

A Boundary Delineation System for the Bureau of Ocean Energy Management

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Chief, Mapping and Boundary Branch

BOEM

Esri Ocean GIS Forum - 2015



Outline

- * **Introduction**

- * BOEM
- * Marine Cadastre

- * **Background**

- * Federal mapping on the Outer Continental Shelf (BLM to MMS to BOEM)
- * Map products
- * Submerged Lands Act Boundary and OCSLA Section 8(g) Zone
- * Challenges

- * **Building a New System**

- * Contract with Esri, Inc. for a Boundary Delineation System

Who is BOEM?

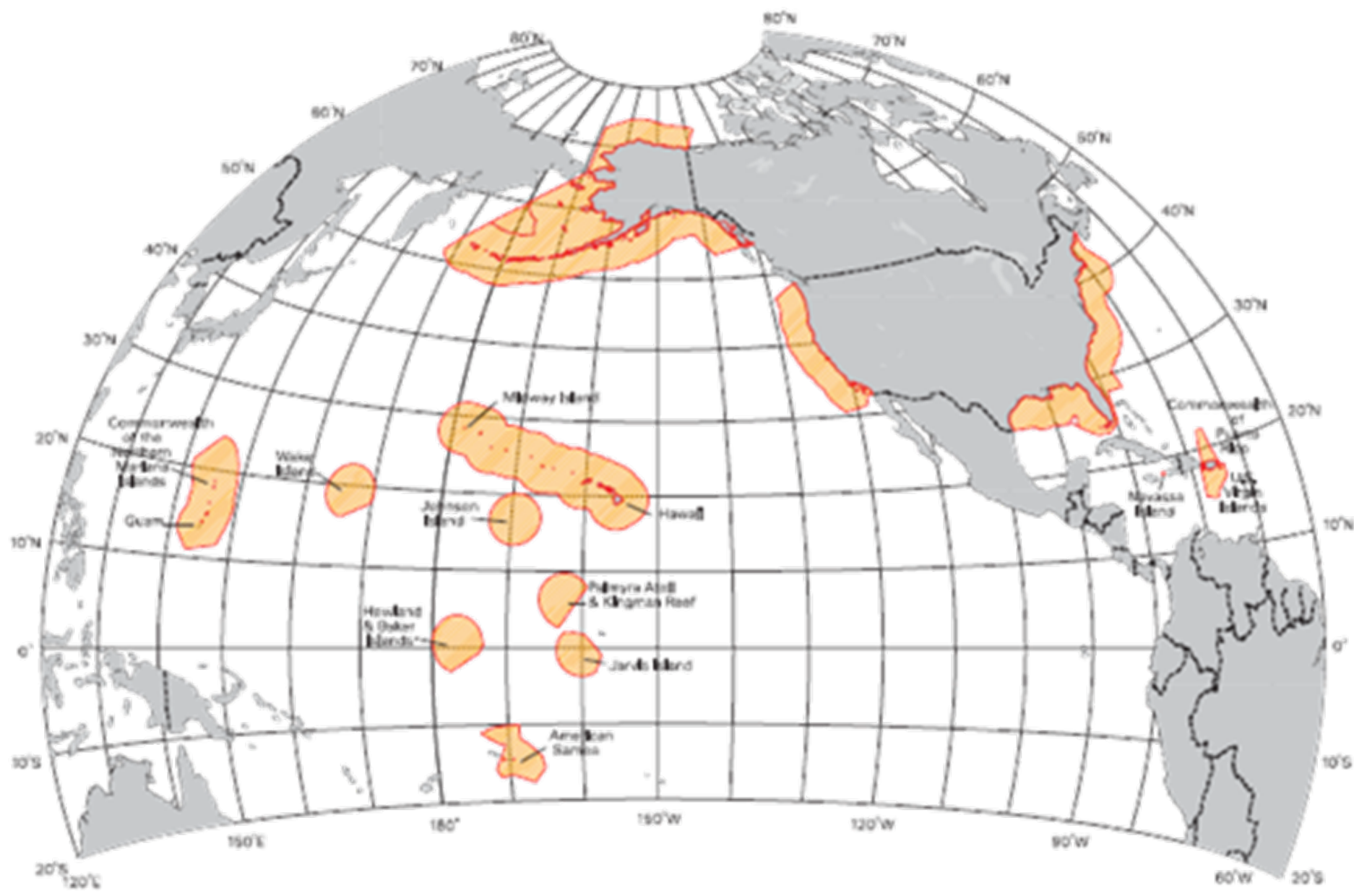


- * **Bureau of Ocean Energy Management** is the bureau within DOI responsible for the exploration and development of energy and marine mineral resources on the Outer Continental Shelf (OCS).
- * **Minerals Management Service**
1982 - 2010
- * **Bureau of Ocean Energy Management, Regulation and Enforcement**
2010 - 2011

Authority

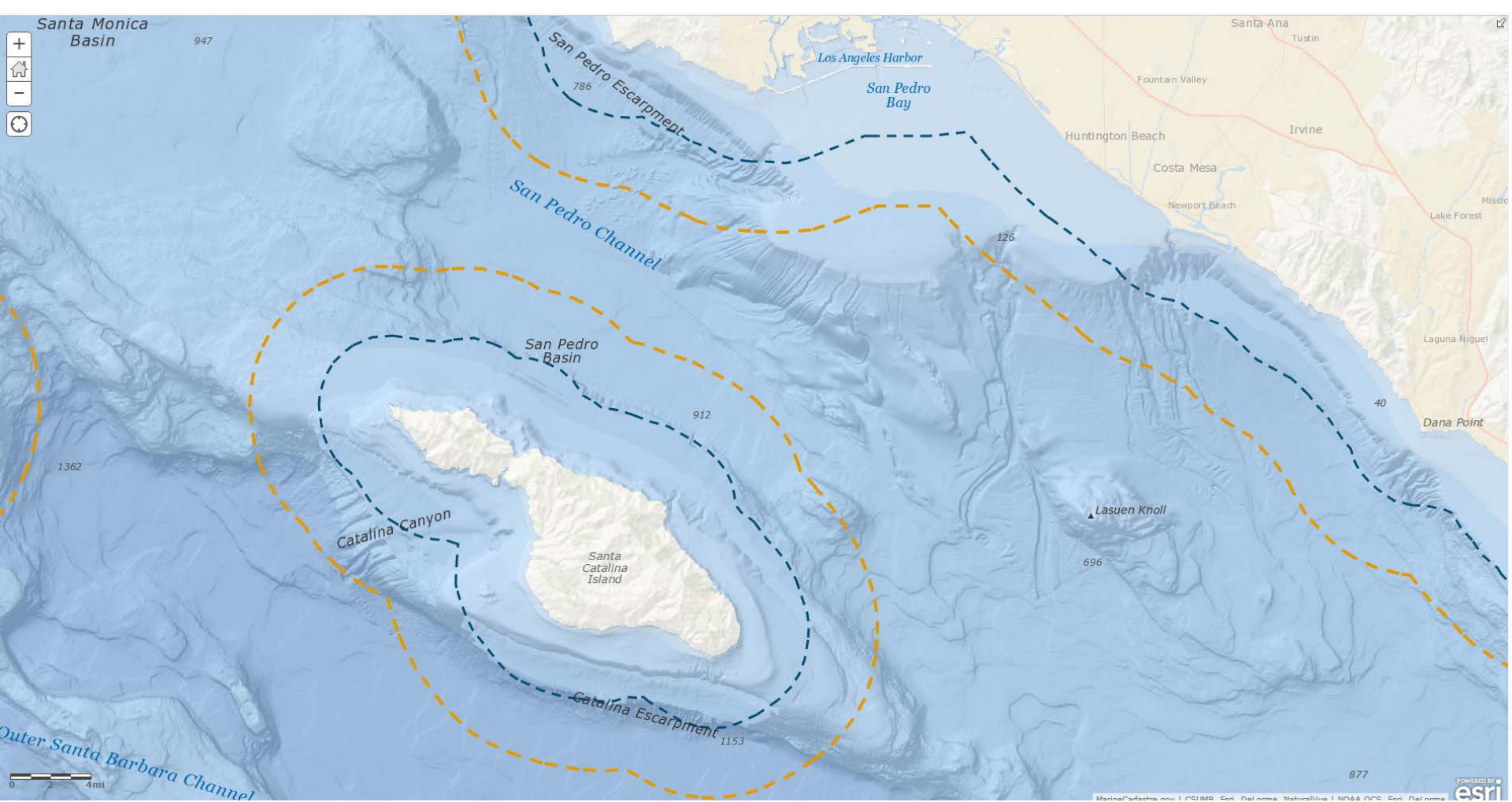
Outer Continental Shelf Lands Act of 1953:

“... all submerged lands lying seaward and outside of the area of lands beneath navigable waters... and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control.”

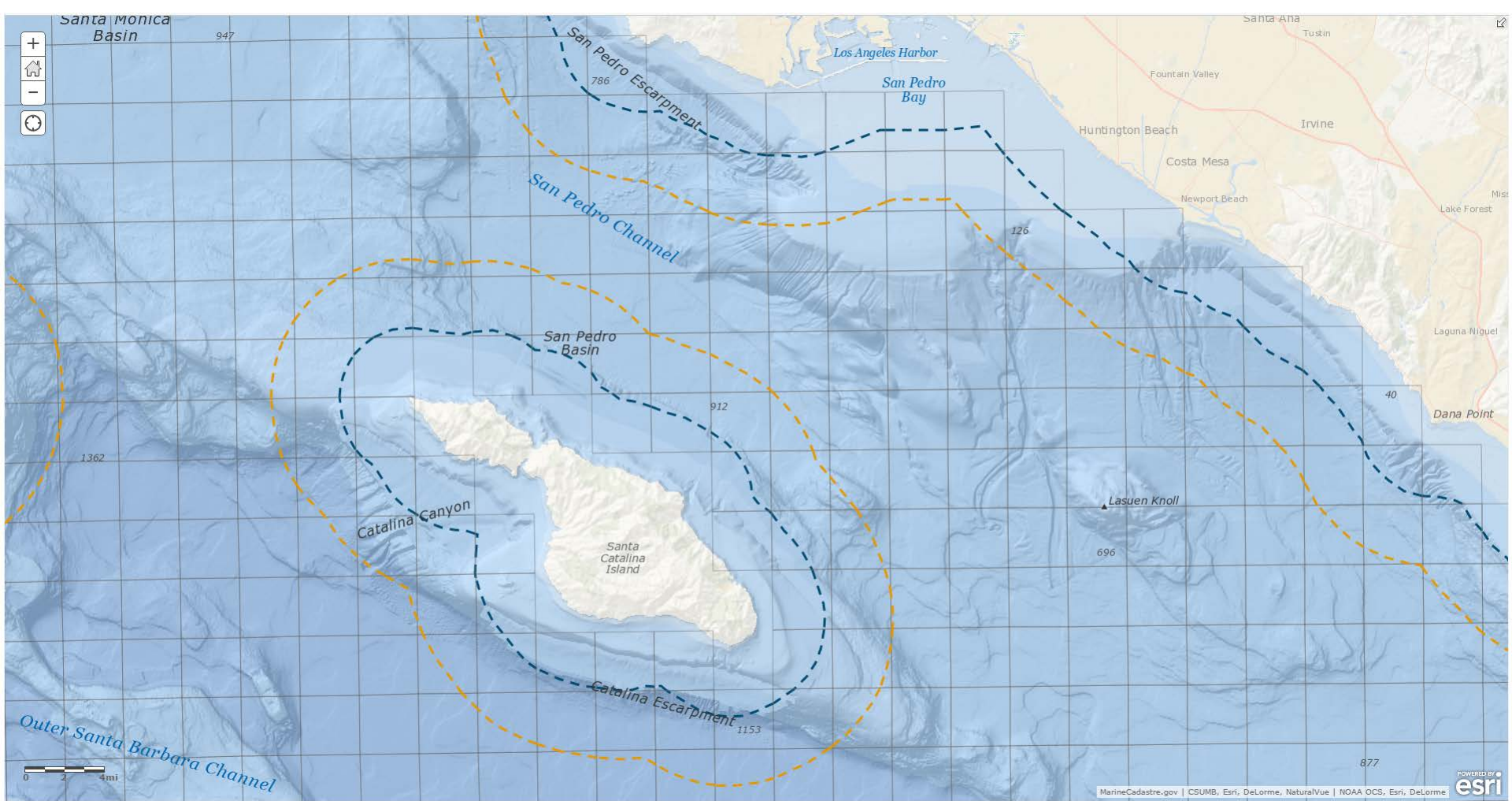


The Marine Cadastre

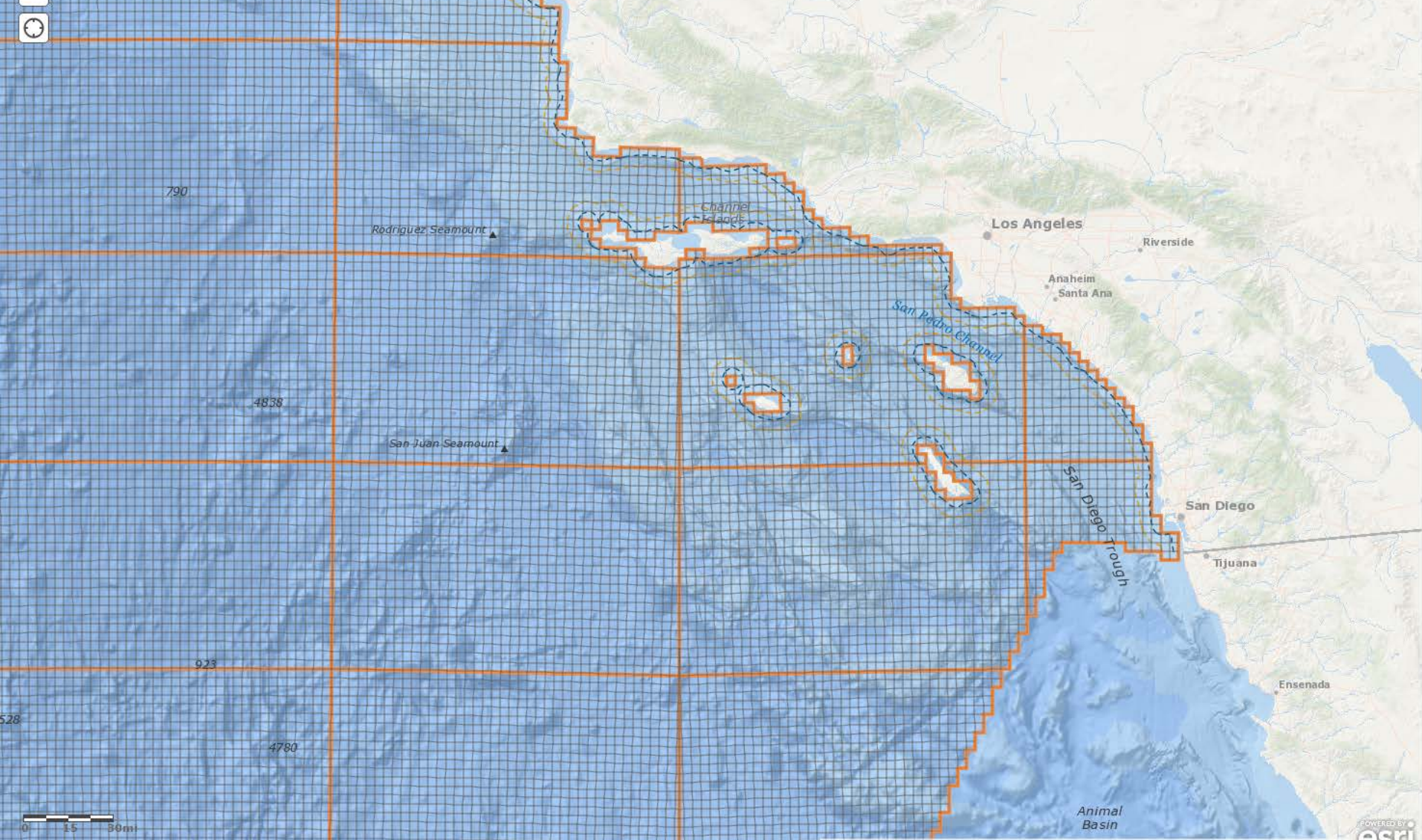
- * Extends from the official baseline of the nation's coastline to the full extent of the OCS.
- * Includes the block grids and official boundaries.
- * Enables BOEM to ***define, describe, analyze, and account for every acre/hectare of federal offshore submerged lands.***



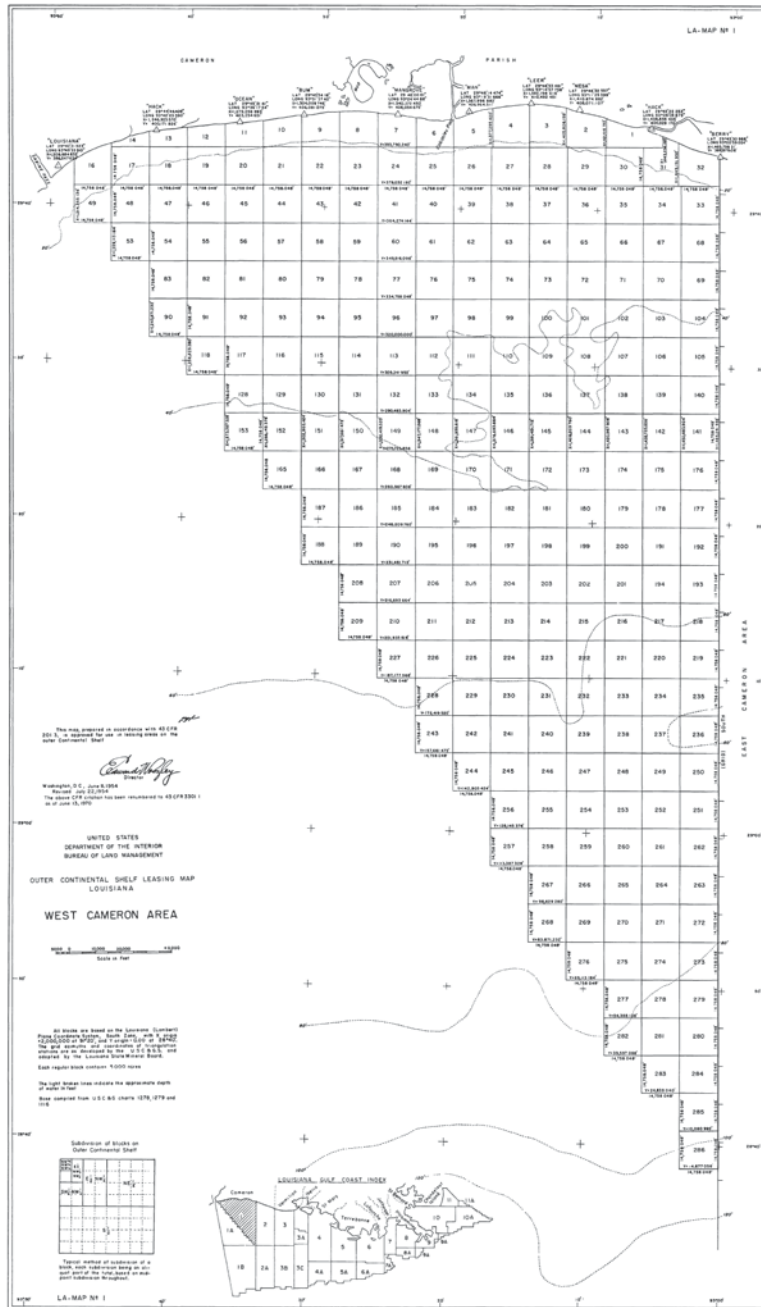
The **Marine Cadastre** includes the block grids and official boundaries, which provide the base for nearly all of the BOEM offshore maps and leasing processes.



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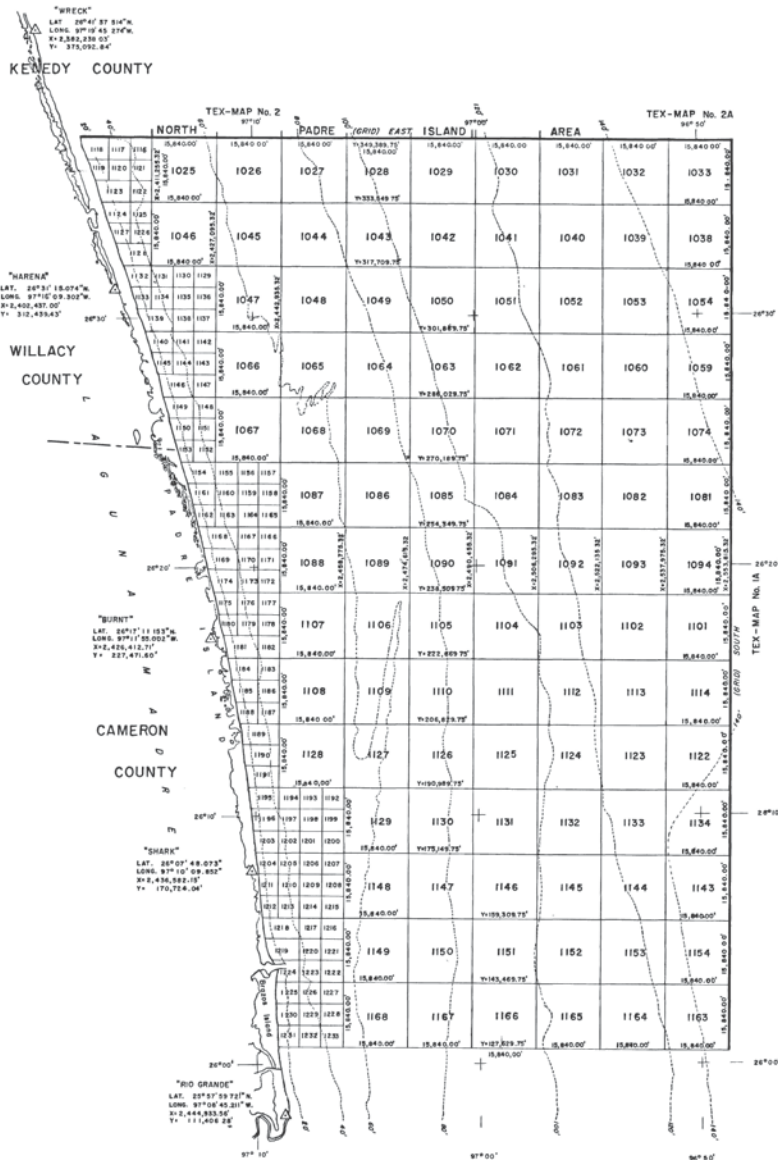


The **Marine Cadastre** includes the block grids and official boundaries, which provide the base for nearly all of the BOEM offshore maps and leasing processes.



1954 –
 Bureau of
 Land Management
 creates first
Leasing Maps

West Cameron Area, LA



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OUTER CONTINENTAL SHELF LEASING MAP
TEXAS

SOUTH PADRE ISLAND AREA



All blocks are based on the Texas (Letter) Plane Coordinate System, South Zone with X origin = 2,000,000 at 98°30' Y origin = 0.00 at 25°40'

The grid datum and coordinates of triangulation stations are as developed by the U.S.C. & G.S. and adopted by the General Land Office of Texas.

Each large block contains 2,750 acres, and each regular small block 640 acres. The areas of the irregular small blocks along the shore are not shown herein.

The light broken lines indicate the approximate depth of water in feet.

Shore line taken from U.S.C. & G.S. charts 1287 & 1288.



Typical method of subdivision of the blocks, each subdivision being an aliquot part of the total, based on mid-point subdivision throughout



State Plane Coordinate System

Blocks contain 5000 acres

South Padre Island Area, TX

This map, prepared in accordance with 43 CFR 201.3, is approved for use in leasing areas on the Outer Continental Shelf.

W. L. Harrison Acting Director
Washington, D. C., July 16, 1964
The above CFR citation has been renumbered to 43 CFR 330.1 as of June 13, 1970

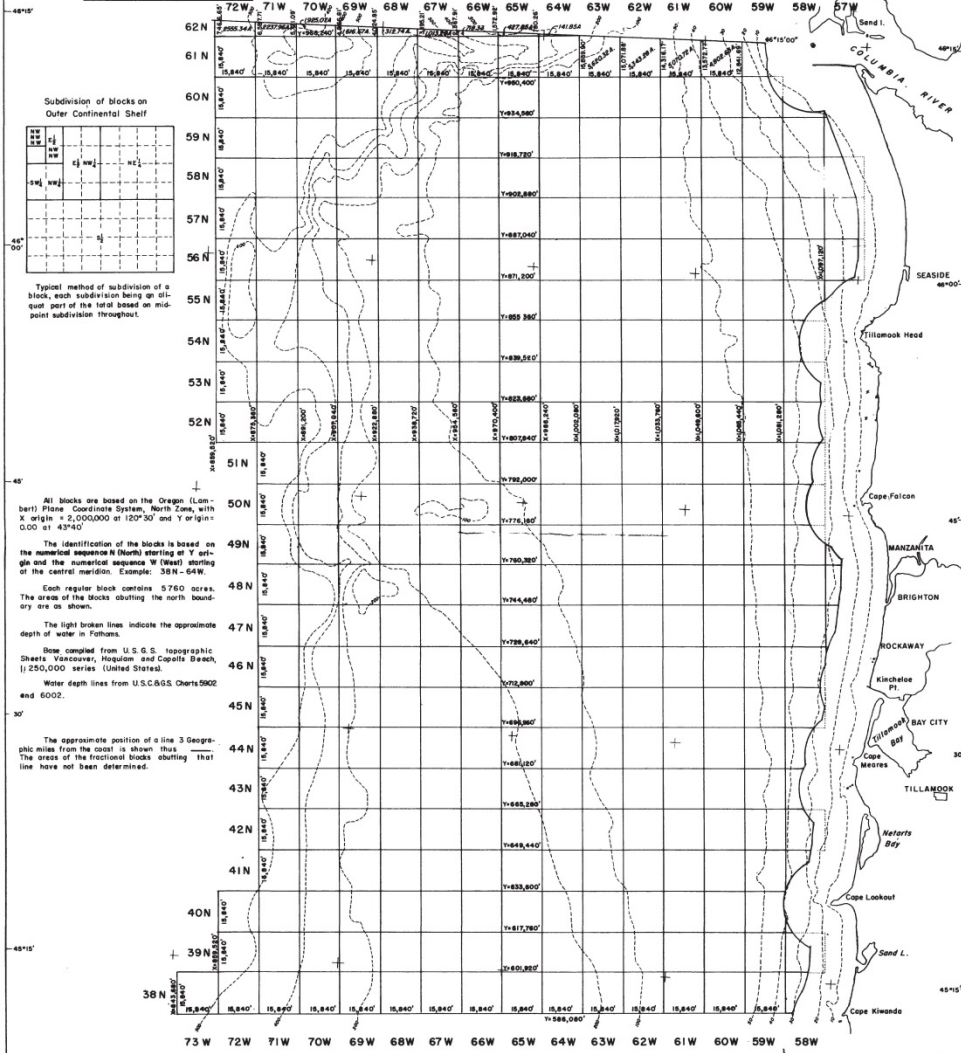
Submerged Lands Act

- * Passed by Congress in 1953
- * Granted title to the natural resources located within **three nautical miles of a coastal state** (nine nautical miles for Texas and the Gulf Coast of Florida – also Puerto Rico).
- * SLA boundary is projected seaward from officially recognized baseline points along the **mean lower low water line** of the coast line.

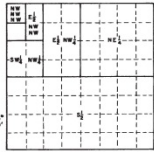
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
OUTER CONTINENTAL SHELF LEASING MAP

TILLAMOOK AREA MAP No. 1

SCALE
0 20,000 40,000 60,000 FEET



Subdivision of blocks on Outer Continental Shelf



Typical method of subdivision of a block, each subdivision being an equal part of the total based on mid-point subdivision throughout.

All blocks are based on the Oregon (Lambert) Plane Coordinate System, North Zone, with X origin = 2,000,000 at 120°30' and Y origin = 0.00 at 43°40'.

The identification of the blocks is based on the numerical sequence N (North) starting at Y origin and the numerical sequence W (West) starting at the central meridian. Example: 39N-64W.

Each regular block contains 5760 acres. The areas of the blocks abutting the north boundary are as shown.

The light broken lines indicate the approximate depth of water in Fathoms.

Bathymetry compiled from U.S.G.S. Topographic Sheets Vancouver, Hoquiam and Copella Beach, 1:250,000 series (United States).

Water depth lines from U.S.C.G.S. Charts 5902 and 6002.

The approximate position of a line 3 Geographic miles from the coast is shown thus. The areas of the fractional blocks abutting that line have not been determined.

This map, prepared in accordance with 43 CFR 201.3, is approved for use in leasing areas on the Outer Continental Shelf.

J.P. Meins
Acting Director

Revised June 6, 1963
ORE-MAP No. 1
Washington, D.C. May 3, 1963

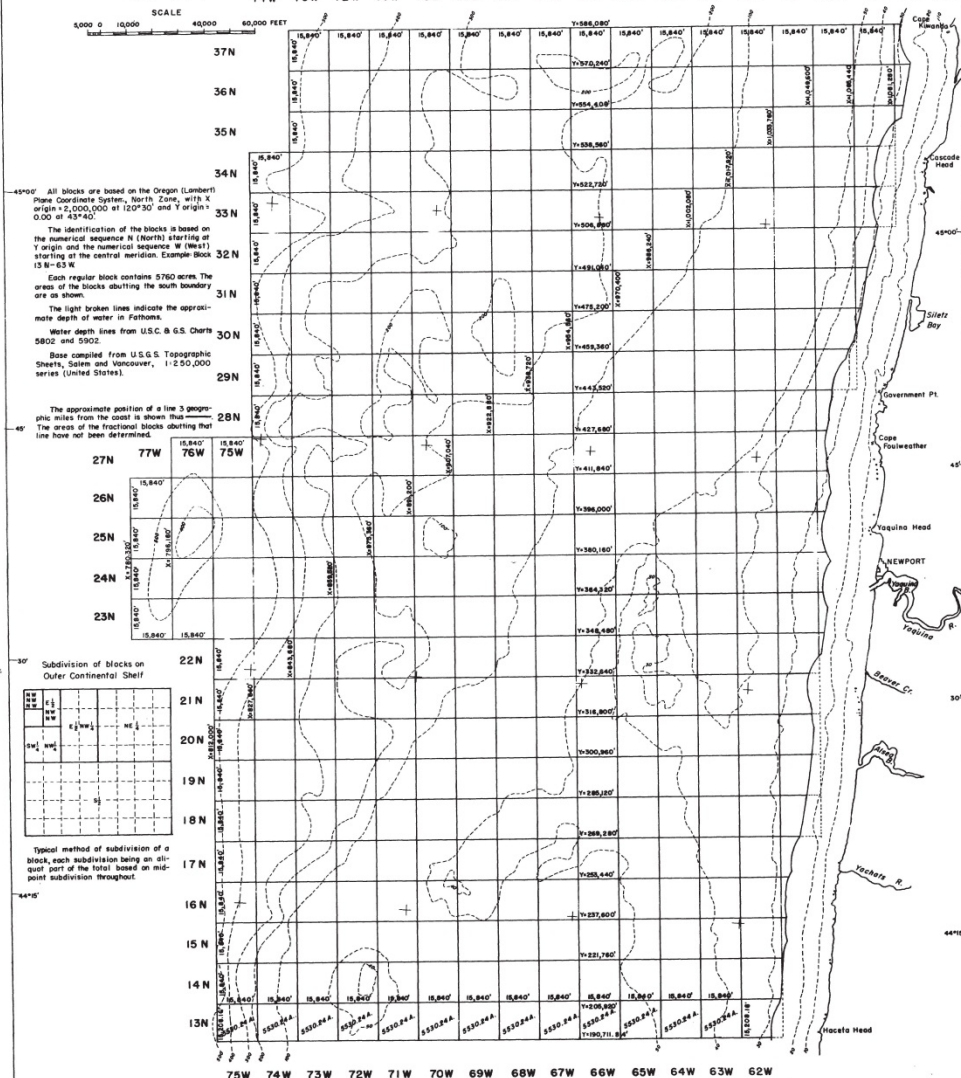


1963 – First Leasing Maps with the Submerged Lands Act Boundary

Tillamook Area, OR

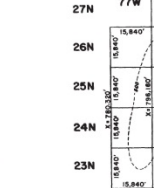
NEWPORT AREA

MAP No. 2



All blocks are based on the Oregon (Lambert) Plane Coordinate System, North Zone, with X origin 7,000,000 at 120°30' and Y origin 0.00 at 43°40'.
The identification of the blocks is based on the numerical sequence N (North) starting at Y origin and the numerical sequence W (West) starting at the central meridian. Example Block 15 N-65 W.
Each regular block contains 5760 acres. The areas of the blocks abutting the south boundary are as shown.
The light broken lines indicate the approximate depth of water in Fathoms.
Water depth lines from U.S.C. & G.S. Chart 5802 and 5902.
Base compiled from U.S.G.S. Topographic Sheets, Salem and Vancouver, 1:250,000 series (United States).

The approximate position of a line 3 geographic miles from the coast is shown that line have not been determined.



Subdivision of blocks on Outer Continental Shelf

SW 1/4	SE 1/4	NE 1/4	SW 1/4	SE 1/4	NE 1/4
SW 1/4	SE 1/4	NE 1/4	SW 1/4	SE 1/4	NE 1/4

Typical method of subdivision of a block, each subdivision being an aliquot part of the total based on mid-point subdivision throughout.

This map, prepared in accordance with 43 CFR 201.3, is approved for use in leasing areas on the Outer Continental Shelf.

J.P. [Signature]
Acting Director
Washington, D.C. May 3, 1963



Newport Area, OR

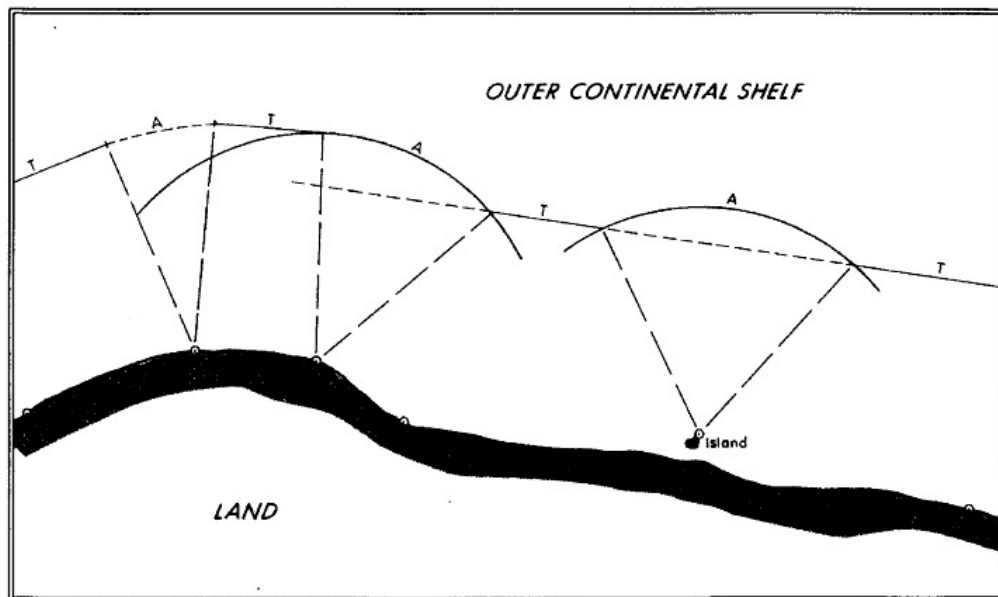


Figure 5 Curve intersecting a straight line.

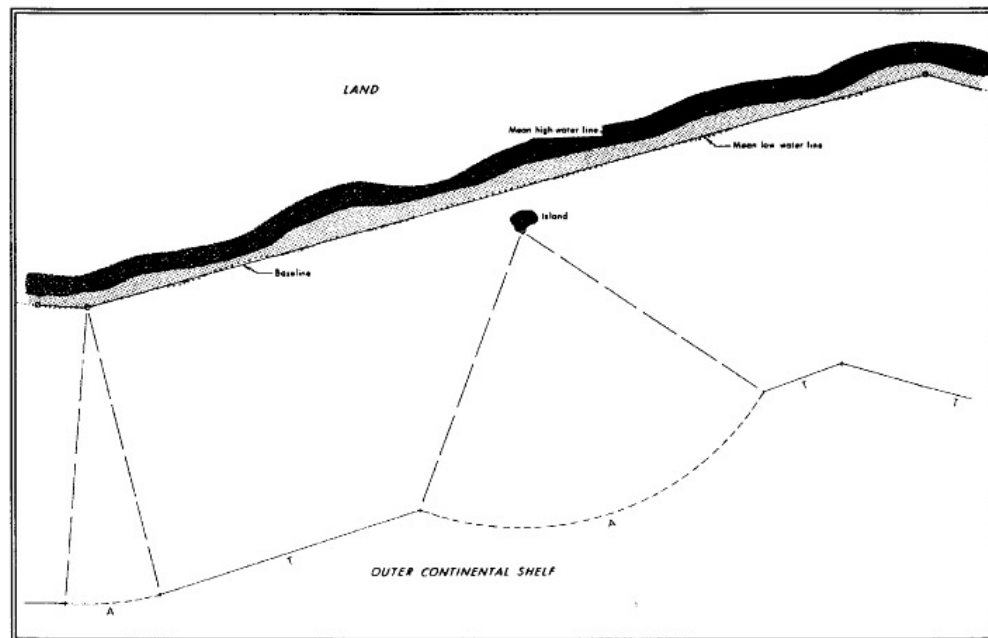
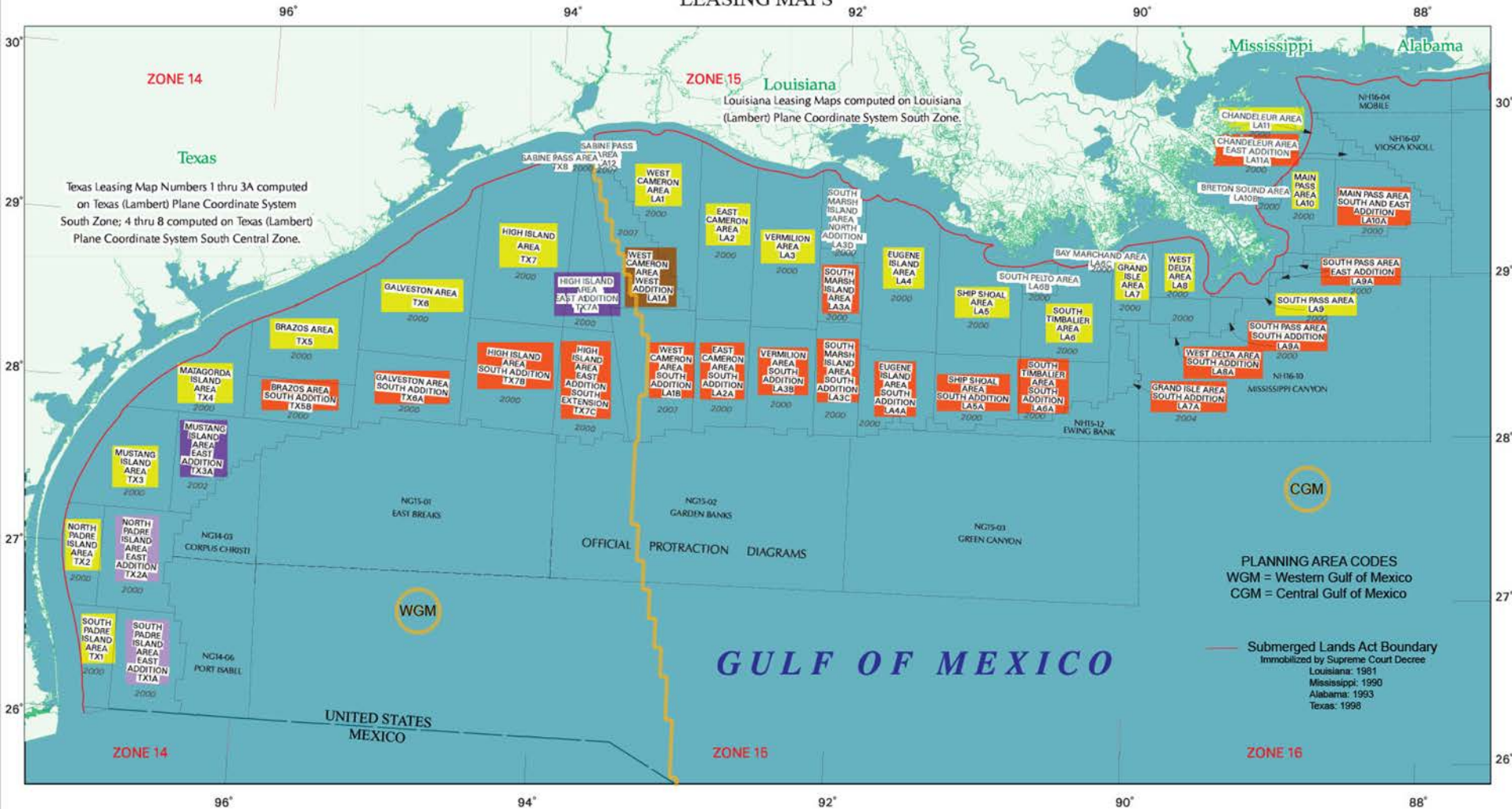
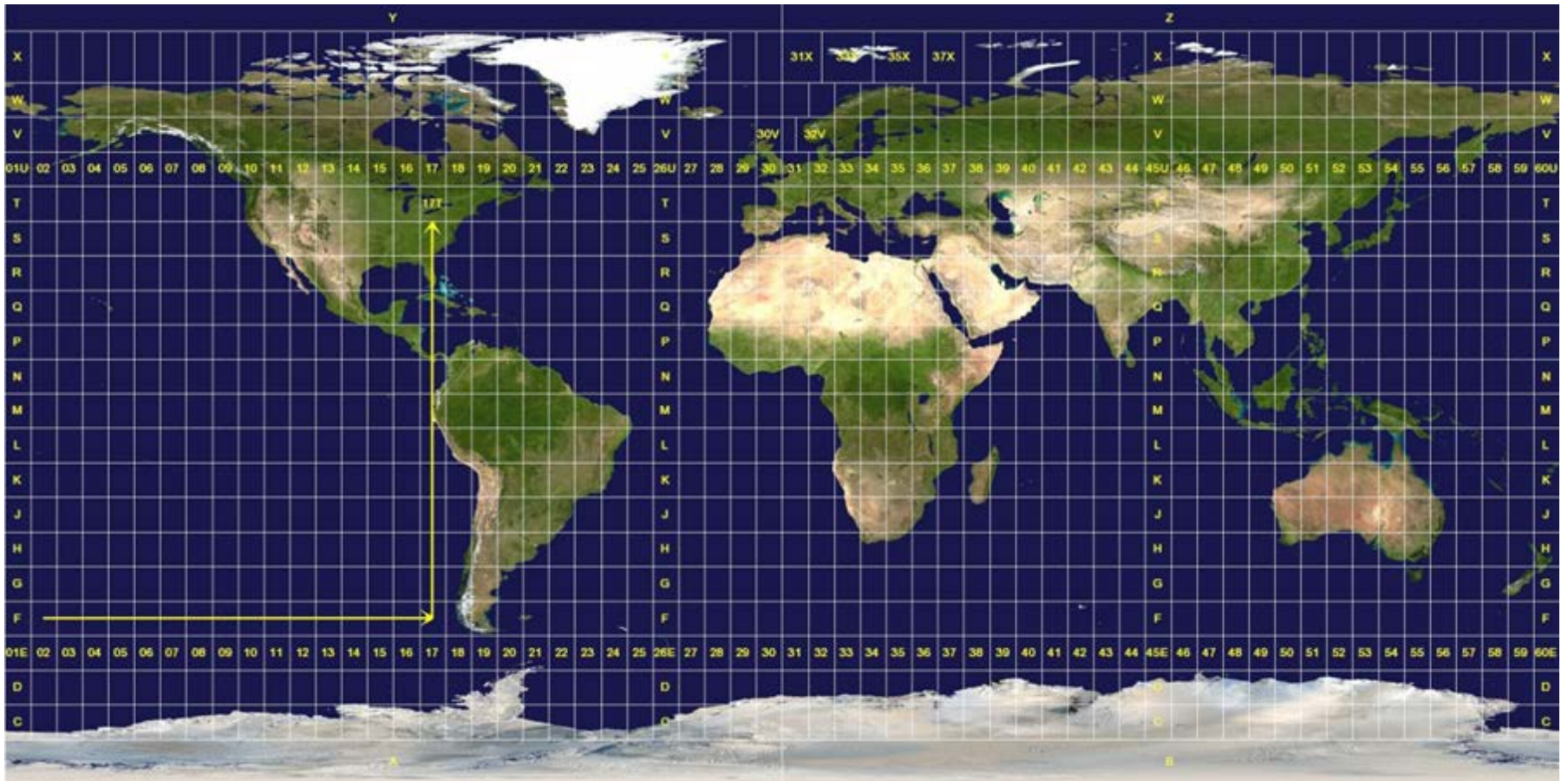


Figure 6 Tangent intersected by a superimposed arc.

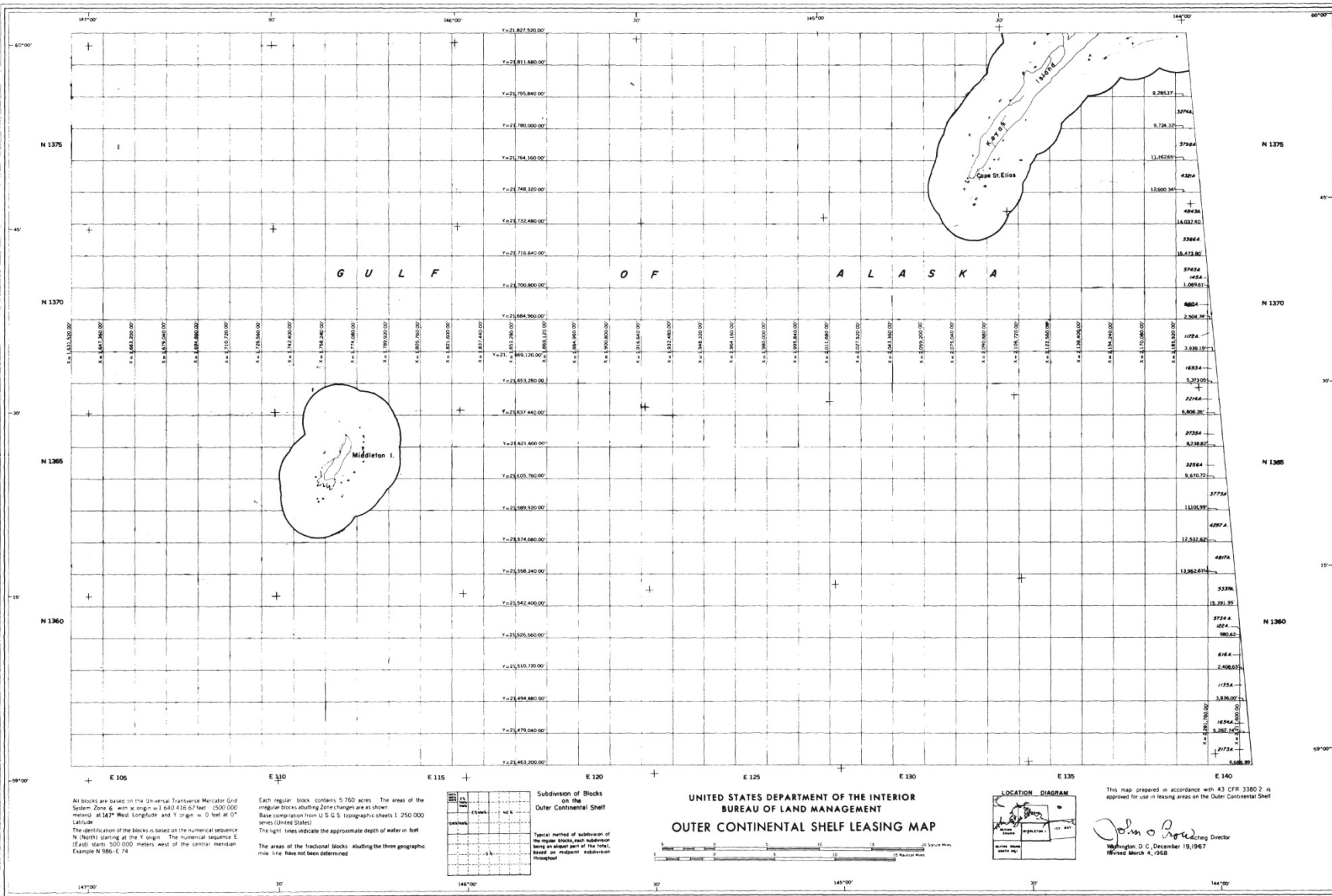
GULF OF MEXICO LEASING MAPS



Extent of Leasing Maps in the Gulf of Mexico - 1967

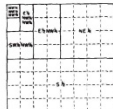


1967 – BLM utilizes the **Universal Transverse Mercator (UTM) grid system** for the first Lease Maps generated for the Gulf of Alaska.



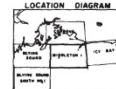
All blocks are based on the Universal Transverse Mercator Grid System, Zone 6, with x origin = 1 640 216.07 feet (500 000 meters) at 147° West Longitude and Y origin = 0 feet at 0° Latitude. The identification of the blocks is based on the numerical sequence N (North) starting at the Y origin. The numerical sequence E (East) starts 500 000 meters west of the central meridian. Example N 966 - E 74.

Each regular block contains 5 760 acres. The areas of the irregular blocks abutting zone changes are as shown. Base comparison from U.S.G.S. topographic sheets 1 250 000 series (United States). The light lines indicate the approximate depth of water in feet. The areas of the fractional blocks abutting the three geographic mile line have not been determined.

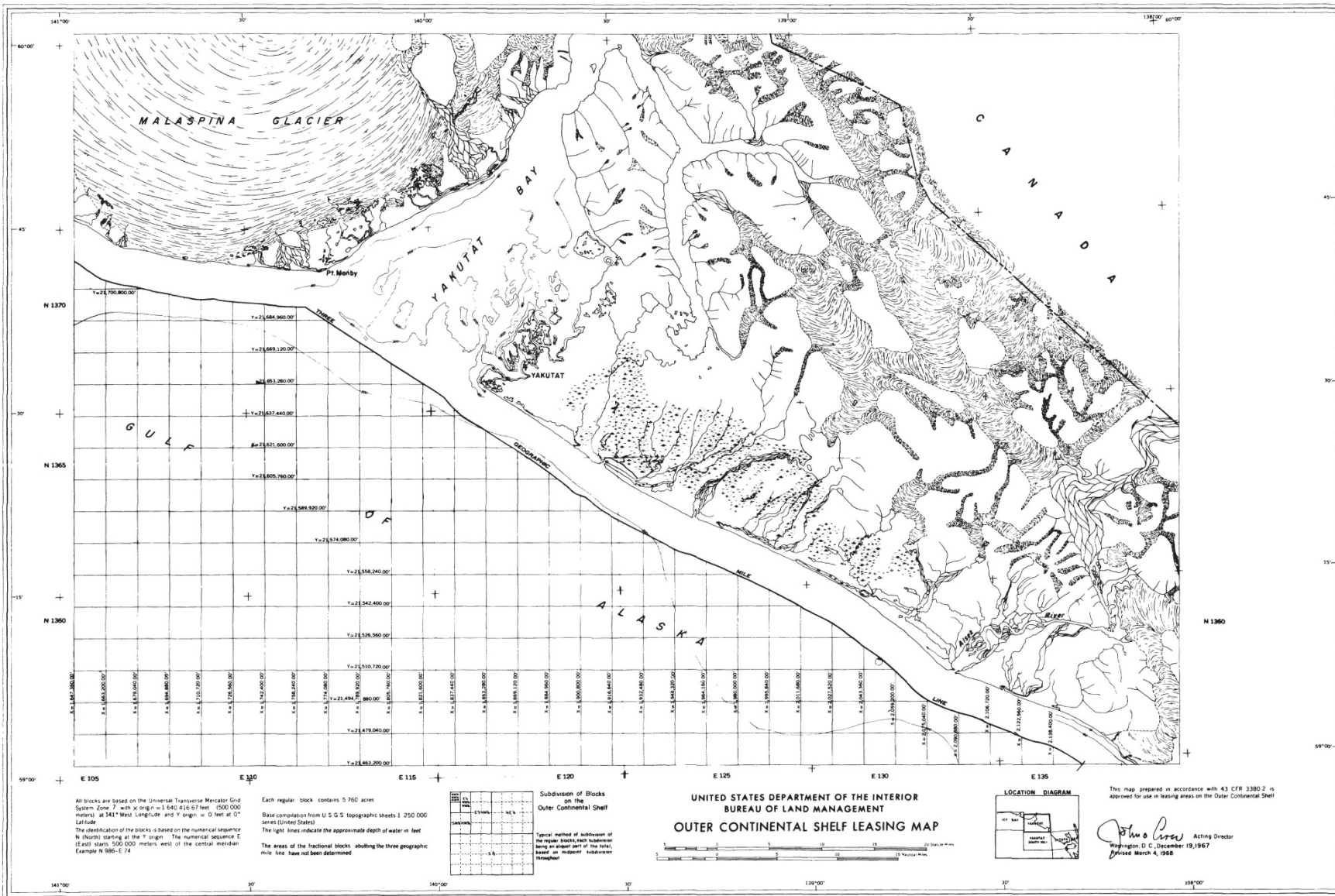


Subdivision of Blocks on the Outer Continental Shelf. Typical method of subdivision of the regular blocks, each subdivision being an equal part of the total. Based on midpoint subdivision method.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
OUTER CONTINENTAL SHELF LEASING MAP

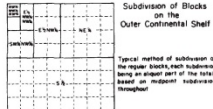


This map prepared in accordance with 43 CFR 3380.2 is approved for use in leasing areas on the Outer Continental Shelf.
John O. ... Acting Director
Washington, D. C., December 19, 1967
Revised March 4, 1968

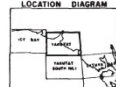


All blocks are based on the Universal Transverse Mercator Grid System Zone 7 with x origin = 1 640 416.67 feet (500 000 meters) at 141° West Longitude and y origin = 0 feet at 0° Latitude. The identification of the blocks is based on the numerical sequence N (North) starting at the 'Y' origin. The numerical sequence E (East) starts 500 000 meters west of the central meridian. Example N 580 - E 74.

Each regular block contains 5 760 acres. Base compilation from U S G S topographic sheets 1 250 000 Series (United States). The light lines indicate the approximate depth of water in feet. The areas of the fractional blocks abutting the three geographic meridians have not been determined.



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
OUTER CONTINENTAL SHELF LEASING MAP



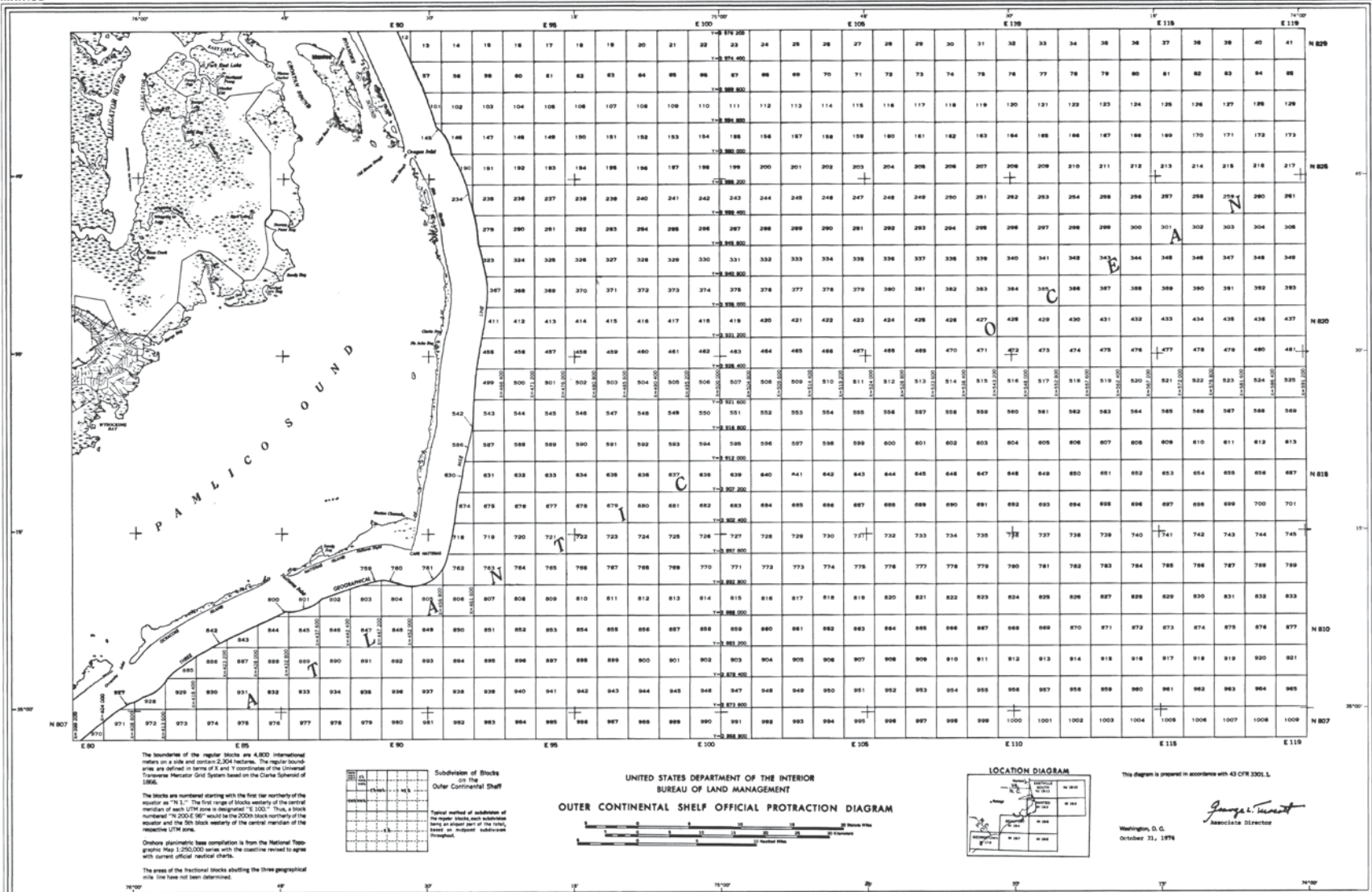
This map prepared in accordance with 43 CFR 1380.2 is approved for use in leasing areas on the Outer Continental Shelf.
John A. Brown Acting Director
Washington, D. C., December 19, 1967
Revised March 4, 1968

Computer Mapping Software - 1970

- * Based on FORTRAN programming language code
- * Block grid is mathematically generated
- * SLA boundary is mathematically projected from points along the coast line
- * Manually intensive, requiring many steps
- * Unable to project a line seaward beyond 12 nautical miles
- * Unable to generate blocks and boundaries in the Southern Hemisphere or west of 180° .

Official Protraction Diagram - 1972

- * UTM grid
- * Blocks are increased to 5760 acres
- * Measure 1° in latitude by 2° in longitude south of 48° latitude; increase to 3° in longitude north of 48°
- * Printed at 1:250,000 scale

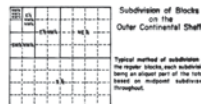


The boundaries of the regular blocks are 4,800 International meters on a side and contain 2,304 hectares. The regular block areas are defined in terms of X and Y coordinates of the Universal Transverse Mercator Grid System based on the Clarke Spheroid of 1866.

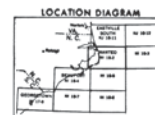
The blocks are numbered starting with the first (or northerly) of the regular as "N 1". The first range of blocks westerly of the central meridian of each UTM zone is designated "E 100". Thus, a block numbered "N 2004 E 567" would be the 200th block northerly of the equator and the 56th block westerly of the central meridian of the respective UTM zone.

Onshore platimetric base compilation is from the National Topographic Map 1:250,000 series with the coastline revised to agree with current official nautical charts.

The areas of the fractional blocks abutting the three geographical mile line have not been delineated.



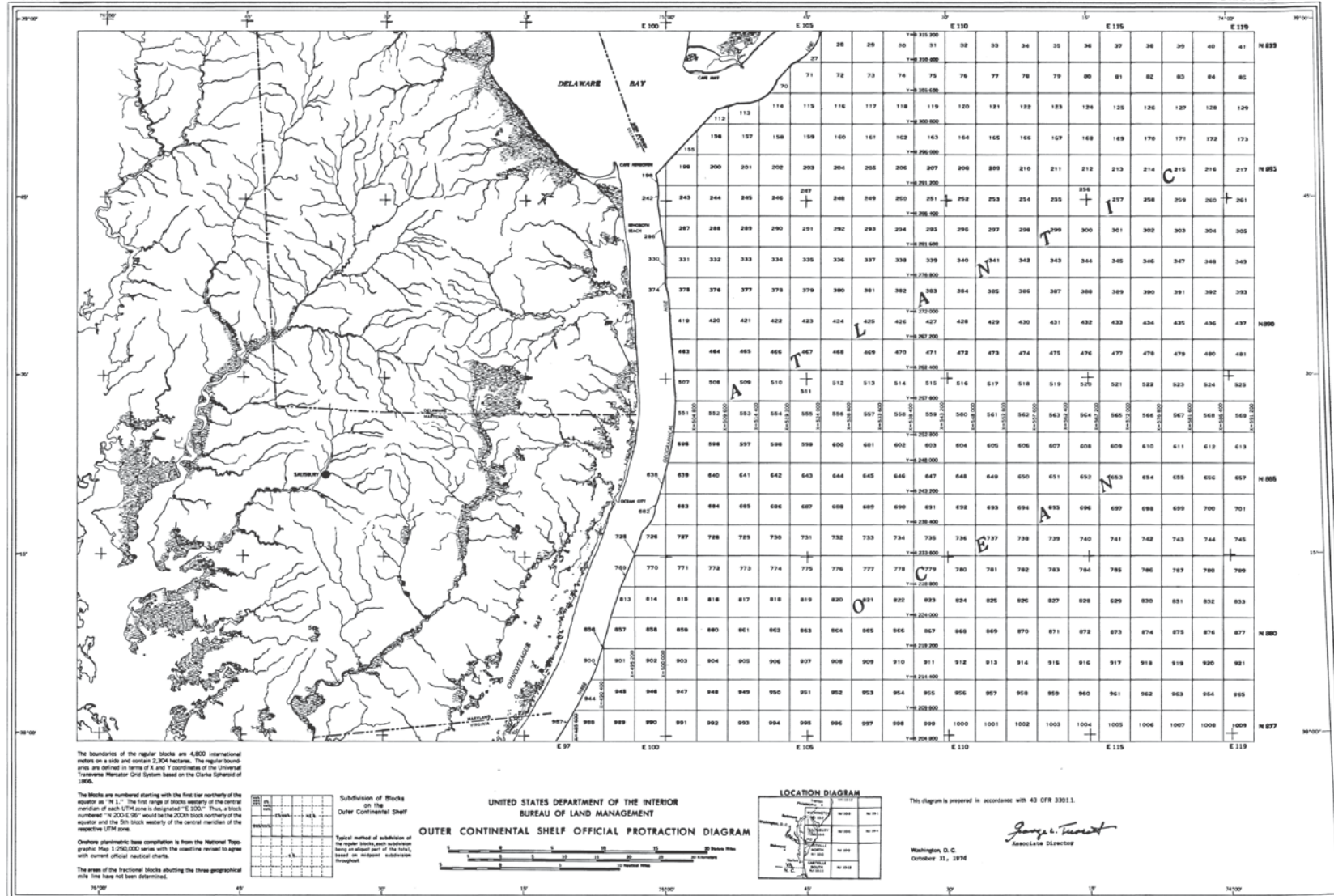
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
OUTER CONTINENTAL SHELF OFFICIAL PROTRACTION DIAGRAM



This diagram is prepared in accordance with 43 CFR 3301.1.

Washington, D. C.
October 31, 1978

James M. Swartz
Associate Director

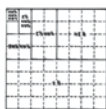


The boundaries of the regular blocks are 4,000 international meters on a side and contain 2,304 hectares. The regular bound areas are defined in terms of X and Y coordinates of the Universal Transverse Mercator Grid System based on the Clarke Spheroid of 1866.

The blocks are numbered starting with the first row northerly of the equator as "N 1". The first range of blocks westerly of the central meridian of each UTM zone is designated "E 100". Thus, a block numbered "N 200216 90" would be the 2002nd block northerly of the equator and the 5th block westerly of the central meridian of the respective UTM zone.

Onshore placemarks base computation is from the National Topographic Map 1:250,000 series with the coastline revised to agree with current official nautical charts.

The areas of the fractional blocks abutting the three geographical risks have not been determined.

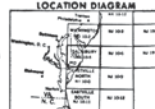


Subdivision of Blocks on the Outer Continental Shelf

Typical method of subdivision of the outer blocks, each subdivision being an equal part of the total, based on inherent subdivision throughout.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OUTER CONTINENTAL SHELF OFFICIAL PROTRACTION DIAGRAM



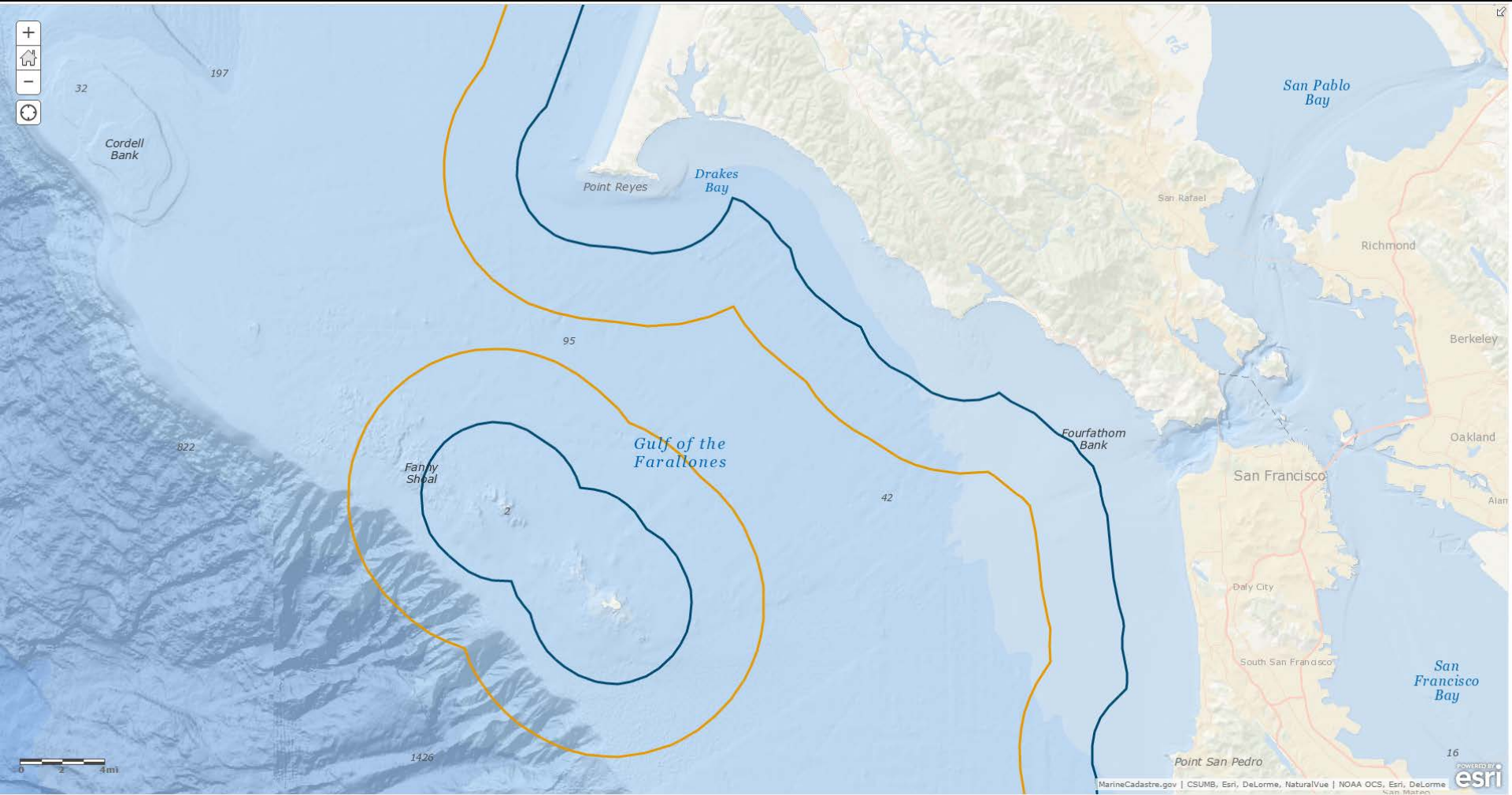
This diagram is prepared in accordance with 43 CFR 3301.1.

George E. Townsend
Associate Director
Washington, D. C.
October 31, 1974

Salisbury, NJ

Section 8(g) Zone

- * 1978: OCS Lands Act amended.
- * Section 8(g): rents, royalties, and other revenue obtained from leases located “***within three nautical miles of the seaward boundary of any coastal state***” will be shared between the state and the Federal government.
- * Area between three and six nautical miles offshore referred to as the “8(g) Zone.”
- * 1986: Section 8(g) amended to specify that the ***coastal state would receive 27% of the revenues generated.***



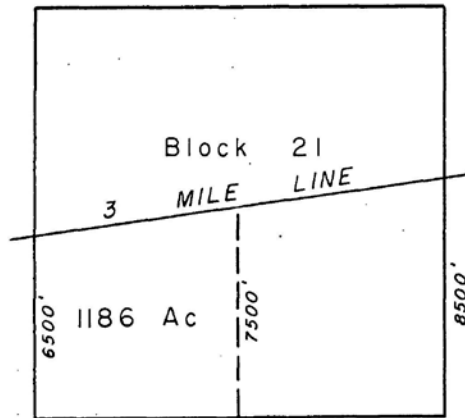
Supplemental Official Protraction Diagram - 1980

- * Generated for OCS blocks that contain at least one boundary
- * Reflect the position of a federal boundary, or boundaries
- * Coordinate values for where the boundary enters and exits the OCS block
- * Arc and tangent segments projected offshore from the baseline
- * Arc centers from the contributing baseline points

WEST CAMERON AREA

Lease Block crossed by the
3 Mile Line.

August 2, 1962



Lease Block
Diagram - 1962

West Cameron Area, LA

see Department of Public Works letter
of August 16, 1962

O.C. 5. 9187 La.

DISC PAK NO.

FILE NO.

UNITED STATES DEPARTMENT OF INTERIOR

~~BUREAU OF LAND MANAGEMENT~~
MINERALS MANAGEMENT SERVICE

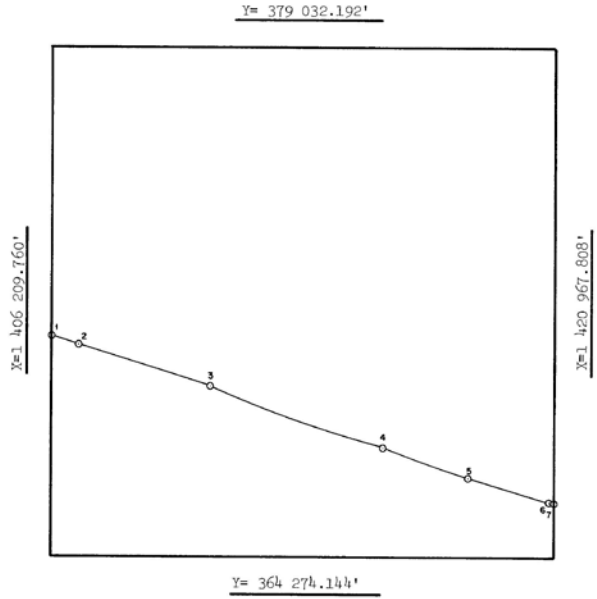
SUPPLEMENTAL OFFICIAL
OCS 8-G BLOCK DIAGRAM

OPD NO. LA-MAP 1

BLOCK NO. 36

OCS LEASE NO. _____

STATE LEASE NO. _____



Supplemental Official Block Diagram - 1983

INTERSECTIONS

	X	Y
1	1 406 209.76'	370 603.95'
2	1 407 028.95'	370 420.00'
3	1 410 887.20'	369 241.29'
4	1 415 928.43'	367 447.54'
5	1 418 390.47'	366 600.18'
6	1 420 835.47'	365 855.18'
7	1 420 967.81'	365 815.13'

ARC CENTERS

	X	Y
*1-2	1 410 175.00'	407 090.00'
*2-3	1 416 365.00'	405 700.00'
3-4	1 425 600.00'	402 610.00'
4-5	1 429 020.00'	401 485.00'
*5-6	1 429 020.00'	401 485.00'
6-7	1 431 465.00'	400 740.00'

*TANGENT SEGMENT

FEDERAL AREA <u>1341.35ac</u>	STATE AREA _____	8G AREA <u>3658.65ac</u>
% _____	% _____	% _____

West Cameron Area, LA

COMPUTATIONS BY MM DATE 2/10/83 FOR THE DIRECTOR Island Management FOR THE STATE _____

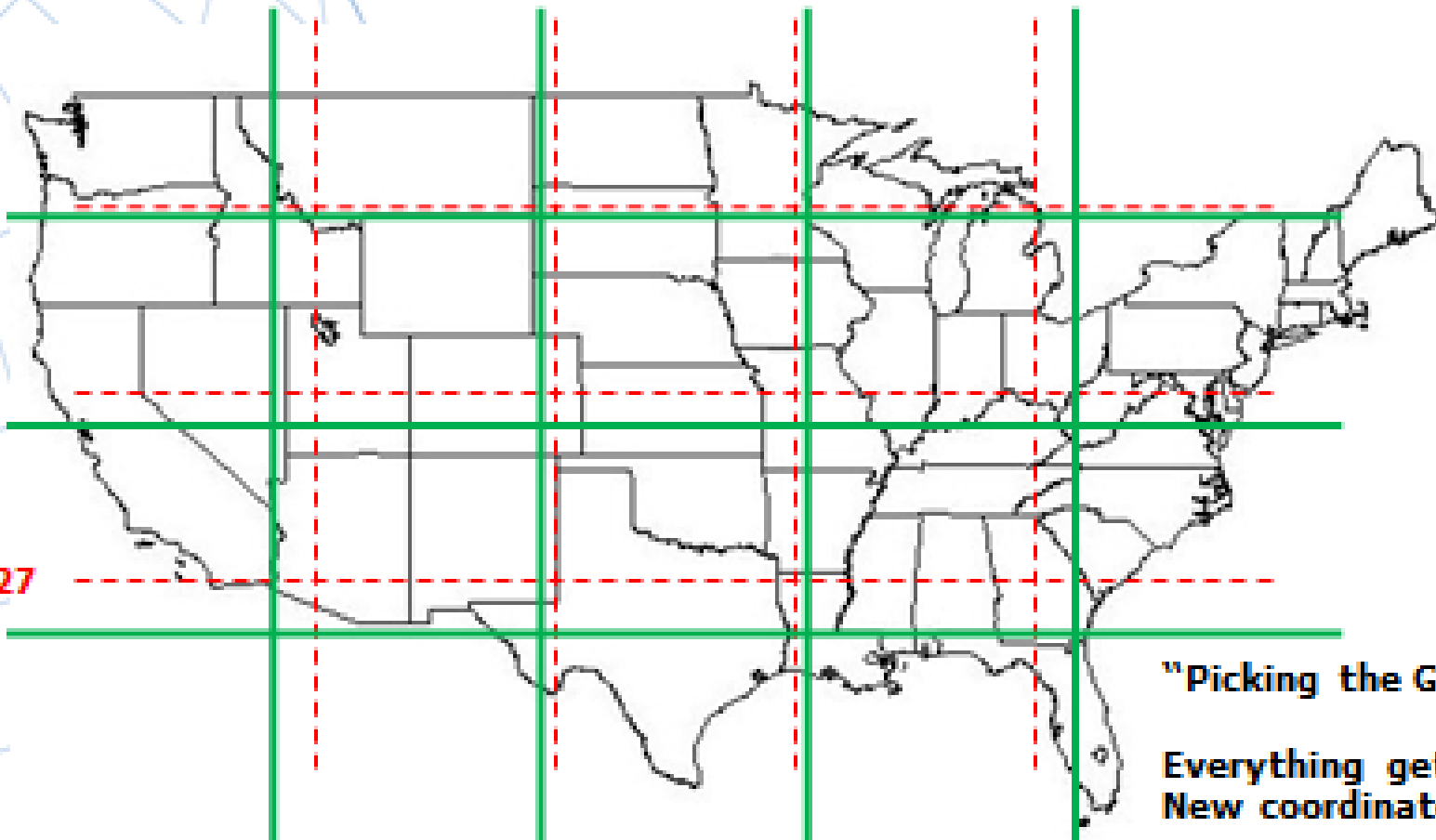
DRAFTED BY JK DATE 2/15/83 DATE _____

CHECKED BY JK DATE 3/17/83 DATE 2/24/83 DATE _____

NAD27 and the Gulf of Mexico

- * Minerals Management Service (MMS) created in 1982
- * 1989: All Federal agencies that perform mapping activities are instructed to migrate to the North American Datum of 1983 (NAD83).
- * 1990: Over 5000 oil and gas leases in the Gulf of Mexico
- * MMS planned to convert all maps from NAD27 to NAD83. Conversion was completed for all Regions except the Gulf of Mexico.

Changing the Datum



1927

1983

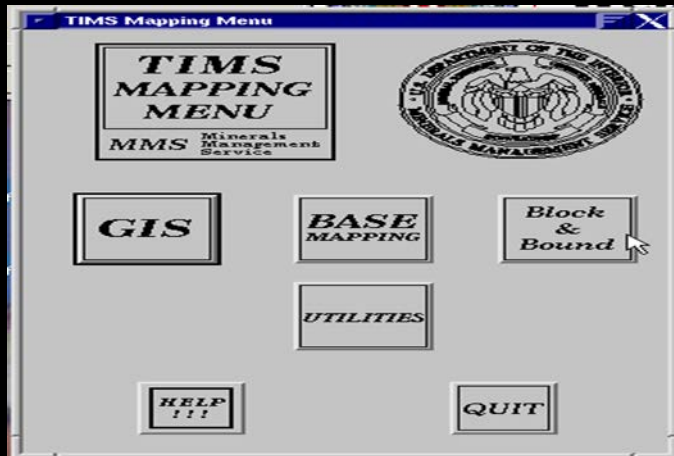
"Picking the Grid"

Everything gets a
New coordinate!!

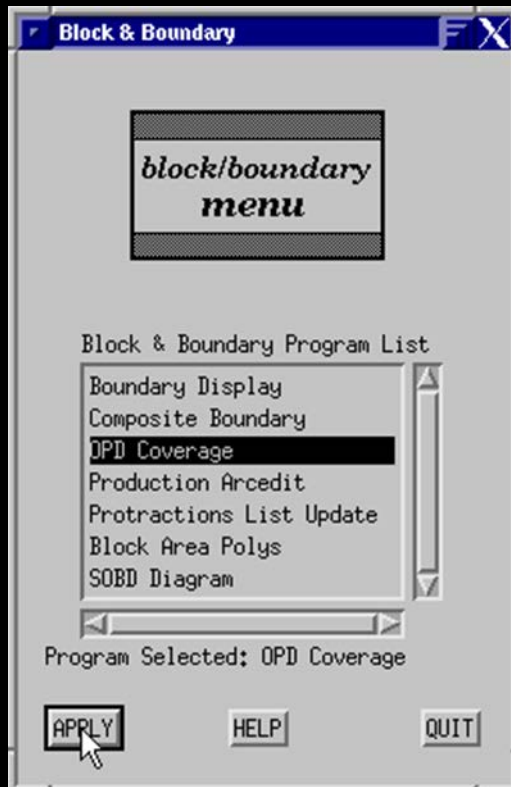
1927-1983: 100's of
meters

1983-2022: 1-2 meters





1992 – Technical Information Management System (TIMS)



TIMS database contains all major business functions required for BOEM to perform leasing activities.

Block and Boundary component contains tabular data and mapping tools

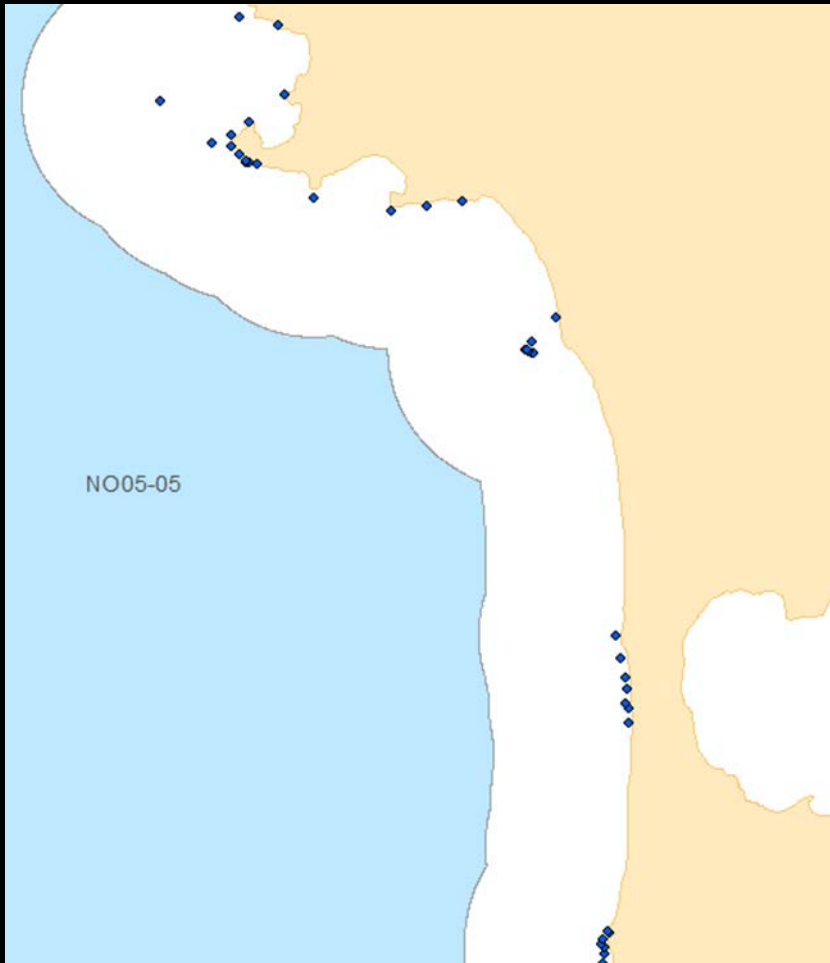
Geospatial data cannot be stored in TIMS

Mapping tools not functional outside of North America

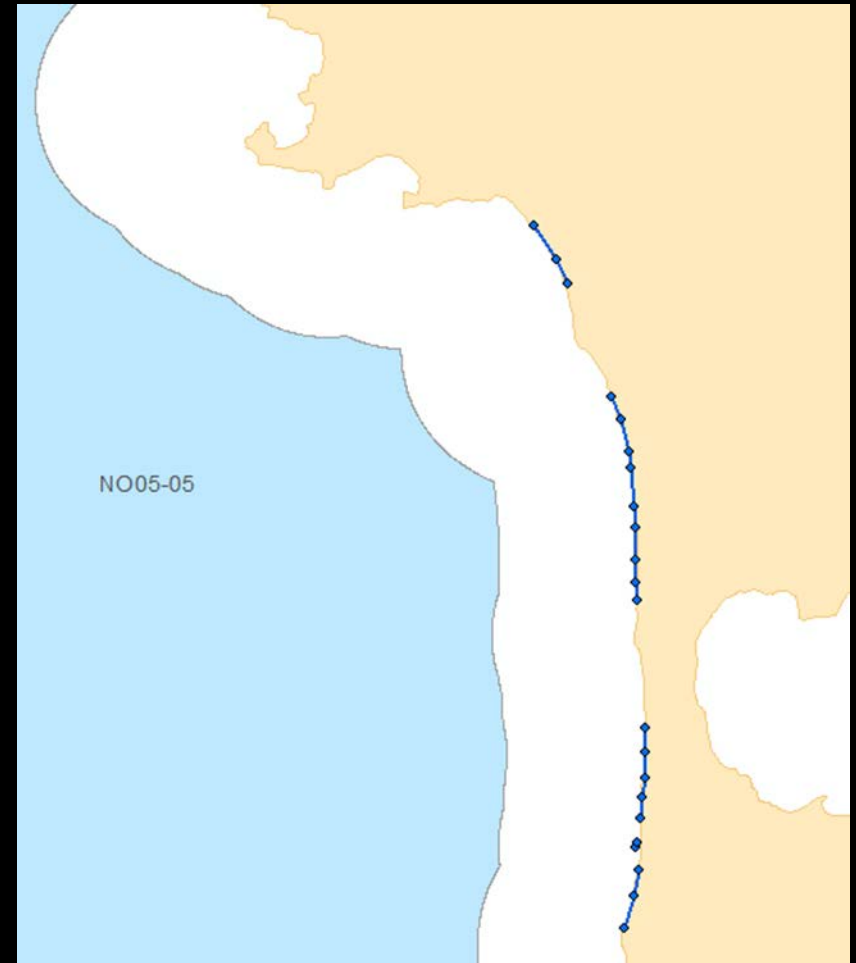
Building a New System - 2007

- * Replace TIMS mapping tools with GIS technology
- * Custom tools for all processes (calculations, generate blocks and boundaries, produce maps)
- * Contracts with Esri, Inc. signed 2009 and 2010
- * First set of custom tools delivered in December 2010, including the ***Project Boundary*** tool.

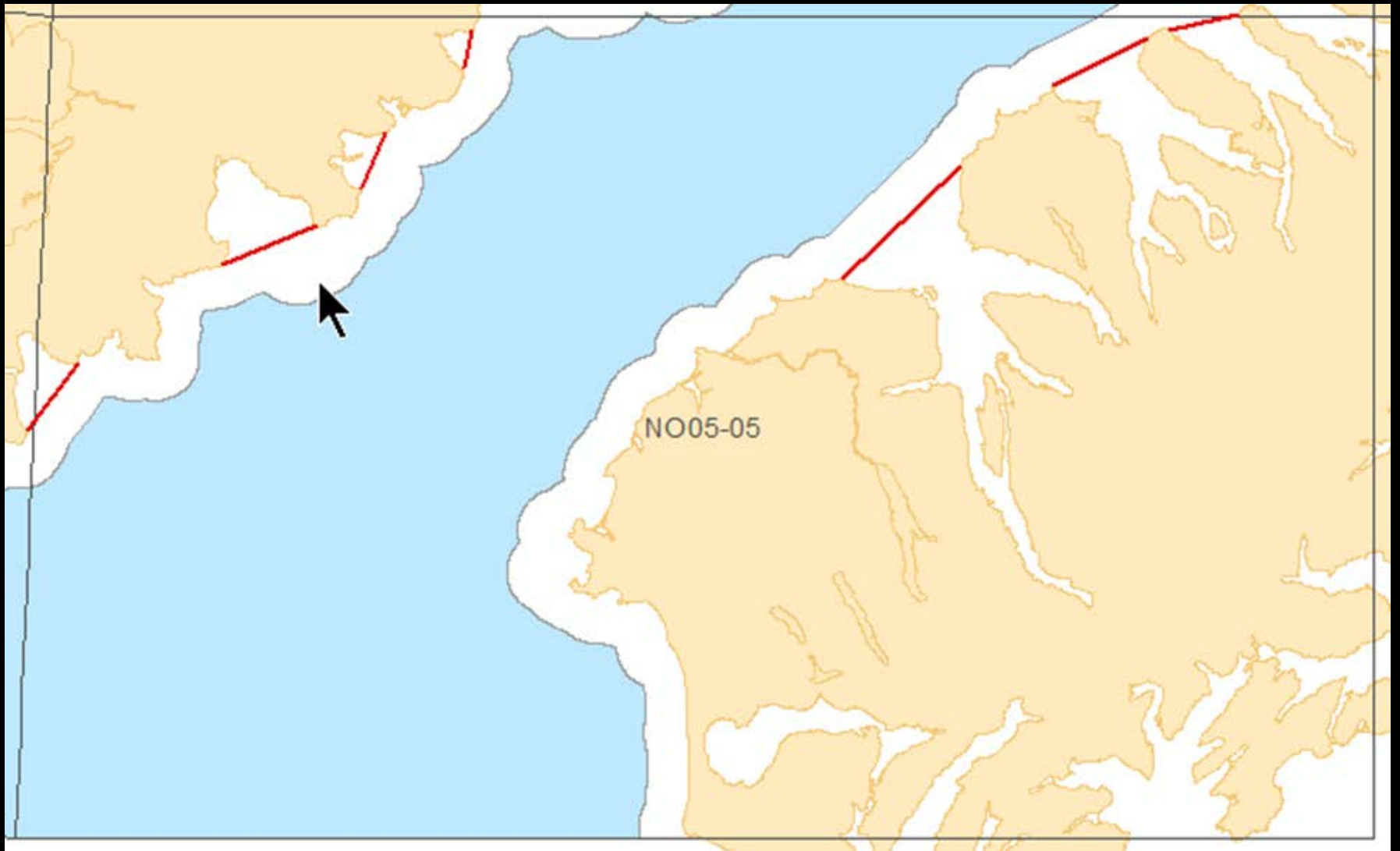
Baseline: the most seaward, or salient, points along the shoreline.



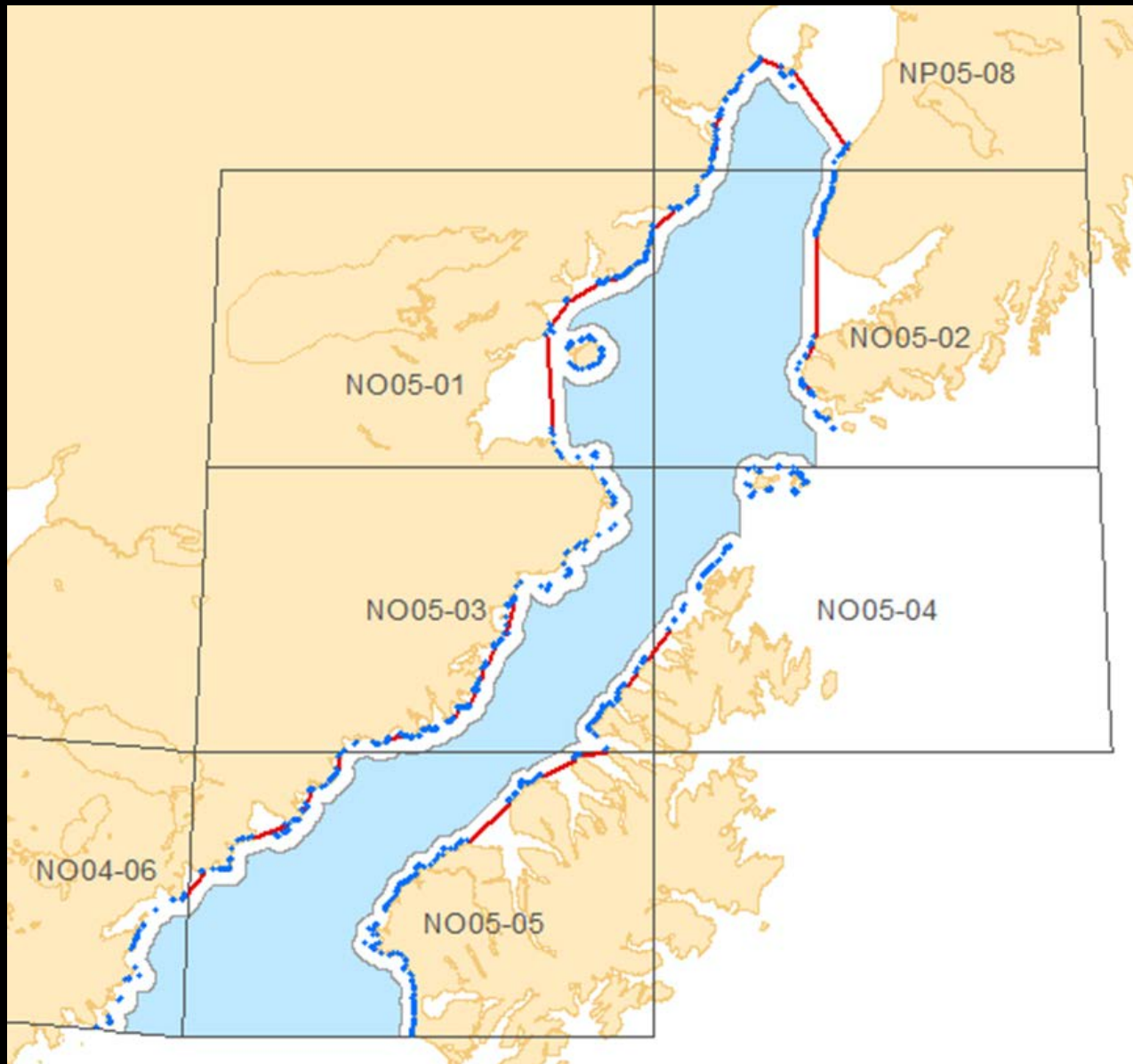
Subset of isolated points



Subset of points connected by lines



Subset of bay closing lines showing limit of inland waters.



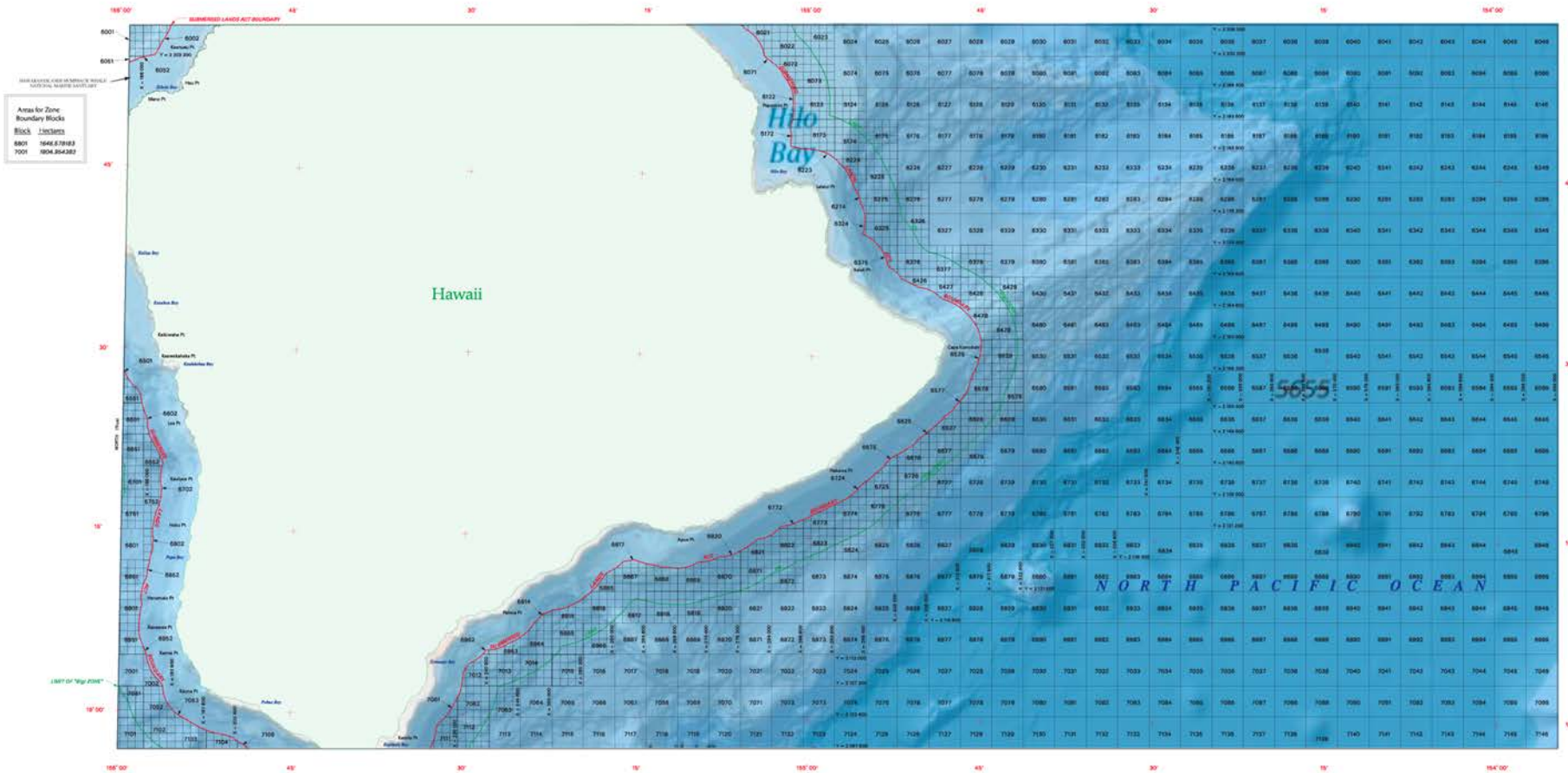
Baseline and SLA Boundary, Upper Cook Inlet, Alaska

Building the Boundary Delineation System - 2015

- * New contract with Esri: replace majority of custom tools with commercial-off-the-shelf (COTS) tools.
- * New Data Model will utilize 39 separate file geodatabases, accommodating all OCS areas of the U.S. regardless of datum.
- * Import of TIMS Block and Boundary data into the geodatabases for the Atlantic, Pacific, and Alaska Regions.
- * Utilize the **Data Interoperability** extension for importing and exporting Block & Boundary data between the BDS and TIMS.

Building the Boundary Delineation System - 2015

- * Generate new blocks for the principal Hawaiian Islands and subdivide all blocks into aliquot parts.
- * Esri **Project Boundary** tool for creating official marine boundaries.
- * Map Production tools will be configured to generate OPDs and SOBDs.



The boundaries of the regular blocks are 4,000 international meters in size and contain 2,304 hectares. The regular boundaries are defined in terms of X and Y coordinates of the Universal Transverse Mercator Grid based on the Canada Reference System (CRS) 1986 (Gauss).

Chapman planimetric base compilation is extracted from the 1983 1:24,000 (1:24,000) D-1, and additional files from World Vector Database 1:250,000 (1:250,000).

The grid definition of the irregular blocks along the zone boundary are defined in the Bureau of Ocean Energy Management Technical Information Management System.

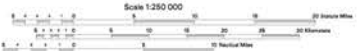
The "Crosses" (swimsuit) type is from Civil, Inc., which has been compiled from data collected by the NOAA National Geospatial Data Center.

The Submerged Lands Act Boundary and Lines of "Big Zone" lines described herein affect the Official National procedure for Submerged Lands Act and Outer Continental Shelf areas. The areas of the National Wicks which have been reviewed and are as depicted on the Supplemental Official Protraction Diagram (SOAP). Consult the SOAP's for further descriptions and approval dates.

Copies of these diagrams are available for download in pdf format from <http://www.boem.gov/OCSEnergy/ProgramMappingandData/index.asp>

OCS Blocks with an aliquot part grid indicate that a Supplemental Official Protraction Diagram has been generated in support of leasing for renewable energy purposes.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT
OUTER CONTINENTAL SHELF OFFICIAL PROTRACTION DIAGRAM



NORTH AMERICAN DATUM OF 1983
WORLD GEODETIC SYSTEM OF 1984



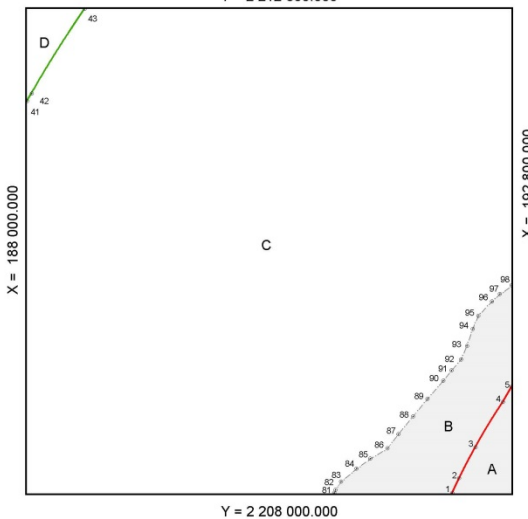
This diagram is prepared in accordance with 30 CFR 256.8

For the Director
DRAFT COPY
Chief, Leasing Division, Mapping and Boundary Branch

BOEM Prototype: Official Protraction Diagram

Supplemental Official Block Diagram

OCS Planning Area Name	<u>Hawaii</u>	OPD Number	<u>NF05-10</u>
OPD Name	<u>Alenuihaha Channel</u>	Block Number	<u>7102</u>
Submerged Lands Act Boundary Radius	<u>5556.000</u>	Datum	<u>WGS 84</u>
Limit of "8(g) Zone" Radius	<u>11 112.000</u>	UTM Zone	<u>5N</u>
		Units	<u>Meters</u>
		Previous SOBD	<u></u>
		Signature Date	<u></u>



Federal 8(g) Area	C = <u>0000.000000 ha</u>
Federal Non-8(g) Area	D = <u>0000.000000 ha</u>
Sanctuary Area	B = <u>0000.000000 ha</u>
Sanctuary / State Area	A = <u>0000.000000 ha</u>
Total Area	<u>2304.000000 ha</u>

BOEM prototype: Supplemental Official Block Diagram

Offshore Intersections		Contributing Baseline Points		Tangent Baseline End Points	
X	Y	X	Y	X	Y
1	239 200.000	3 787 203.183	1-2	239 200.000	3 787 203.183
2	239 200.000	3 787 203.183	2-3	239 200.000	3 787 203.183
3	239 200.000	3 787 203.183			
4	239 200.000	3 787 203.183			
5	239 200.000	3 787 203.183			
41	239 200.000	3 787 203.183			
42	239 200.000	3 787 203.183			
43	239 200.000	3 787 203.183			
81	239 200.000	3 787 203.183			
82	239 200.000	3 787 203.183			
83	239 200.000	3 787 203.183			
84	239 200.000	3 787 203.183			
85	239 200.000	3 787 203.183			
86	239 200.000	3 787 203.183			
87	239 200.000	3 787 203.183			
88	239 200.000	3 787 203.183			
89	239 200.000	3 787 203.183			
90	239 200.000	3 787 203.183			
91	239 200.000	3 787 203.183			
92	239 200.000	3 787 203.183			
93	239 200.000	3 787 203.183			
94	239 200.000	3 787 203.183			
95	239 200.000	3 787 203.183			
96	239 200.000	3 787 203.183			
97	239 200.000	3 787 203.183			
98	239 200.000	3 787 203.183			

- Tangent Segment
- Submerged Lands Act Boundary
- Limit of "8(g) Zone"
- Marine Protected Area

For the Director, BOEM _____ Date _____

For HI _____ Date _____

Print Name _____

Print Name _____

OCS Planning Area Name Hawaii

OPD Name Kaiwi Channel

Limit of "8(g) Zone" Radius 11 112.000

Y = 2 323 200.000

OPD Number NF04-09

Block Number 7117

Aliquot Part a

Datum WGS 84

UTM Zone 4N

Units Meters

Previous SOAD _____

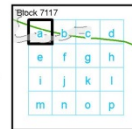
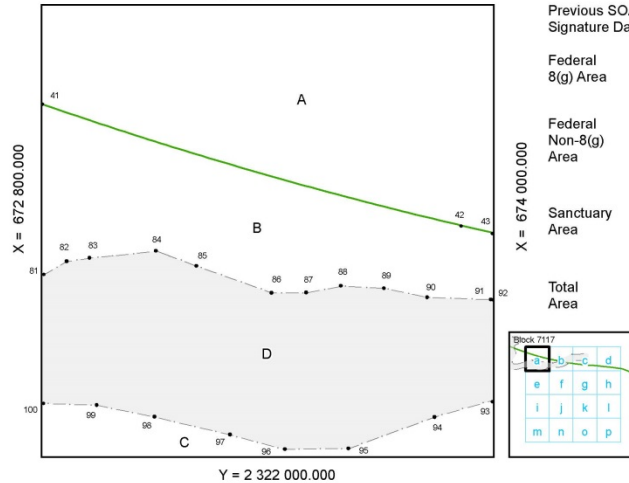
Signature Date _____

Federal 8(g) Area A = 52.000000 ha

Federal Non-8(g) Area B = 36.000000 ha
 C = 15.000000 ha

Sanctuary Area D = 40.999999 ha

Total Area 144.000000 ha



Offshore Intersections		Contributing Baseline Points		Tangent Baseline End Points	
X	Y	X	Y	X	Y
41	239 200.000	3 787 203.183	41-42	239 200.000	3 787 203.183
42	239 200.000	3 787 203.183	* 42-43	239 200.000	3 787 203.183
43	239 200.000	3 787 203.183			* 239 200.000
81	239 200.000	3 787 203.183			3 787 203.183
82	239 200.000	3 787 203.183			
83	239 200.000	3 787 203.183			
84	239 200.000	3 787 203.183			
85	239 200.000	3 787 203.183			
86	239 200.000	3 787 203.183			
87	239 200.000	3 787 203.183			
88	239 200.000	3 787 203.183			
89	239 200.000	3 787 203.183			
90	239 200.000	3 787 203.183			
91	239 200.000	3 787 203.183			
92	239 200.000	3 787 203.183			
93	239 200.000	3 787 203.183			
94	239 200.000	3 787 203.183			
95	239 200.000	3 787 203.183			
96	239 200.000	3 787 203.183			
97	239 200.000	3 787 203.183			
98	239 200.000	3 787 203.183			
99	239 200.000	3 787 203.183			
100	239 200.000	3 787 203.183			

* Tangent Segment
 — Limit of "8(g) Zone"
 Marine Protected Area

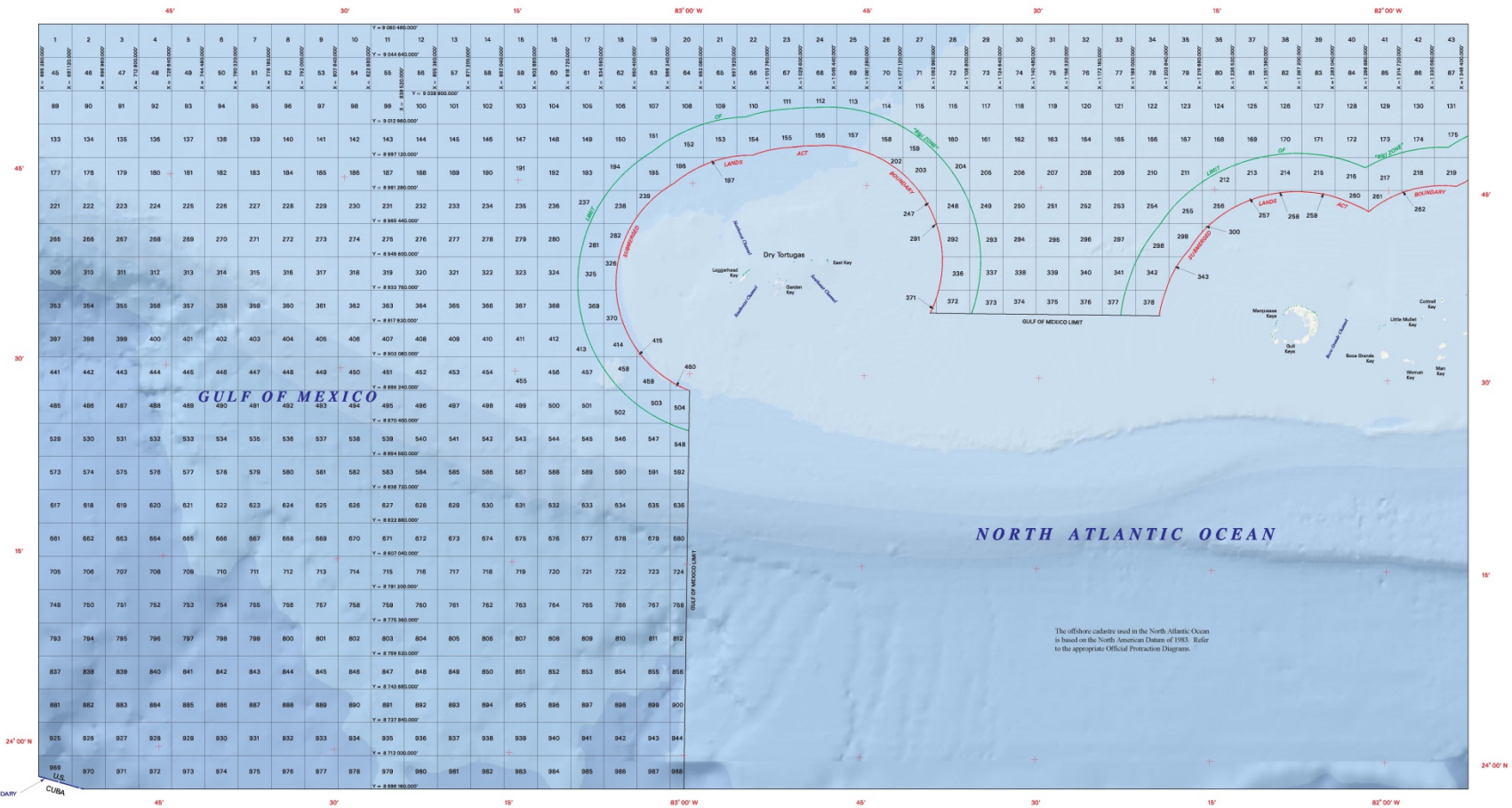
BOEM prototype: Supplemental Official Aliquot Diagram

For the Director, BOEM _____ Date _____

For Hawaii _____ Date _____

Print Name _____

Print Name _____

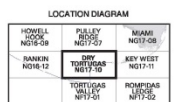
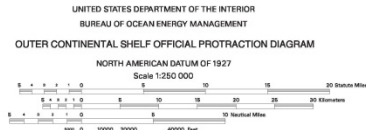


All blocks are based on the Universal Transverse Mercator Grid System, Zone 17, with X origin = 1,645,410.07 feet (500,000 international meters) at 81° West Longitude, and Y origin = 0 feet at 0° Latitude.
Regular blocks are 15,840 feet on a side and contain 5,760 acres. Areas and dimensions of the singular blocks are so indicated.
Basemap from the Esri Coastal layer, accessed 02/04. The green dots adjacent to the coast line represent the baseline points used to determine the offshore boundary.
The United States - Cuba Maritime Boundary depicted here is provisional, pending the entry into force of applicable boundary delimitation agreements and, beyond 200 nautical miles, pending the establishment of United States continental shelf jurisdiction, if any.

The Submerged Lands Act Boundary Limit of '83 Zone, the U.S.-Cuba Provisional Maritime Boundary, and the boundary line between the North Atlantic Ocean and Gulf of Mexico, depicted herein reflect the official federal position for Submerged Lands Act and OCS Lands Act purposes. The areas of the fractional blocks abutting these lines have been determined and are so depicted on the Supplemental Official OCS Block Diagrams (SOCDs). Consult the SOCDs for official descriptions and approval dates.
This revised diagram supersedes protraction diagram DRY TORTUGAS NS 17-10, approved 24 OCT 1978, revised 18 APR 1981, and NG 17-10 revised 20 SEP 1995.
Copies of these diagrams and other information may be obtained at the appropriate BOEM OCS region or from <http://www.boem.gov/Maps-and-GIS/Data/>



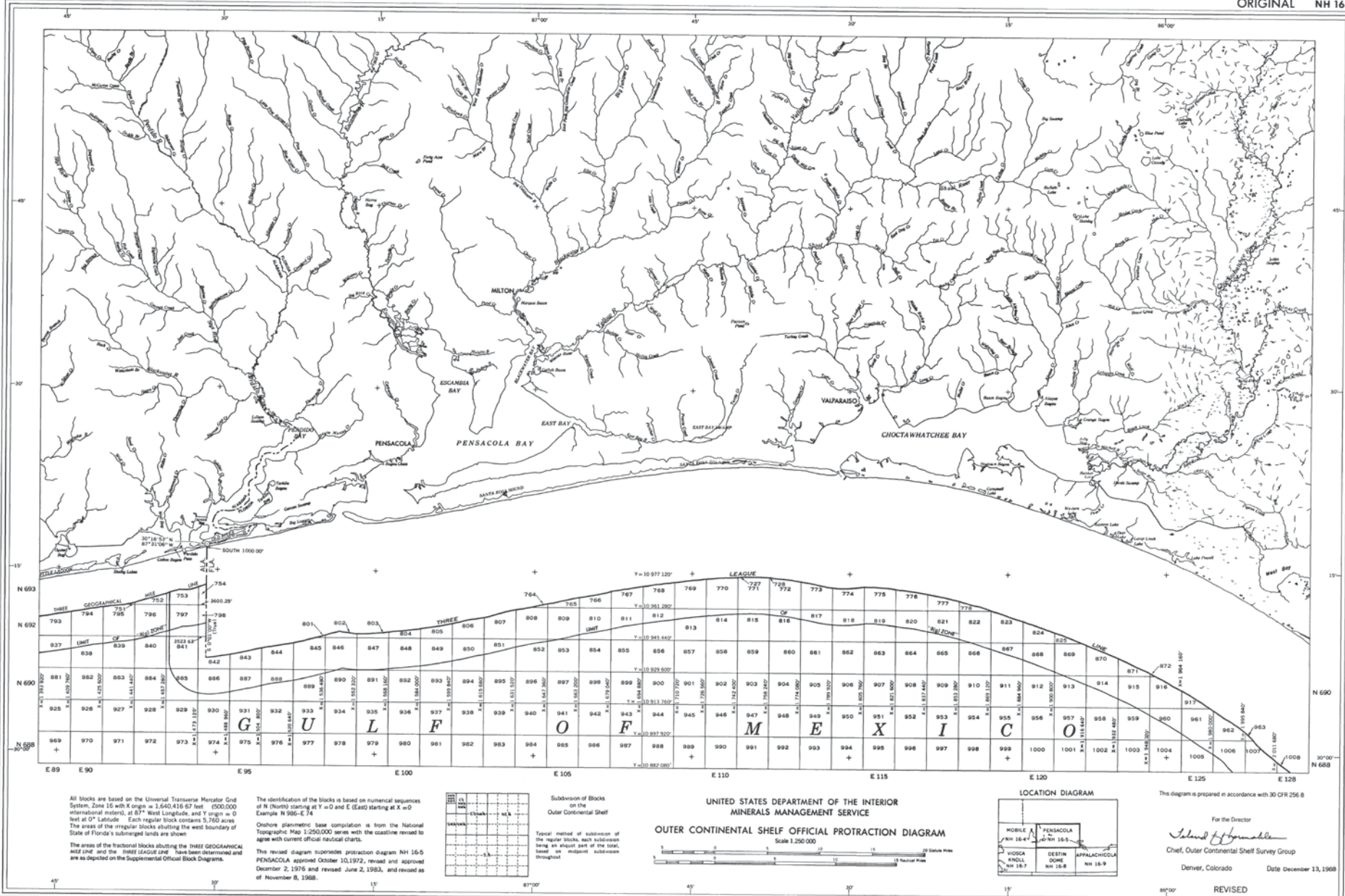
Subdivision of Blocks
as per the
Outer Continental Shelf
Typical method of subdivision of the Outer Continental Shelf and part of the sea, landward of the Submerged Lands Act boundary.



The offshore cadastre used in the North Atlantic Ocean is based on the North American Datum of 1983. Refer to the appropriate Official Protraction Diagrams.

This diagram is prepared in accordance with 30 CFR 556.8
For the Director
Douglas L. Vandegrift
Douglas L. Vandegrift
Chief, Mapping and Boundary Branch, Leasing Division
Herndon, Virginia Date 01-OCT-2014
Revised

Official Protraction Diagram with Esri Oceans Basemap Dry Tortugas, Florida



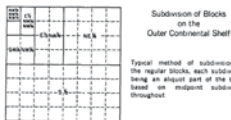
All blocks are based on the Universal Transverse Mercator Grid System, Zone 16 with X origin = 1,640,416.67 feet (500,000 international meters), at 87° West Longitude, and Y origin = 0 feet at 0° Latitude. Each regular block contains 5,760 acres. The areas of the irregular blocks abutting the west boundary of State of Florida's submerged lands are shown.

The areas of the fractional blocks abutting the THREE GEOGRAPHICAL AND LEAGUE LINE have been determined and are as depicted on the Supplemental Official Block Diagrams.

The identification of the blocks is based on numerical sequences of N (North) starting at Y = 0 and E (East) starting at X = 0. Example: N 986-E 74.

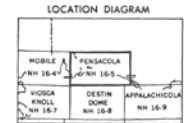
Onshore geologic base compilation is from the National Topographic Map 1:250,000 series with the coastline revised to agree with current official nautical charts.

This revised diagram supersedes protraction diagram NH 16-5 PENSACOLA approved October 10, 1972; revised and approved December 2, 1976 and revised June 2, 1983, and revised as of November 8, 1988.



UNITED STATES DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE
OUTER CONTINENTAL SHELF OFFICIAL PROTRACTION DIAGRAM

Scale 1:250,000

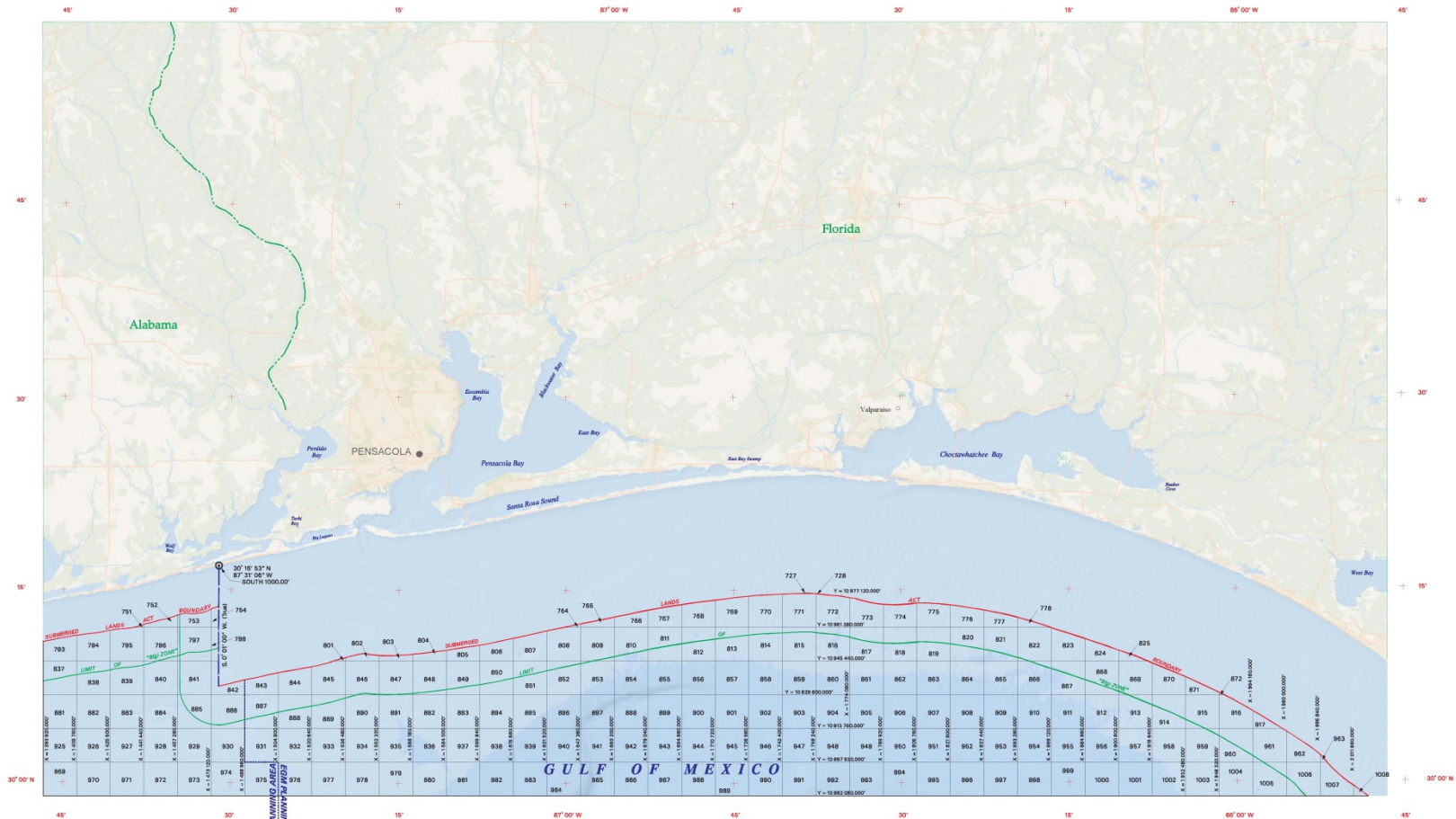


This diagram is prepared in accordance with 30 CFR 256.8

For the Director
Richard J. Gornall
Chief, Outer Continental Shelf Survey Group
Denver, Colorado Date December 13, 1988

REVISED

OPD: Pensacola, Florida - 1988

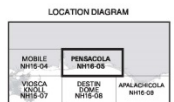
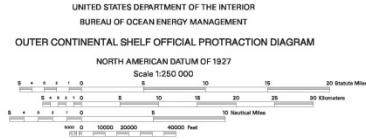


All blocks are based on the Universal Transverse Mercator Grid System, Zone 18, with X origin = 1,940,416.67 feet (590,000 international meters) at 87° West Longitude, and Y origin = 0 feet at 0° Latitude.
Regular blocks are 15,840 feet on a side and contain 5,760 acres.
Basemap from the East Oceans layer, accessed August 2014.

The Submerged Lands Act Boundary and Limit of 18(1)(g) Zone lines depicted hereon reflect the official federal position for Submerged Lands Act and OCS Lands Act purposes. The areas of the fractional blocks abutting these lines have been determined and are as depicted on the Supplemental Official OCS Block Diagrams (SOBDs). Consult the SOBDs for official descriptions and approval dates.
Copies of these diagrams and other information may be obtained at the appropriate BOEM OCS region or from <http://www.boem.gov/Maps-and-GIS/Data/>

Block No.	Block No.	Block No.	Block No.
793	794	795	796
797	798	799	800
801	802	803	804
805	806	807	808
809	810	811	812
813	814	815	816
817	818	819	820
821	822	823	824
825	826	827	828
829	830	831	832
833	834	835	836
837	838	839	840
841	842	843	844
845	846	847	848
849	850	851	852
853	854	855	856
857	858	859	860
861	862	863	864
865	866	867	868
869	870	871	872
873	874	875	876
877	878	879	880
881	882	883	884
885	886	887	888
889	890	891	892
893	894	895	896
897	898	899	900
901	902	903	904
905	906	907	908
909	910	911	912
913	914	915	916
917	918	919	920
921	922	923	924
925	926	927	928
929	930	931	932
933	934	935	936
937	938	939	940
941	942	943	944
945	946	947	948
949	950	951	952
953	954	955	956
957	958	959	960
961	962	963	964
965	966	967	968
969	970	971	972
973	974	975	976
977	978	979	980
981	982	983	984
985	986	987	988
989	990	991	992
993	994	995	996
997	998	999	1000
1001	1002	1003	1004
1005	1006	1007	1008

Subdivision of Blocks on the Outer Continental Shelf
Typical method of subdivision of the Outer Blocks and part of the new Lands Act blocks are shown throughout.



This diagram is prepared in accordance with 30 CFR 556.6
For the Director
Douglas L. Vandegrift
Douglas L. Vandegrift
Chief, Mapping and Boundary Branch, Leasing Division
Hemlock, Virginia
Date: 01-OCT-2014
Revised

OPD: Pensacola, Florida - 2015

Contact:

Doug.Vandegraft@boem.gov

(703) 787-1312

<http://www.boem.gov/Maps-and-GIS-Data/>

<http://marinecadastre.gov/>