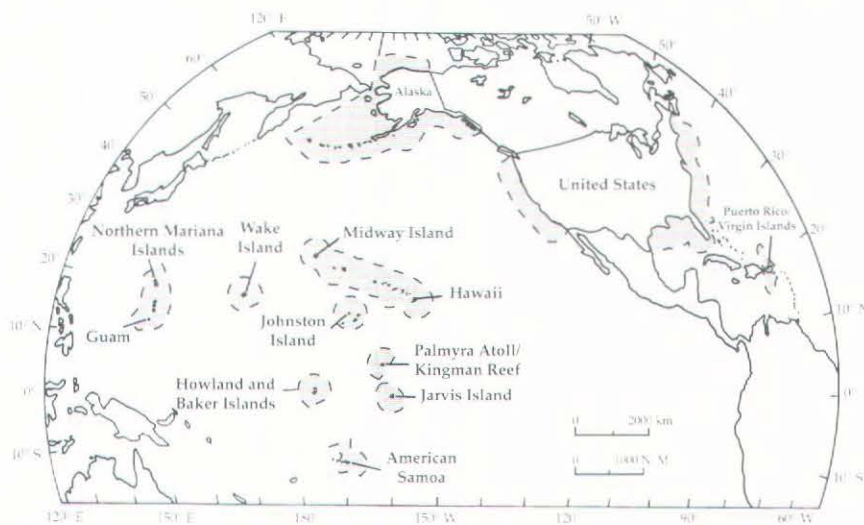


Figure 2: Fishery Conservation Zone-Exclusive Economic Zone (EEZ) 200-nautical mile limit.

jurisdiction of NOS, the BC does take an interest in all maritime limits depicted on U.S. charts.

The 3- and 12-nautical mile limits were originally placed on NOS charts by The Geographer's Office, DOS, in the late 1960's. The arcs were penciled in manually by The Geographer and presented to the BC for approval. They were then forwarded to NOS where the lines were transferred in ink to another copy of the chart. Both copies were returned to The Geographer and the BC for final approval. The penciled copies were retained by The Geographer, and the inked versions were returned to NOS. NOS was responsible for printing and distributing the 50 percent black-and-white reductions. At this stage, a caution note was added stating that the chart was not to be used for navigation, along with an explanation regarding the preparation and function of the territorial sea and contiguous zone limits (see Figure 4). This process involved 160 of the 975 nautical charts issued by NOS. The limits are shown on only one chart scale covering an area. On the East and Gulf coasts, the limits are shown on a continuous series of charts at 1:80,000 scale. For the West coast, Alaska, Hawaii, and U.S. territories and possessions, the chart coverage varies from 1:50,000 to 1:1,023,188 scale.

The 200-nautical mile limit was compiled mathematically utilizing NOS computer equipment. Geodetic software was modified to allow the NOS geographer to compute geodetic points (at a specified interval, e.g., 30 minutes of one degree of an arc) on an arc 200 nautical miles from a salient baseline point. At various chart scales, connecting these points provided a smooth arc with a radius of 200 nautical miles. Required input for each arc included a baseline point geographic coordinate, a beginning and ending azimuth, a specified interval for points along the arc, and the distance from the baseline point. The output for the computation of each arc was a punch card with latitude and longitude, azimuth, and an identification designator. The cards and magnetic tape were submitted to the NOS computer facility with a program to convert the points into a plotter format for each nautical chart. The lateral boundaries between the United States and adjacent nations were provided by DOS as published in the Federal Register. A total of 56 NOS nautical charts portray portions of the EEZ limit.

## METHODS

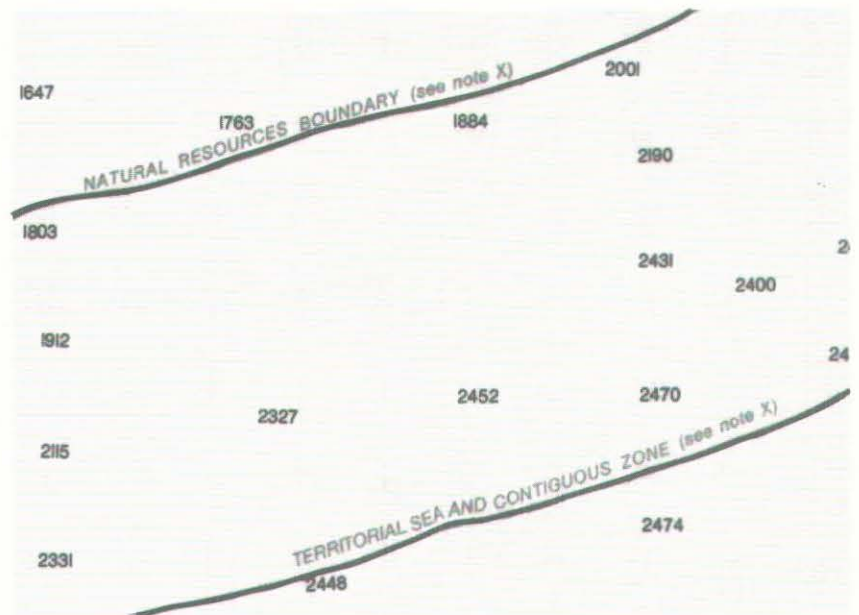


Figure 3: Natural Resources Boundary and Territorial Sea and Contiguous Zone depicted on a nautical chart. (Lines have been widened and darkened for illustration purposes.)

## CAUTION

### THIS DOCUMENT IS NOT FOR USE IN NAVIGATION

The lines drawn on this document delimit provisionally the territorial sea, contiguous zone, and certain internal waters of the United States. They have been prepared by an interdepartmental committee and represents its interpretation of relevant legal principles as applied to the geographical information shown on a Coast and Geodetic Survey nautical chart which has been used as a base. These lines are subject to revision whenever it is required by amplification or correction of the information shown on the chart by reinterpretation of the legal principles involved. This document does not attempt to delineate international boundaries and is not to be understood as asserting or implying where they are located.

Figure 4: Caution note appearing on black-and-white 50 percent reduction nautical charts.

Under the Submerged Lands Act (67 Stat. 29), the natural resources limit was granted to Florida (Gulf of Mexico coast only-420 U.S. 531), Texas (394 U.S. 836), and Puerto Rico (Public Law 96-205, 1980). These limits are placed on the charts manually in the same manner and follow the same approval procedures as the territorial sea and contiguous zone limits. A total of 29 nautical charts covering these 3 areas show the 3-league limit (Puerto Rico 4, Texas 9, and Florida 16).

#### CURRENT PROCEDURES

The 1958 Geneva Convention on the Territorial Sea and Contiguous Zone states "...the normal baseline for measuring the breadth of the territorial sea is the low water line along the coast as marked on large-scale charts officially recognized by the coastal State." The purpose here is not to expound on the methods used to develop the low water line, but to point out that it is a line in constant change and, therefore, the 3- and 12-nautical mile limits must be changed accordingly.

The process of change begins at the chart compilation level. The cartographers apply various sources to the chart drawing.<sup>2</sup> These sources may include NOS hydrographic surveys, shoreline manuscripts (which are compiled from tide-coordinated aerial photographs), U.S. Army Corps of Engineers channel surveys, and other Federal, State, or private sources. After the cartographer corrects the low water line or the shoreline from which the 3- and 12-nautical mile limits are constructed, a copy of the drawing is made and sent to the NOS geographer. The geographer, in turn, manually constructs 3- and 12-nautical mile arcs or bay closing lines using the corrected low water line. The corrected drawing and a paper copy of a current edition of the nautical chart are sent to DOS where the Special Assistant for Ocean Affairs and Policy Planning reviews the work. The Special Assistant then writes a memorandum describing the changes and submits it to the Chairman of the BC. The Chairman notifies the BC members about charts that need to be reviewed, along with any other related issues that need to be discussed.

#### TECHNICAL ASPECTS

The 3-, 9-, and 12-nautical mile limits are placed on the nautical charts manually. Previous discussion described the procedures used to establish the limits on NOS nautical charts. Because the low water line is constantly changing, the maritime limits will also change.

As a chart nears the reprinting cycle, it is examined for changes in the low water line or any shoreline change that may cause the limits to move. A copy is sent to the NOS geographer's office for examination, where corrections are manually penciled on the updated chart drawing. Because the charts are legal documents, the accuracy of the limits is an essential factor. In September 1983, the BC decided as a "rule of thumb" that a new edition would be issued if the change was at least one-half the width of the line on the chart. The line weight on the chart is .5 millimeter (.020 inches). At a scale of 1:80,000, the width of the line is equal to 40 meters on the surface. If the line moves as little as 20 meters, a new line is constructed. No consideration was given to the various chart scales used. For example, at 1:500,000 scale, the line weight would equal 250 meters at half a line weight which measures only .25 millimeter on the chart. The majority of charts portraying the 3-, 9-, and 12- nautical mile limits are at scales ranging from 1:80,000 to 1:200,000.

Within NOS, discussions have been held regarding the placement of 3-, 9-, and 12-nautical mile maritime limits in the automated database for

<sup>2</sup>The chart drawing is a mylar copy of the chart on which the cartographers apply corrections. The drawing is sent to the Reproduction Section for negative engraving.

nautical charts. The method for accomplishing this has not been resolved. Basically, two methods have been considered: digitizing the lines off the chart drawings and incorporating software into the system to compute the limits from salient points on the low water line. Many questions remain to be answered before going too far: 1) How will the limits be maintained? 2) How will the bay closing lines be drawn? 3) Who will maintain the limits? 4) Can the BC be assured of the accuracy of the limits? and 5) Can NOS continue to adhere to the principles and policies used by the BC? The BC has already accepted use of the computer in the determination and application of the 200-nautical mile limit. This should open the door for NOS to incorporate the remaining maritime limits in digital form and instill some confidence in the BC that it may be an acceptable process.

"As a consequence of 200-nautical mile maritime claims, every coastal country in the world will eventually have to negotiate at least one maritime boundary with at least one neighboring country" (Smith 1981). Thirty maritime boundaries may have to be negotiated by the United States; ten off one or more of the 50 states, and 20 located off the coast of the American territories. "Nine of the 10 boundaries off the fifty states will involve five different foreign neighbors; Canada, Cuba, Mexico, the former Soviet Union, and The Bahamas. At the beginning of 1981, the United States had reached agreements or understandings for some kind of maritime boundary with Canada, Cuba, Mexico, and former Soviet Union. No boundary talks were held with The Bahamas" (Smith 1981). NOS has provided consultation, computation, and charts to DOS in most, if not all, of these agreements. In the Gulf of Maine case involving Canada, NOS detailed one of its cartographers to DOS for approximately 6 months. The cartographer also went to Europe with a team of U.S. attorneys handling the case before the International Court of Justice.

There have been numerous cases involving Federal vs. States' rights in the past decade. In Kotzebue Sound, Alaska, a low-water feature affected a 24-nautical mile bay closing line. As a result, the Territorial Sea Boundary was changed (see Figure 5). Examples of other cases involve: 1) Massachusetts, regarding the closing lines of Nantucket Sound; 2) Alaska, regarding the closing lines and islands of the North Slope; 3) Mississippi, Alabama and Louisiana, regarding the closing lines of the Mississippi Sound; and 4) low water features off the coast of South Carolina that put a sunken wreck either just inside or just outside the 3-nautical mile limit. Several coastal states are in negotiations over their lateral seaward boundaries. Some, such as Maine-New Hampshire and Georgia-Florida, have recently settled on positions for their lateral seaward boundaries. Others, such as California-Oregon and New York-Rhode Island, have been settled

#### LATERAL SEAWARD BOUNDARIES

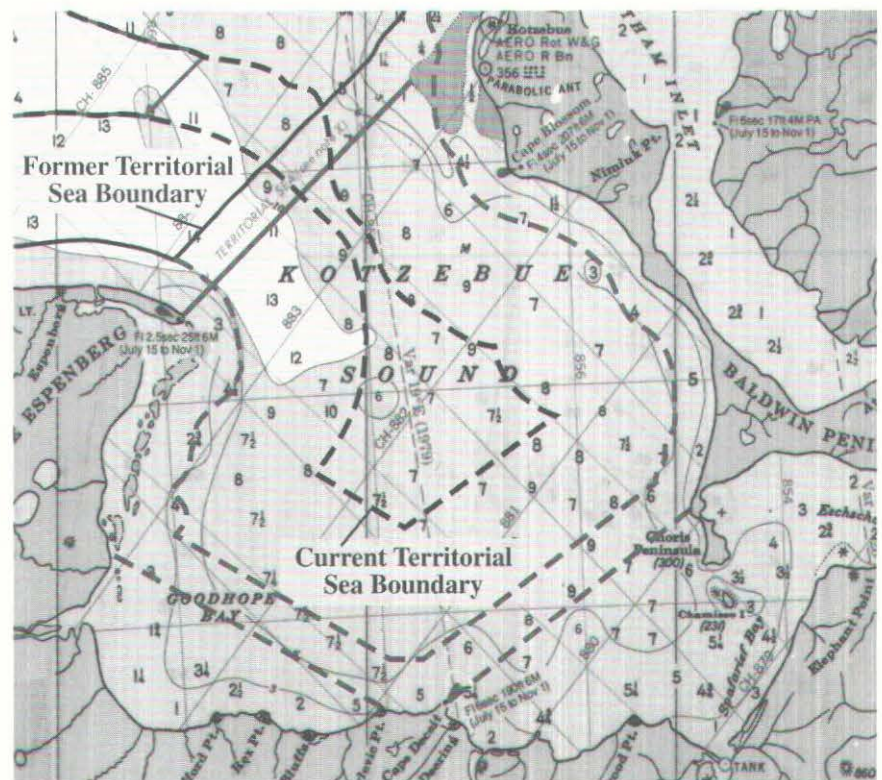


Figure 5: The former (black solid line) and current (black dashed line) Territorial Sea Boundaries are both drawn on this figure to illustrate the effect of the limit change. The former bay closing line and 12 mile limit (gray solid lines) and current bay closing line and 12 mile limit (gray dashed lines) are also shown. (Lines have been widened and darkened for illustration purposes.)

for a number of years. Georgia and South Carolina are settling on the boundary in the Savannah River with assistance from the NOS.

Generally, NOS does not show the lateral boundaries between the states on its nautical charts. The states of Maine and New Hampshire did

request the addition of the adjudicated limit from Portsmouth Harbor to the Isle of Shoals. NOS complied, and the limits are shown on three nautical charts (see Figure 6). In the opinion of the NOS geographer, this type of boundary is not a major problem to show on the charts. However, there may not be a major push to show them. In almost 180 years, there have been only two other cases where NOS was asked to show a maritime boundary between two states. The states of Maryland and Virginia had some differences of opinion in the Chesapeake Bay over oyster beds, and California and Nevada had

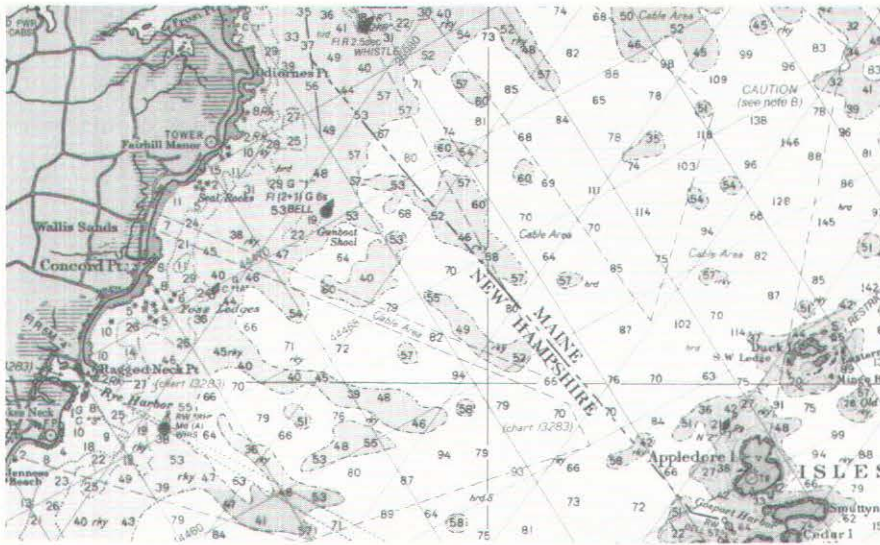


Figure 6: One of the nautical charts that includes the adjudicated boundary between two states (Maine and New Hampshire).

some difficulty as to where the state boundary in Lake Tahoe was located. NOS now shows both boundaries on the charts covering those two areas.

During the period of 1908 to 1930 our nautical charts portrayed the "A-B" line in the Dixon Entrance (a body of water separating the United States and Canada on the west coast of North America). The Canadians claim that the tribunal decision in the 1903 Arbitral Award gave them a maritime limit, whereas the United States contends the "A-B" line represents a hypothetical line defining the territories, not the maritime areas. The placement of the "A-B" line would prevent the U.S. islands of Dall, Prince of Wales, and other territory north of the line from enjoying a territorial sea or contiguous zone south of the "A-B" line. In 1929 the Department of State requested our agency to remove the line from the nautical charts. Canadian charts still show the "A-B" line, and U.S. charts show an equidistant line in Dixon Entrance which leaves another boundary to be resolved.

In 1990, NOS assisted the Department of State in developing the United States-USSR maritime boundary in the Bering Sea. That new boundary now appears on NOS nautical and aeronautical charts.

## CONCLUSIONS

Fifteen years ago, NOS charts rarely depicted a maritime boundary of any type. With today's ever-expanding culture, the Federal Government, coastal states, ocean research groups, and private and public organizations want to know more precisely the limits of areas of potential economic value. The development of more sophisticated surveying and positioning equipment, along with increased controls on national resources and the environment, have brought on the need to know the boundary of an area being regulated, as well as who has jurisdiction over the area. NOS has the mandate to produce and maintain accurate, up-to-date, oceanographic products, continue collecting data, continue building digital databases, and to do whatever it can to serve those involved in the oceanographic and coastal environments.

At the time this paper was written there were at least two pieces of legislation in our Congress to give the states more jurisdiction as well as

addition revenue. One was a follow-up to the Presidential Proclamation giving the United States a 12-nautical mile territorial sea and, in turn, to extend the states jurisdiction to 12-nautical miles as well. The other was the Ocean and Coastal Resources Enhancement Act, which would establish two funds: (1) an ocean and coastal resources enhancement fund and (2) a coastal zone impact assistance fund. Both would be administered by the Secretary of Commerce. Basically, this legislation would give the coastal state and the local communities a portion of any revenue generated within 200-nautical miles of the U.S. coast. One of the requirements of this bill would be for the states to have an extended seaward lateral boundary out to 200-nautical miles. Many of the states have had difficulty working out a seaward three-nautical mile lateral limit, so one can imagine what problems a 200-nautical mile line might create.

Public Law 96-205, Title VI, No. 606(a). 94 stat. 91, as amended Mar. 12, 1980.

**Smith, Robert W.** 1981. *The Maritime Boundaries of the United States*. *Geographical Review*. 71 (Oct):395-410.

Submerged Lands Act, No. 5, 43 USCA No. 1313.3. Submerged Lands Act, No. 2(c), 67 stat. 29, 43 USC No. 1301(c).

## REFERENCES

El Servicio Nacional de Oceanos (NOS) es responsable por la diagramación de las aguas costeras nacionales y por lo tanto, es la agencia encargada de marcar los límites marítimos de los Estados Unidos de América. La Convención de 1958 en Ginebra sobre mares territoriales y el estado de las Zonas Contiguas "... la línea normal para medir la distancia de los mares territoriales es la línea baja del agua a través de la costa, así como se marca en los diagrams de gran escala oficialmente reconocidos por el estado costero. En 1976 se requirió que NOS publicara varios límites marítimos en su edición regular de diagramas náuticos. El trabajo presenta la historia de los límites marítimos en los diagramas del Servicio Nacional de Oceanos (NOS), métodos usados en la construcción de varios límites marítimos, la definición de los límites, límites laterales con relación al mar, y los aspectos técnicos de los límites marítimos.

## RESUMEN