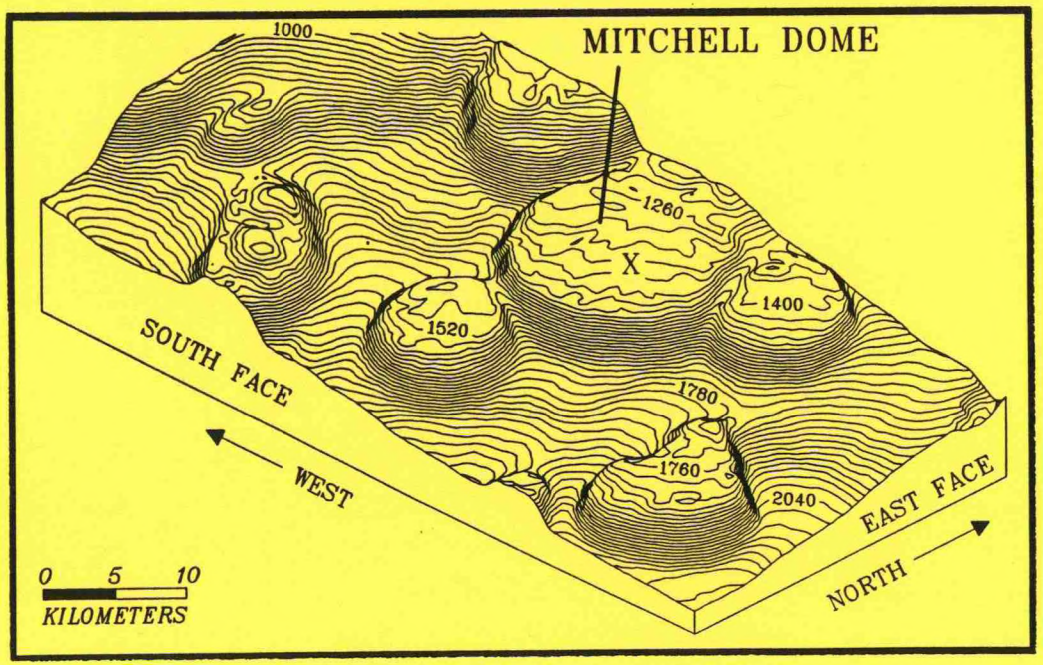
ATLAS OF NOAA'S MULTIBEAM SOUNDING DATA IN THE GULF OF MEXICO EXCLUSIVE ECONOMIC ZONE

Volume 1

A Guide To Bathymetric Maps and Digital Data



U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
Coast & Geodetic Survey
October 1992

COVER: Three-dimensional plot of seafloor showing salt domes close to Mississippi delta. Stacked contour lines with a contour interval of 20 m are used for depiction. These domes are diapiric structures composed of tabular salt overlain by a veneer of sediment. Jackson and others (1990) have shown that these features form a salt canopy almost identical in shape and size to those found in the Great Kavir region of north central Iran. Also of interest on the cover is the location of a recent major, oil and gas discovery indicated by an X on Mitchell Dome (Simmons, 1991). See page A40 for exact locations of domes.

ACKNOWLEDGMENTS

This atlas was prepared by Paul Grim of the Ocean Mapping Section (OMS) of the Coast and Geodetic Survey. Richard Perry, Jerry Mills, Charles Gross, and Millington Lockwood all of NOAA and Bonnie McGregor of the U.S. Geological Survey made useful comments on the atlas. Jennifer Pierce helped with editing the atlas images on a microcomputer.

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Copies of the atlas are free of charge from the Ocean Mapping Section (address given in the text), while supplies last.

TABLE OF CONTENTS

[* printed map at scale of 1:100,000 available while supplies last - data for all maps available in a digital format - see text]

INTRODUCTION

In response to a 1983 presidential proclamation establishing the U.S. Exclusive Economic Zone (EEZ), which extends 200 nautical miles offshore of the United States and U.S. trust territories, NOAA's Coast and Geodetic Survey commenced surveying this zone with multibeam swath sonar techniques. The resulting maps and data are needed in this largely unexplored area for a variety of purposes. These include the conservation and management of living and non-living resources and for various types of planning purposes. The data are useful for the interpretation of geologic structures and processes, which can help the U.S. in such diverse undertakings as the exploration for oil and gas and in understanding the dispersal of pollutants along the seafloor.

This atlas summarizes the results of NOAA's multibeam mapping surveys in the U.S. Gulf of Mexico EEZ through 1991 (Figure 1). All data were collected by NOAA ships MT. MITCHELL and WHITING starting in 1988. The total number of survey days shown in this figure is about 700, corresponding to just over 100,000 nautical miles of trackline. Additional data will be available in the future as mapping continues.

The atlas was developed to: (1) provide a source of bathymetric data for a wide range of users; (2) give an index to other NOAA bathymetric products such as more detailed maps, grids, and "full resolution" data, and; (3) demonstrate how contour maps and three-dimensional plots can be created by using gridded bathymetric data as input to widely available desktop computers and printers.

This atlas does not cover the details of NOAA's EEZ program or the methods of collecting and processing the data. Such information can be found in many of the publications listed under "REFERENCES" and in the references contained in these publications.

AVAILABILITY OF NOAA EEZ MAPS AND DIGITAL DATA IN GULF OF MEXICO

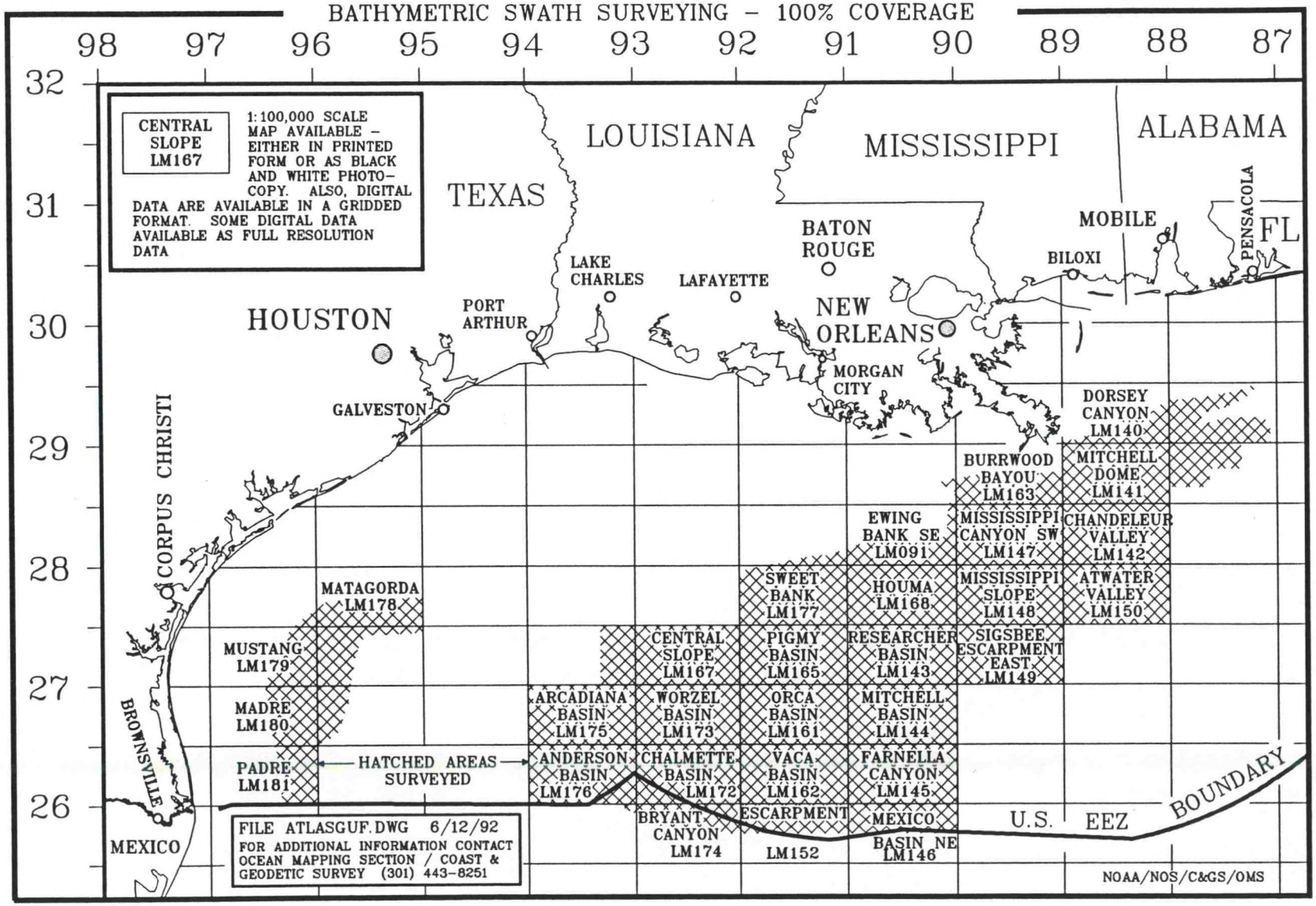

FIGURE 1

MAP AREAS AND SOUNDING CHARACTERISTICS

NOAA's EEZ multibeam surveys are conducted from the 150 m depth contour seaward to the limit of the EEZ boundary. In some cases the surveys extend beyond this boundary in order to map areas judged to be of special environmental or geological interest (e.g., the Sigsbee Escarpment in the central Gulf of Mexico). In contrast to traditional survey techniques, multibeam surveys cover 100% of the seafloor.

A standard map area, measuring 1 degree of longitude by 0.5 degrees of latitude, typically contains between 5 and 10 million discrete soundings. The actual number is mainly a function of water depth with more soundings being obtained in shallower waters. Each sounding has a latitude, longitude, and depth associated with it. The positional accuracy of a sounding is within 50 m of its true location and the error in depth is less than one percent of true water depth. This complete set of data is called full resolution data and is currently disseminated in a binary format (not ASCII or text format) on magnetic tape.

The full resolution data are processed to produce a regular depth grid (matrix) typically measuring 400 columns by 230 rows for a map area. It is used to generate contours for 1:100,000 scale maps. This depth grid (generally referred to as the 250 meter UTM grid) also is used to produce a second, less dense grid, called the geographic grid.

The depths in the geographic grid have a grid spacing of 15 seconds in both the latitude and longitude directions. It has exactly 241 columns and 121 rows. All contour maps and three-dimensional images, shown in Appendix A of this atlas, were made on a microcomputer with a laser printer using the geographic grids.

Both types of grids, for a single map area, are available in an ASCII format on a single high density PC disk (i.e., on a 3.5 inch diskette with up to 1.44 MB of data or on a 5.25 inch floppy disk with up to 1.2 MB of data). These grids, as well as the full resolution data, can be obtained from NOAA's National Geophysical Data Center in Boulder, Colorado.

AVAILABILITY OF MAPS AND DATA

Printed, multicolored maps derived from the relatively detailed 250 meter UTM grid at a scale of 1:100,000 with a contour interval of 20 m are available for some map areas. Digital gridded data for all 29 Gulf of Mexico map areas shown in this atlas and some full resolution data are now available to the public. The NOAA sources for maps and digital data are as follows:

MAPS

Printed maps (those marked with an asterisk in the Table of Contents) are available from the National Ocean Service. The cost is $10 per map. Checks or money orders should be made payable to U.S. DEPARTMENT OF COMMERCE, NOAA. Specify the map name and the map "LM" number (e.g., Mitchell Dome Map - LM141) and order from:

Distribution Branch, N/CG33
Coast and Geodetic Survey
NOAA / National Ocean Service
6501 Lafayette Ave.
Riverdale, MD 20737

Telephone: (301) 436-6990

The maps that have not been printed (i.e., do not have an asterisk next to their name in the Table of Contents) are available in a black and white photocopy format from the National Geophysical Data Center (NGDC) at the address given below. NGDC should be contacted for details on obtaining these maps.

DIGITAL DATA

Gridded data (both the 250 meter grid and the 15 second grid) for the 29 Gulf of Mexico map areas are available from NGDC. The full resolution data are currently being sent to NGDC from the National Ocean Service and all data will be available to the public in the near future. The NGDC address is:

Marine Geology and Geophysics Division
NOAA / National Geophysical Data Center
Mail Code E/CG3
325 Broadway
Boulder, CO 80303

Telephone (303) 497-6338

Contact NGDC for details on payment, data formats, and availability of gridded data and full resolution data for the Gulf of Mexico and all other parts of the U.S. EEZ.

GENERAL INFORMATION

For questions on availability of multibeam data not resolved by the above sources, contact:

Ocean Mapping Section
NOAA / National Ocean Service
Code N/CG224
6015 Executive Blvd.
Rockville, MD 20852

Telephone (303) 443-8251

DISCUSSION OF CONTOUR MAPS AND THREE-DIMENSIONAL PLOTS

Appendix A shows 29 page-size contour maps and corresponding three-dimensional maps. These were generated and edited with commercial software packages, SURFER® (Golden Software, Golden, CO) and AUTOCAD® (AutoDesk, Inc, Sausalito, CA) using the geographic grid. See Grim (1990) for a description of the algorithm used to derive the geographic grid from the 250 meter UTM grid. All processing was done on a 80386 microcomputer with output directed to a laser printer with a resolution of 300 dots per inch.

The maps have a contour interval of 50 m with alternating solid and dashed contour lines. Each map is a rectangle with the distance between longitude limits (1 degree) being

9 inches and the distance between latitude limits (0.5 degrees) being 5.049 inches. The maps were made in this manner so they can be photocopied and joined together exactly to create larger map areas. The three-dimensional plots also can be cut along the plot limits and joined together, to form larger plots. The projection of the contour maps approximates a Mercator projection but deviates slightly with increasing distance north and south of 27°N. The scale of the maps is approximately 1:433,000.

Three of the map areas in this atlas have a small amount of data extending somewhat beyond the evenly divisible latitude or longitude limits of a standard 1 degree by 0.5 degree map. These data are not shown in the atlas. The three maps are the Anderson Basin Map, the Burrwood Bayou Map, and the Matagorda Map. However, these data are contained in the grids available from NGDC.

Most maps and three-dimensional plots contain named features. Several were existing names, some were suggested by a group of scientists meeting at Louisiana State University in March, 1991, but most of the names originated with NOAA. Of these three categories, the U.S. Board on Geographic Names (BGN) had previously approved the existing names and the latter two categories were submitted by NOAA to BGN and approved. These two categories are labeled "NEW NOAA/NOS NAMES" on the contour maps.

All three-dimensional plots are viewed from the southeast looking towards the northwest using an orthogonal projection and an elevation above the horizon of 30°. The vertical exaggeration of each plot is 10 to 1. The surface of each plot is defined by stacked contour lines with a spacing of 20 m. In areas with gentle slopes, where the lines have a relatively wide separation, the lines can generally be correlated with the 20 meter contour lines shown on the 1:100,000 scale maps. Note that due to the extreme steepness of some areas of the seafloor, parts of some features are invisible on the three-dimensional plot although they are shown fully on the corresponding contour map. For example, on page A49 the bottom of Pigmy Basin cannot be seen.

OTHER GULF OF MEXICO MAPS AND DATA

The maps shown in this atlas are based only on the multibeam data collected as part of the NOAA EEZ mapping program. No other previously obtained sounding data have been incorporated into NOAA's EEZ sounding data. However, other sounding data have been collected by various sources over many years and used to make maps, generally using hand contouring techniques. Such maps are normally based on single, wide-beam, sounding systems having relatively low resolutions compared to NOAA's narrow beam echo sounding systems used to collect the EEZ multibeam soundings. In addition, these older data generally do not have the positional and depth accuracy or total seafloor coverage of the NOAA EEZ soundings and consequently do not show many small features and the detailed dimensions of larger features.

Many of these maps, having various scales, were produced with such traditional mapping techniques by NOAA. Most of the NOAA maps include areas shoaler than 150 m. Such relatively shallow areas are not covered by NOAA's EEZ multibeam surveys. The scales for these NOAA maps in the Gulf of Mexico range from 1:24,000 (where land areas are included) to 1:1,000,000 for the entire northern part of the Gulf of Mexico.

A recent paper by Bryant and others (1990) presents a series of maps based on single beam sounding data. These maps cover most of the areas shown in this atlas. The agreement between the two sets of maps is generally good for most of the larger features and some of the smaller features.

The most comprehensive survey data that complement NOAA's EEZ multibeam effort in the Gulf of Mexico are the side-scan data collected and published by the U.S. Geological Survey (EEZ-Scan 85 Scientific Staff, 1987). This USGS effort, like the NOAA EEZ multibeam surveying, was in response to the presidential proclamation establishing the U.S. EEZ. The side-scan data are collected by a system called GLORIA (for Geological LOng-Range Inclined Asdic). GLORIA data produce images based on reflectively characteristics of the seafloor. These images, collected and processed digitally, allow the definition of seafloor morphologic

features (Hill and McGregor, 1988). They can be combined in a computer with NOAA's digital EEZ multibeam bathymetric data.

Close cooperation, including data exchange, between the NOAA and USGS efforts in the EEZ, is maintained through JOMAR (Joint Office on MApping and Research). This office serves as a focal point for coordination and information exchange between the two agencies in the area of marine mapping.

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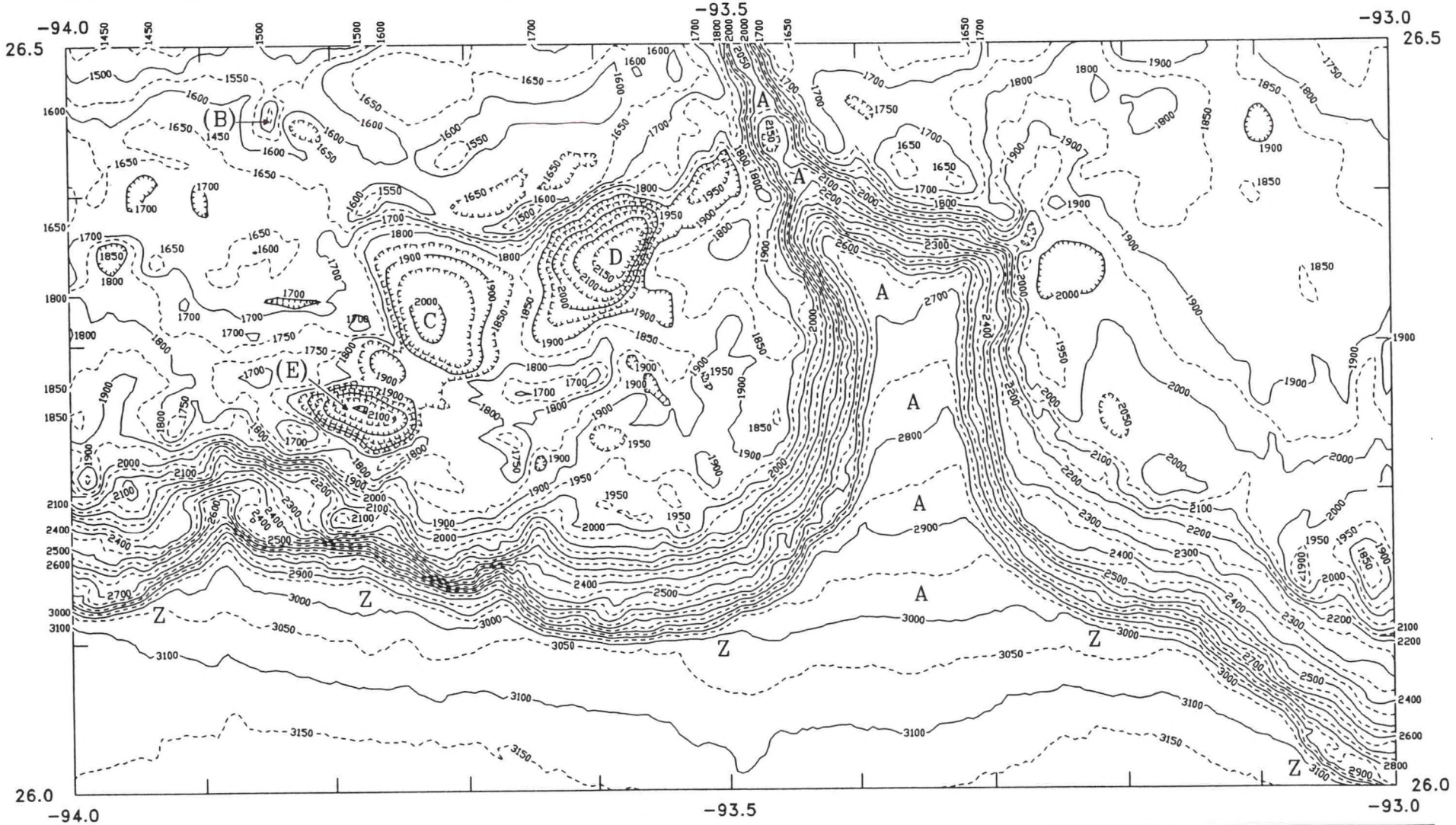
APPENDIX A

MAPS AND PLOTS

ANDERSON BASIN MAP

A2

GULF OF MEXICO



FILE ANDSONTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY

DEPTHS IN METERS

RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES A KEATHLEY CANYON
Z SIGSBEE ESCARPMENT

NEW NOAA/NOS NAMES B KUPFER MOUND C ANDERSON BASIN
D WALL BASIN E DURHAM BASIN

MAP DESIGNATION

LM176

KILOMETERS

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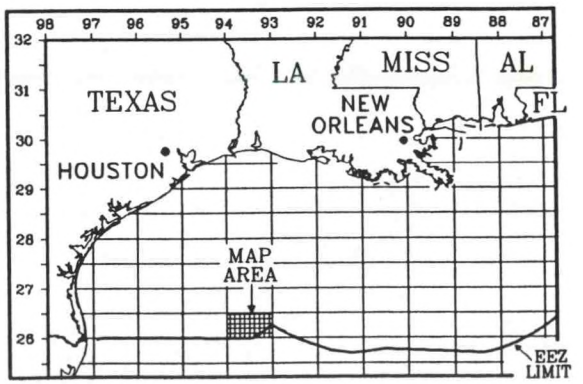
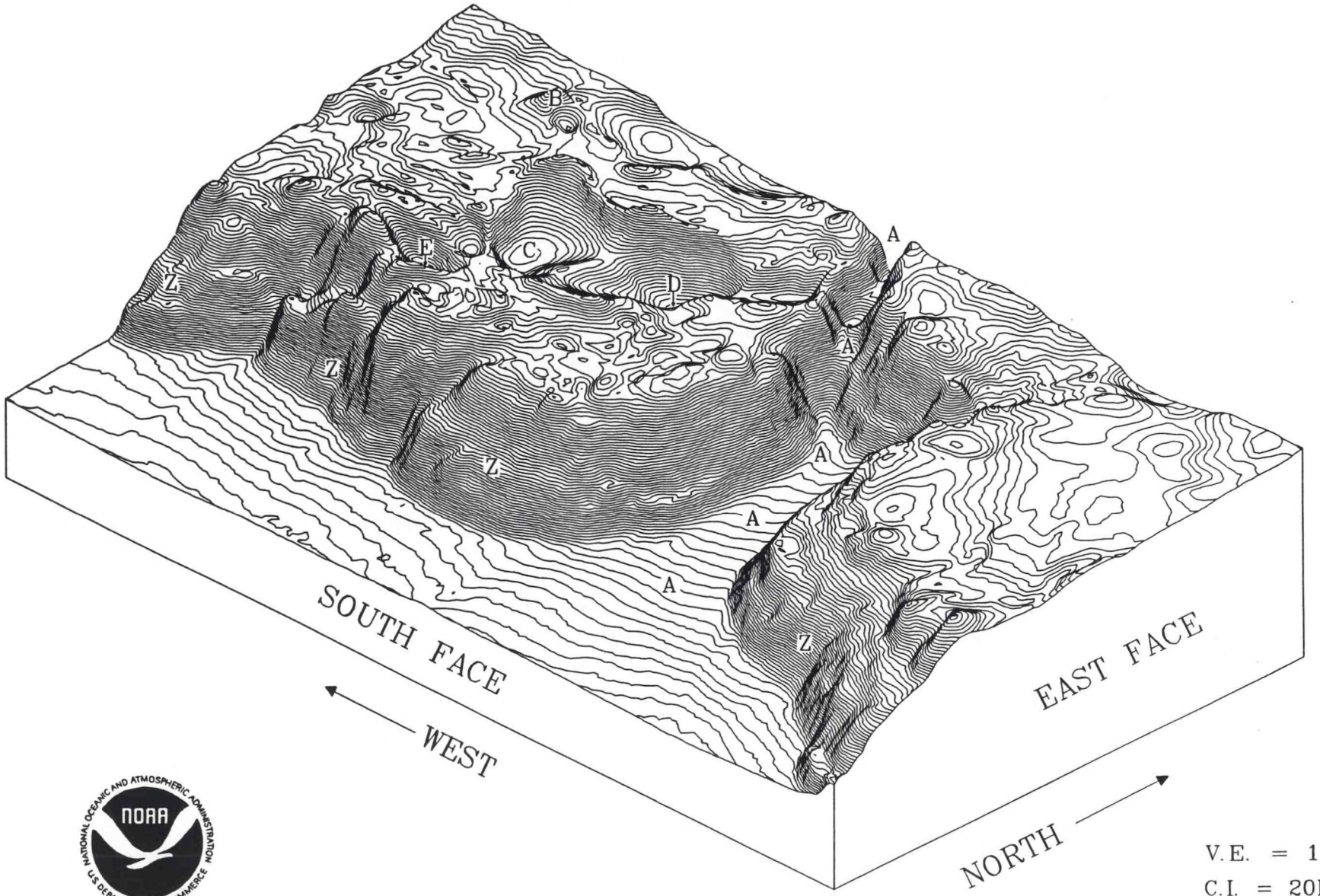


ANDERSON BASIN MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

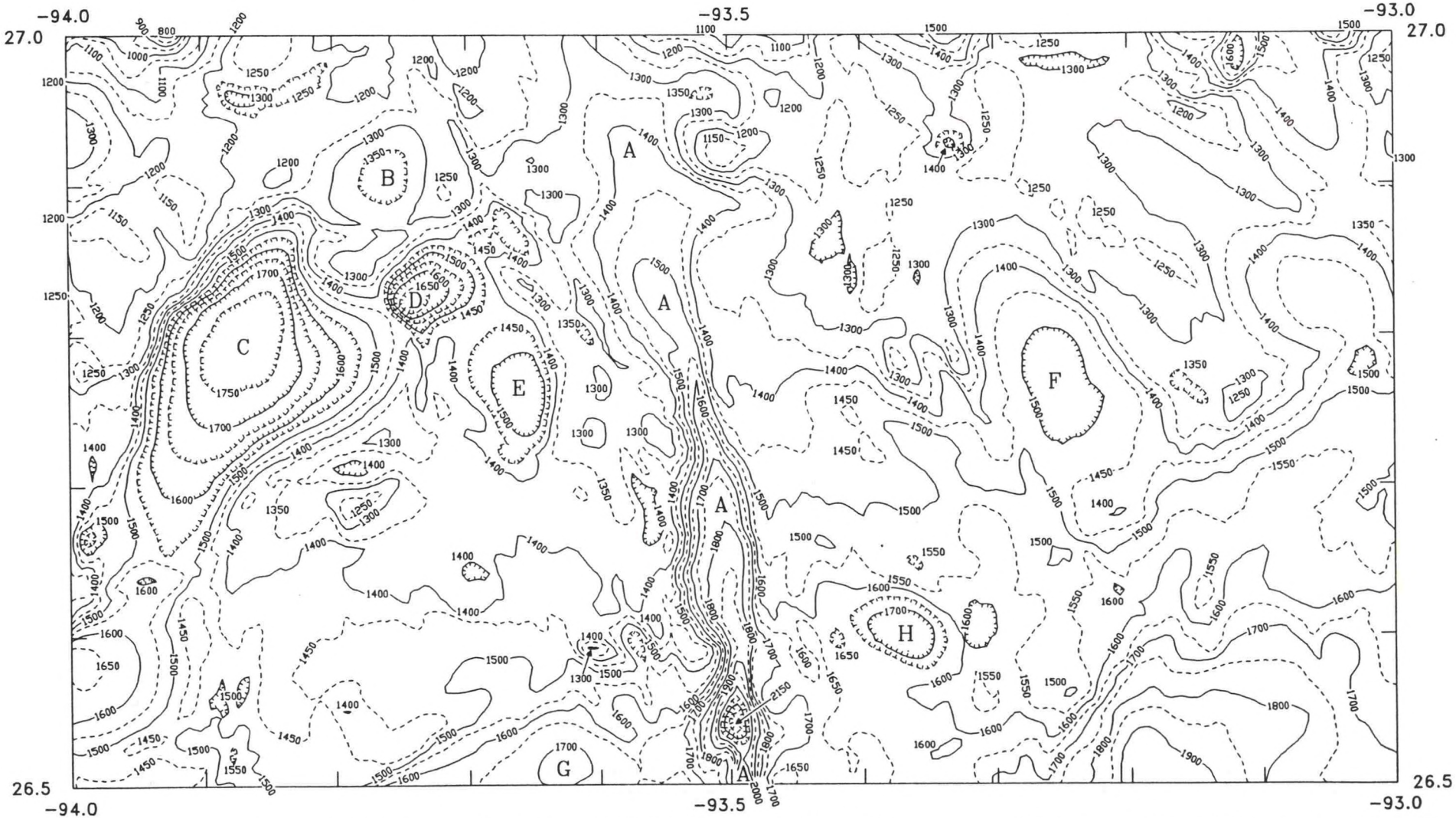
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE ANDSONSA.DWG

ARCADIANA BASIN MAP A4 GULF OF MEXICO



FILE ARCADATA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES A KEATHLEY CANYON

NEW NOAA/NOS NAMES B EUREKA BASIN C GARRISON BASIN
D COLEMAN BASIN E PELICAN BASIN F ARCADIANA BASIN
G MOORE BASIN H CREOLE BASIN

MAP DESIGNATION

LM175

K I L O M E T E R S

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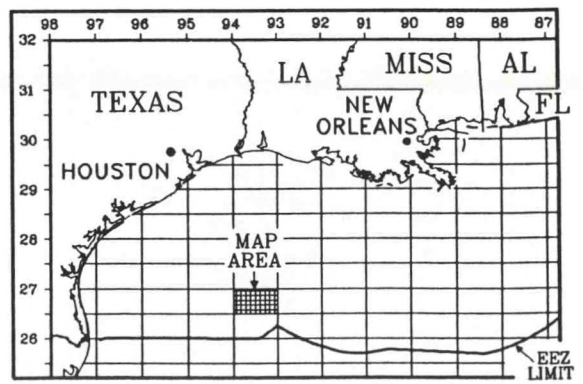
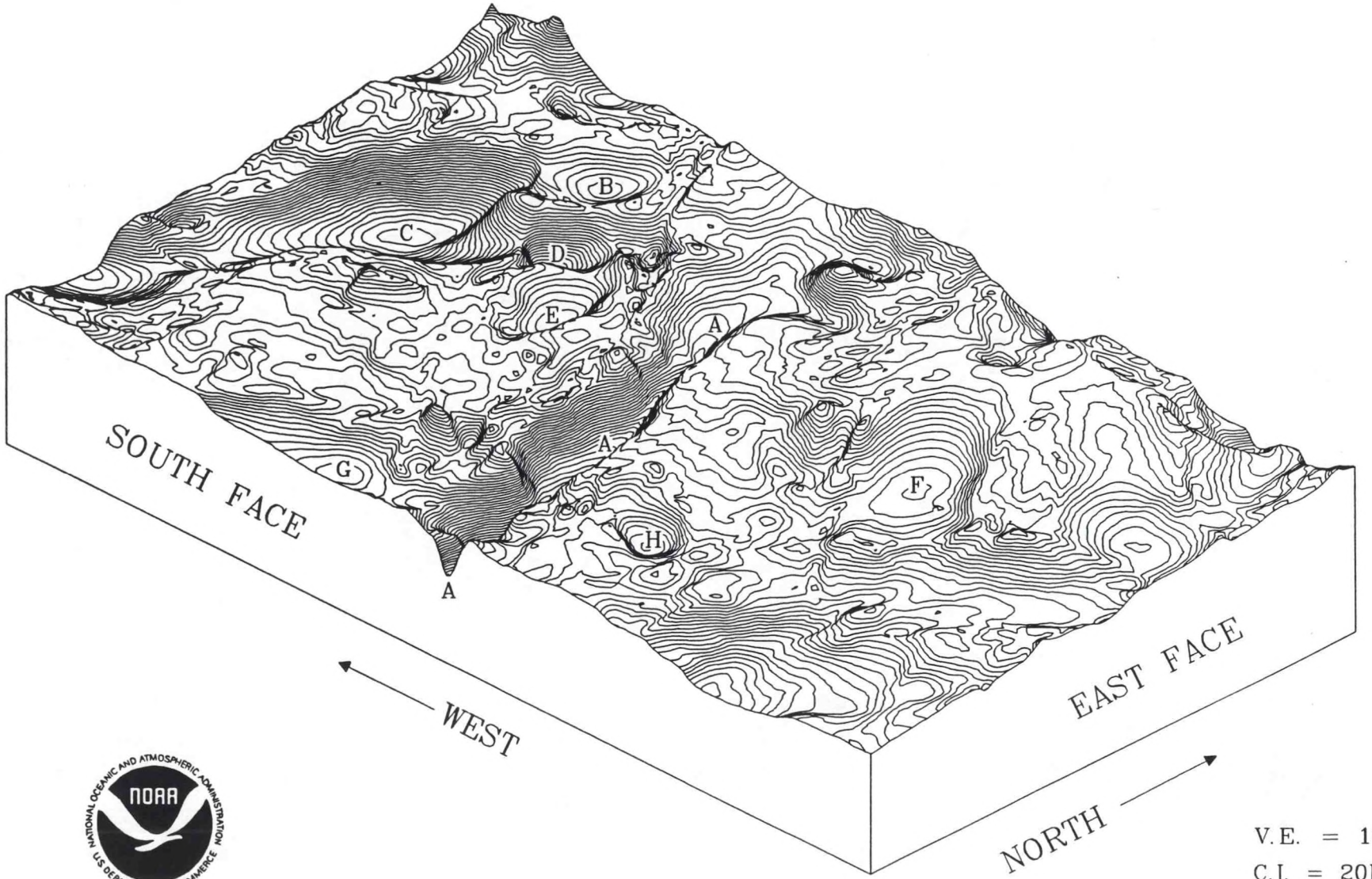


ARCADIANA BASIN MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE

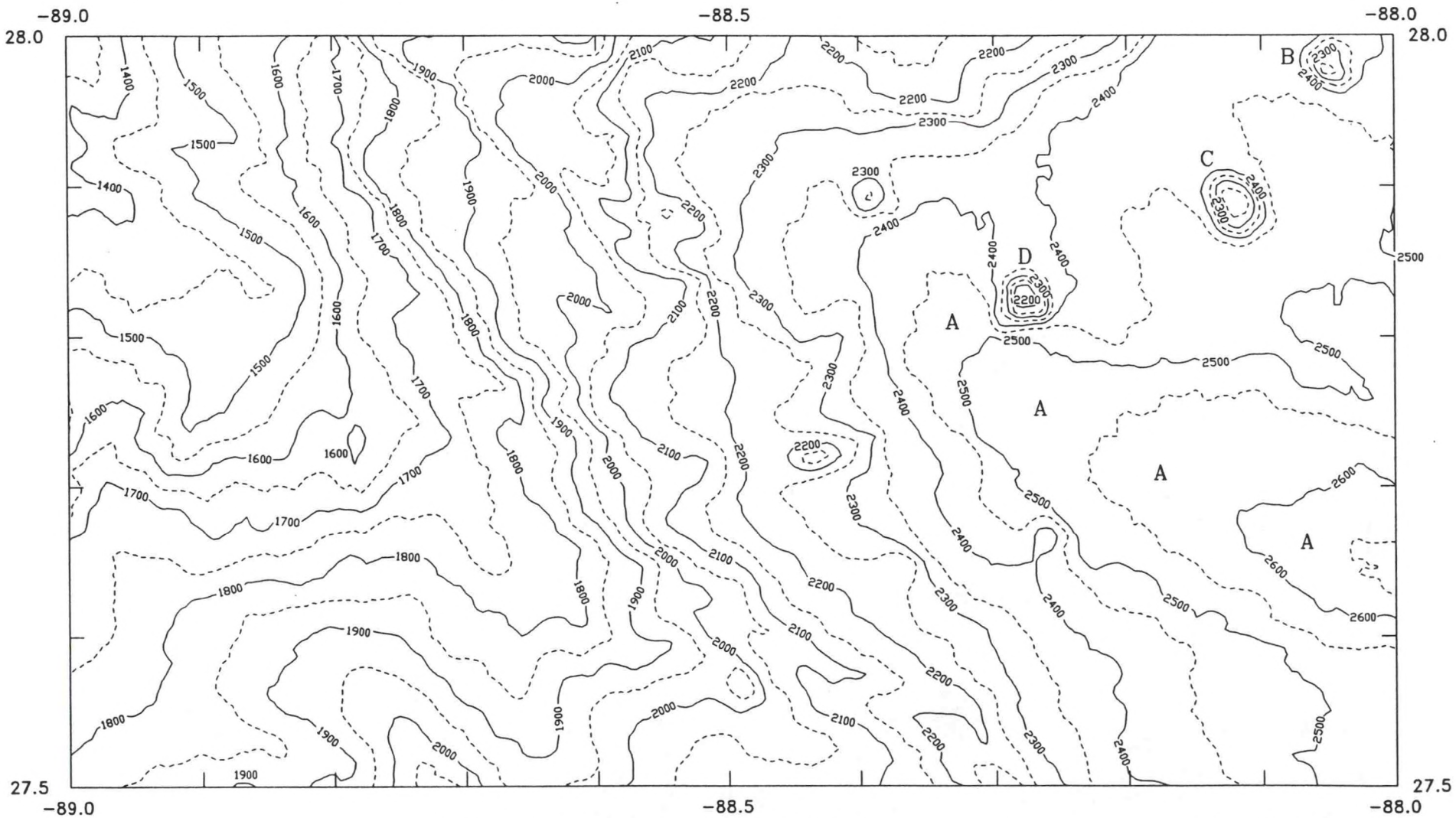


NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

FILE ARCADASA.DWG

V.E. = 10
C.I. = 20M
ELEV. = 30°

ATWATER VALLEY MAP A6 GULF OF MEXICO



FILE ATWVALTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAME A ATWATER VALLEY

NEW NOAA/NOS NAMES B HOG MOUND C BIRD MOUND
D SABLE MOUND

MAP DESIGNATION

LM150

K I L O M E T E R S

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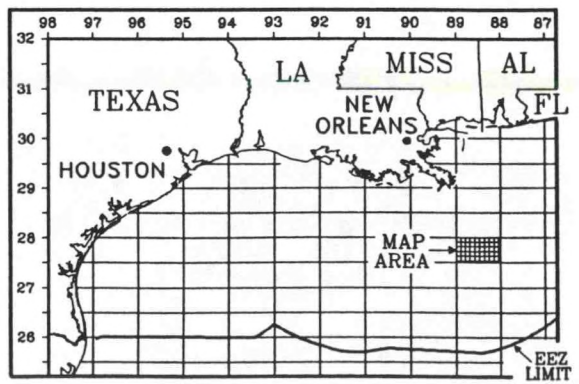
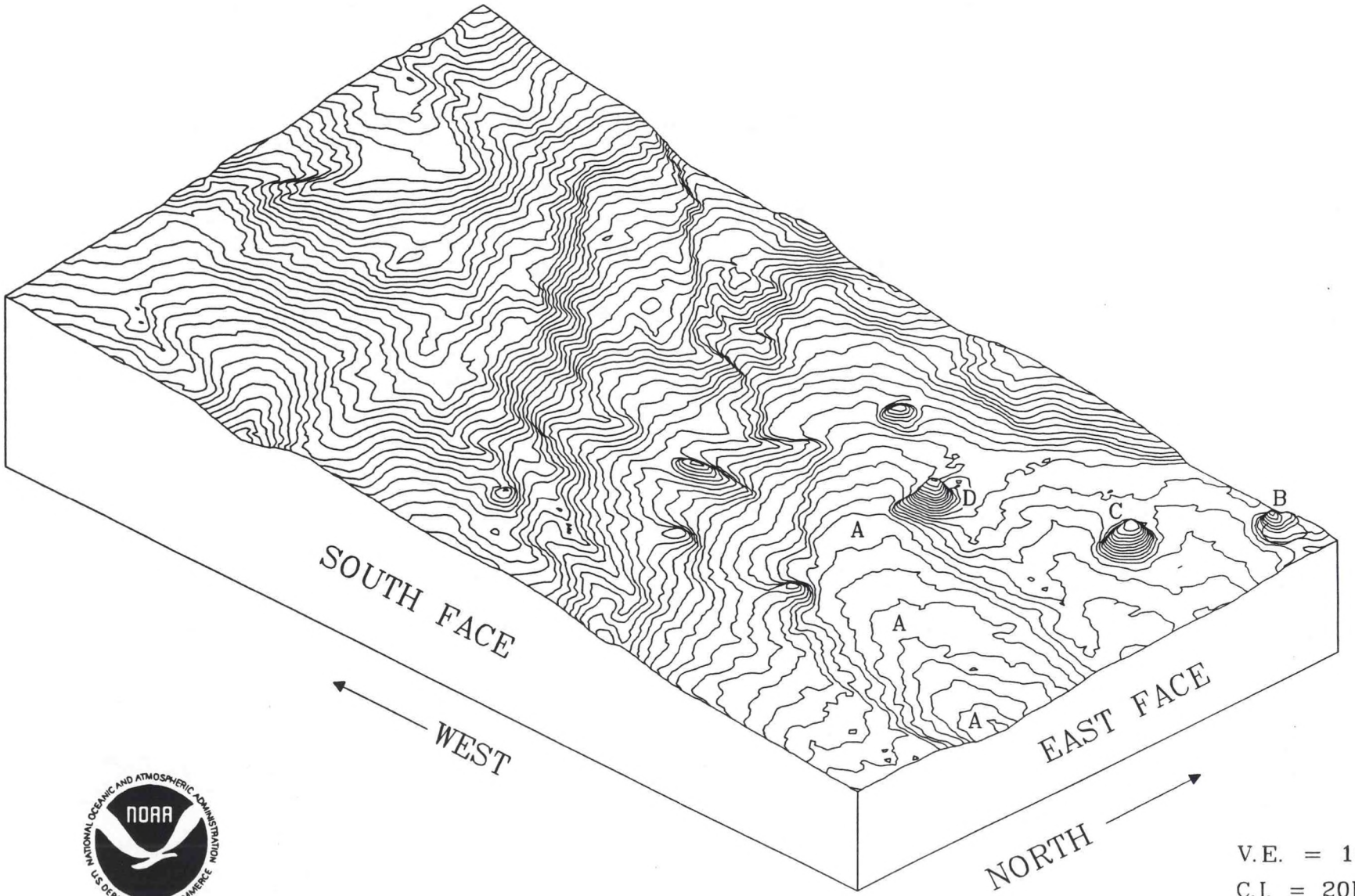


ATWATER VALLEY MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



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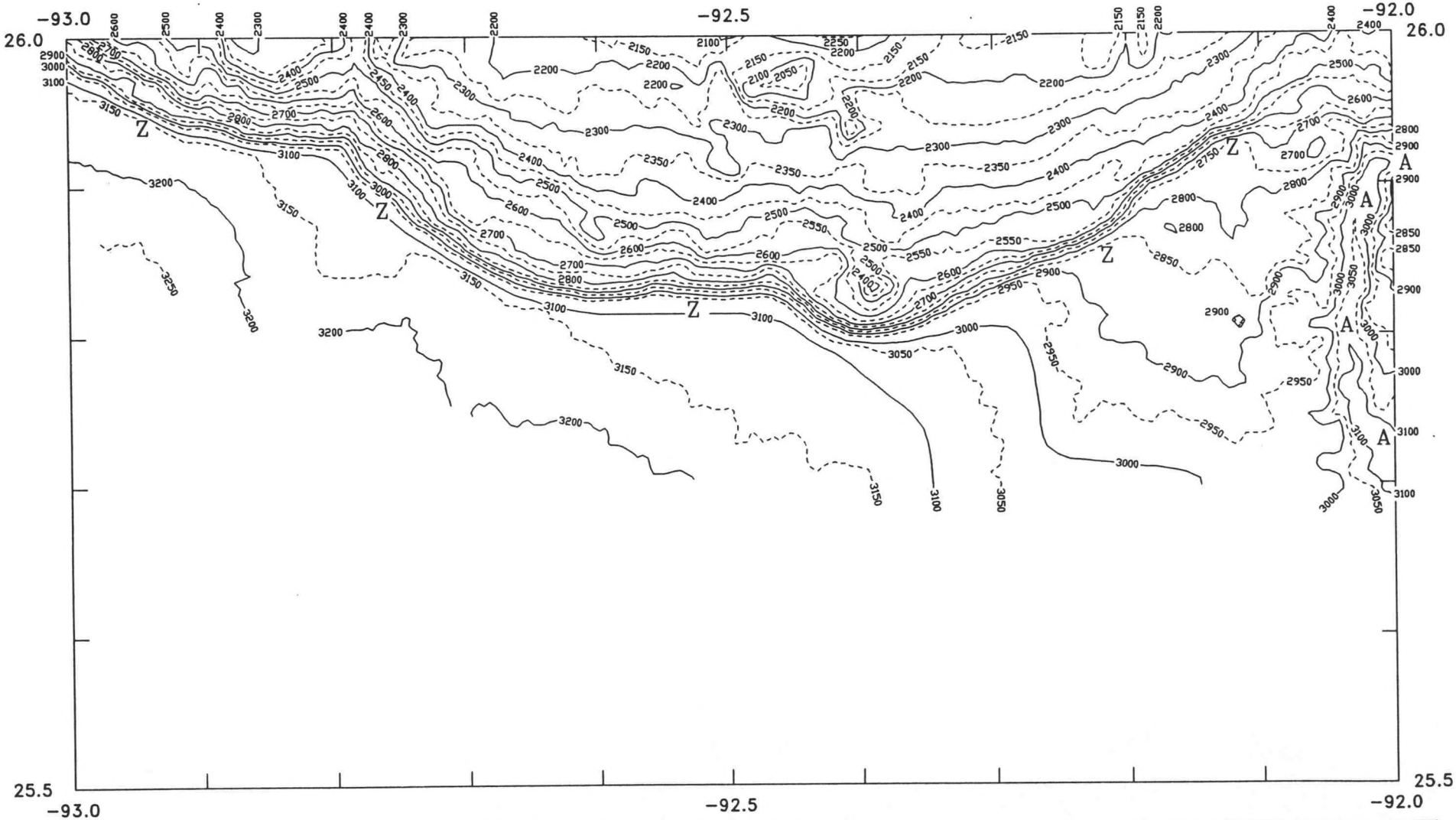
ELEV. = 30°

FILE ATWVALSA.DWG

BRYANT CANYON MAP A8 GULF OF MEXICO



FILE BRYANTTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAME Z SIGSBEE ESCARPMENT

NEW NOAA/NOS NAME A BRYANT CANYON

MAP DESIGNATION

LM174

K I L O M E T E R S

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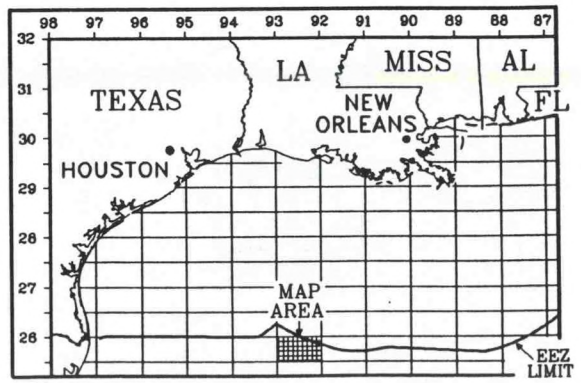
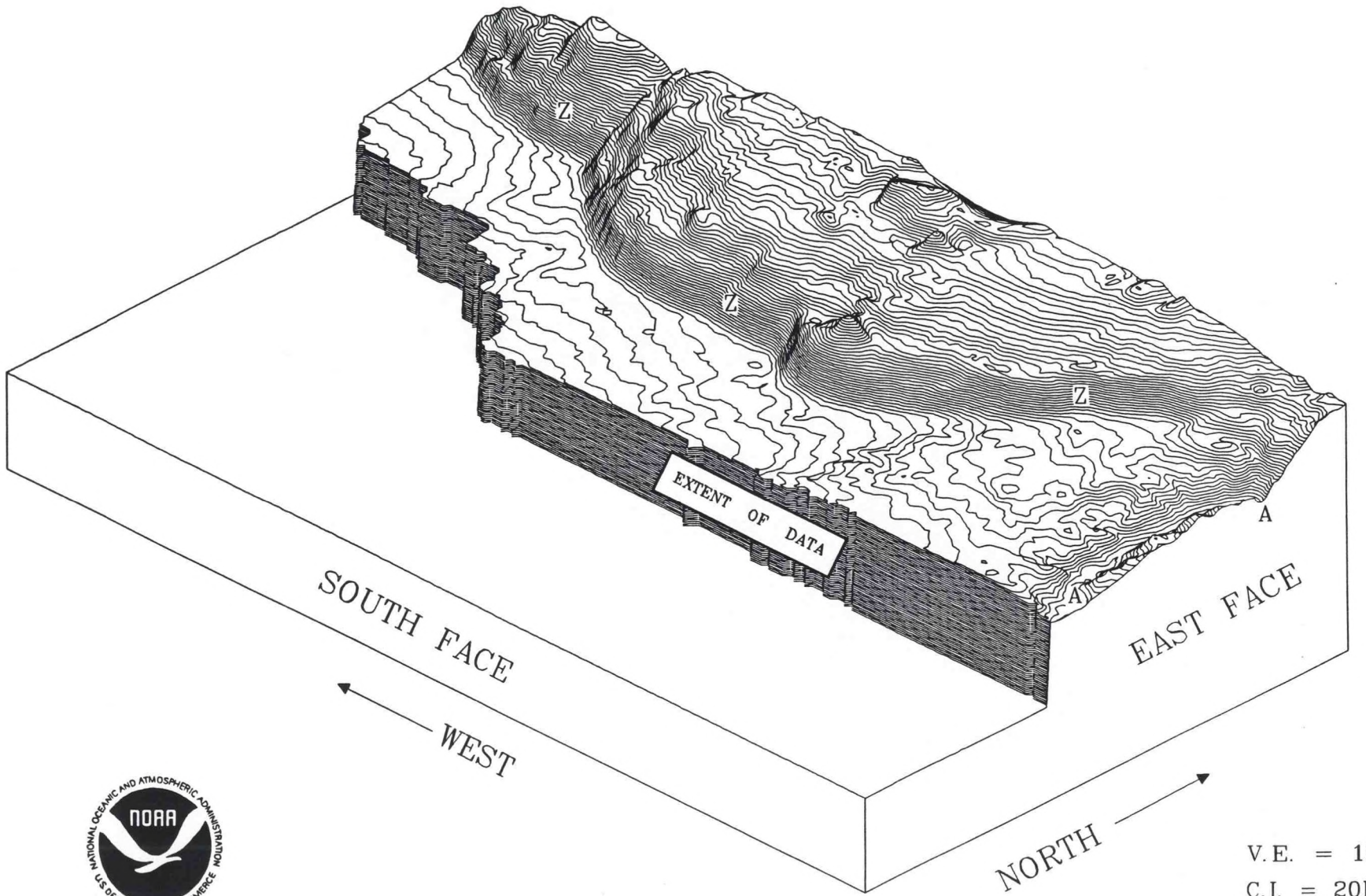


BRYANT CANYON MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



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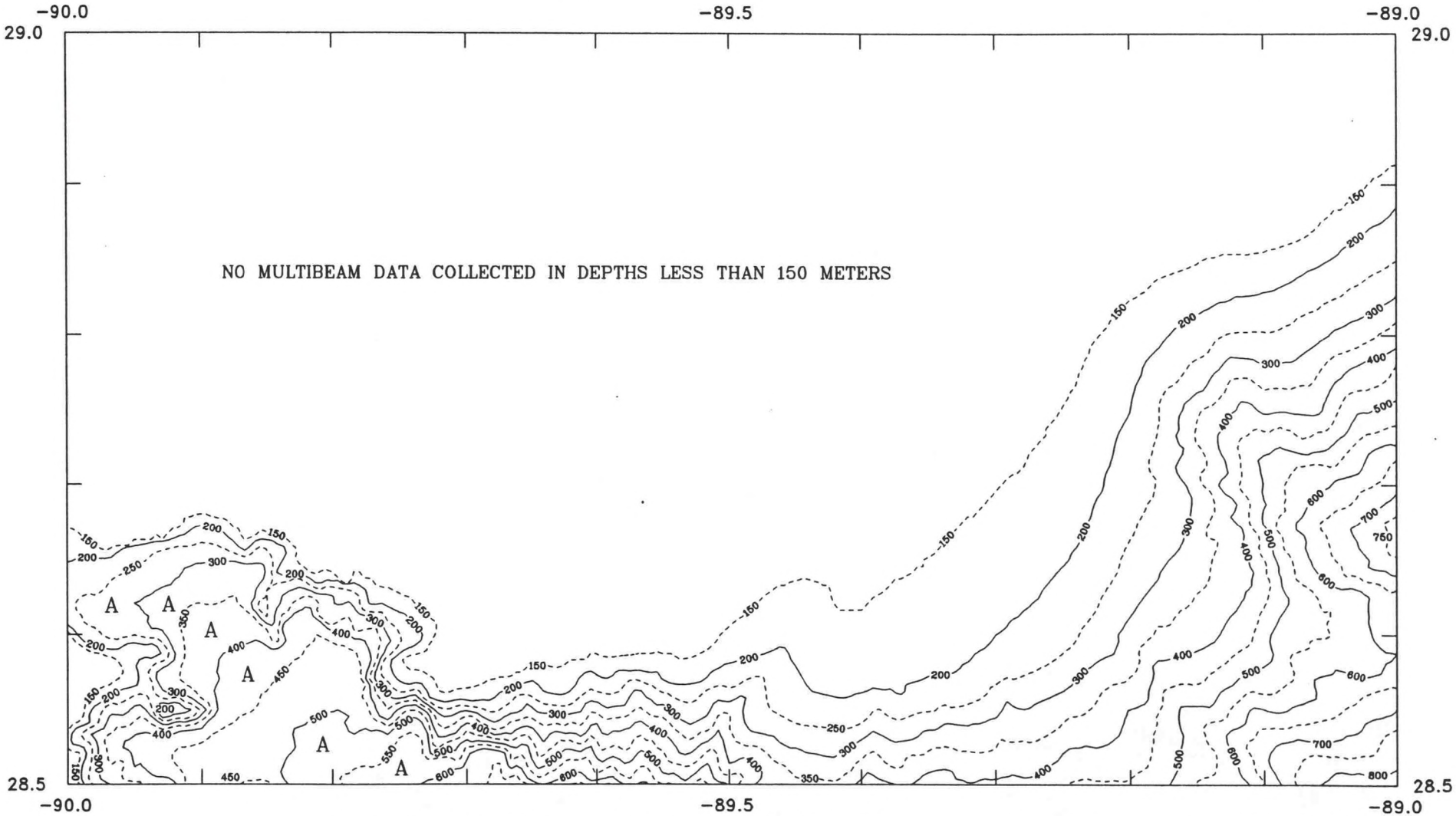
C.I. = 20M
ELEV. = 30°

FILE BRYANTSA.DWG

BURRWOOD BAYOU MAP A10 GULF OF MEXICO



FILE BURBA1TA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES A MISSISSIPPI CANYON

NEW NOAA/NOS NAMES NONE

MAP DESIGNATION

LM163

K I L O M E T E R S

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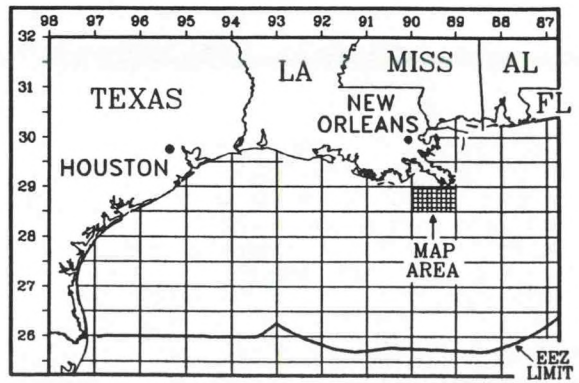
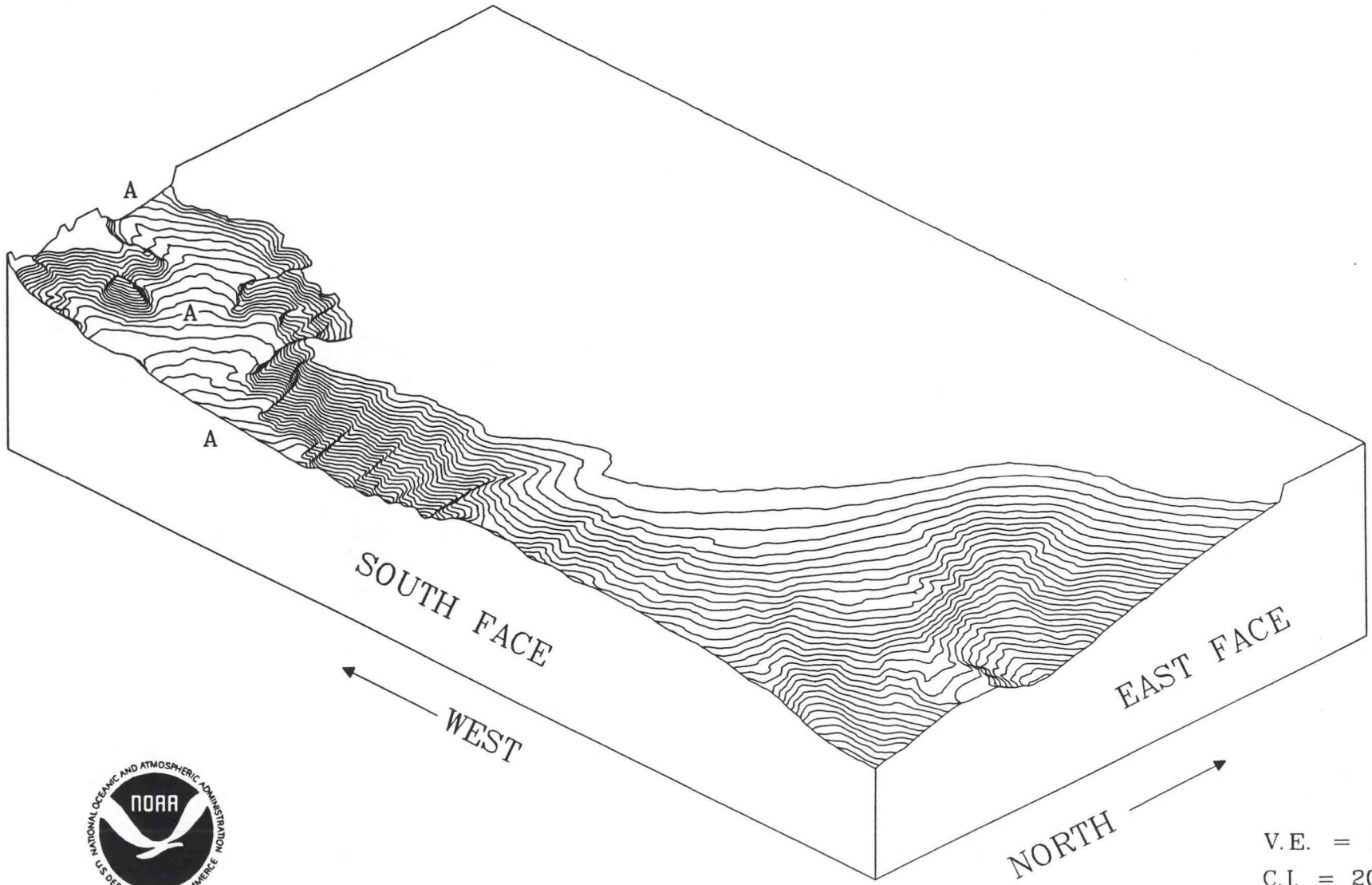


BURRWOOD BAYOU MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



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ELEV. = 30'

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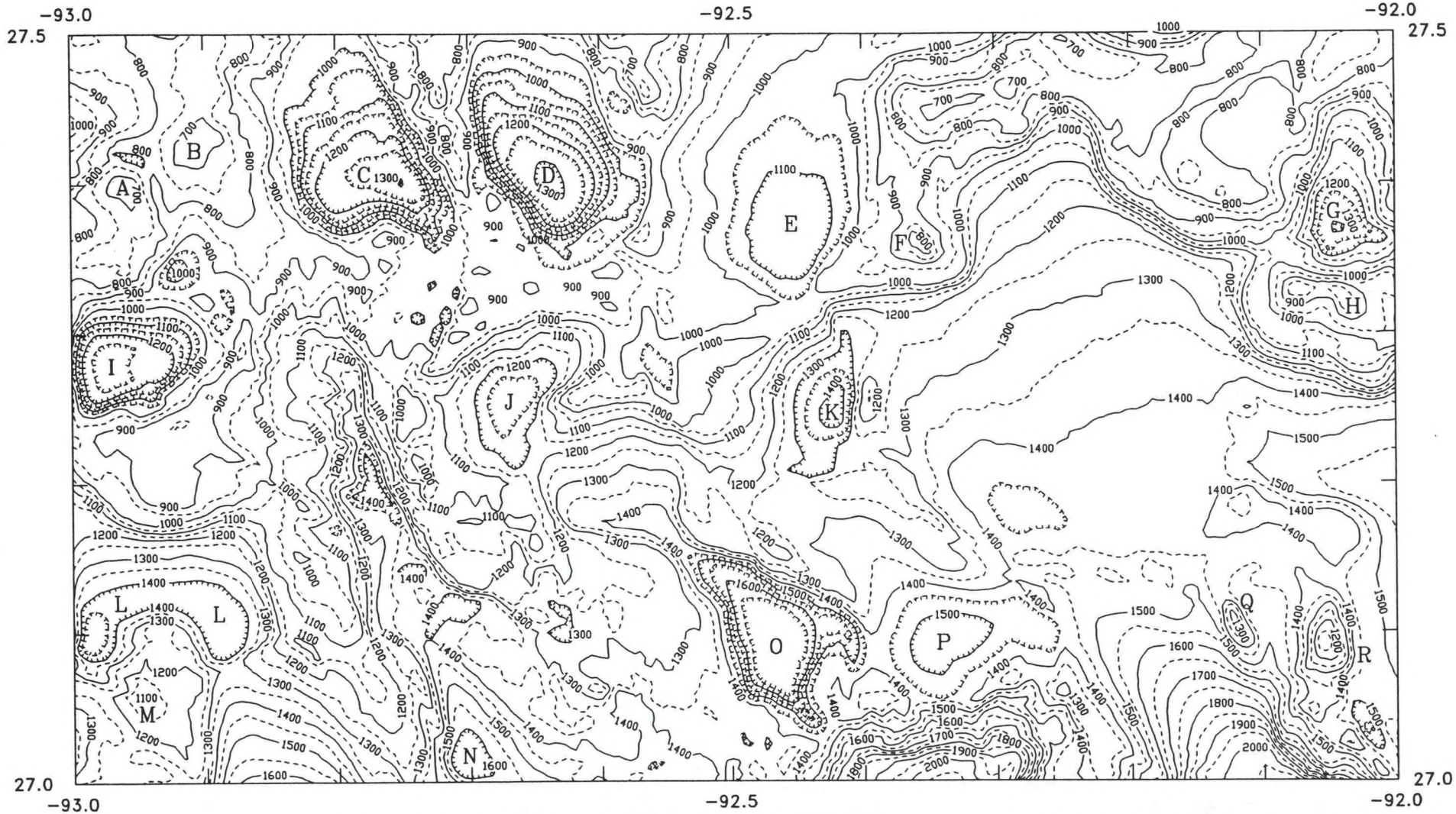
CENTRAL SLOPE MAP A12 GULF OF MEXICO



FILE CENSLPTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY

DEPTHS IN METERS

RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

NEW NAMES A BAYOGOULA MOUND B TCHEFUNCTE MOUND C HOWE BASIN
D RUSSEL BASIN E FISK BASIN F JEFFERSON DAVIS MOUND G McINTIRE BASIN
H ACADIA MOUND I GOULD BASIN J McFARLAN BASIN K LeBLANK BASIN
L FRAZIER BASIN M LAFAYETTE MOUND N KNIFFEN BASIN O BERNARD BASIN
P MORGAN BASIN Q GRAND CHENIER MOUND R EVANGELINE MOUND

MAP DESIGNATION

LM167

K I L O M E T E R S

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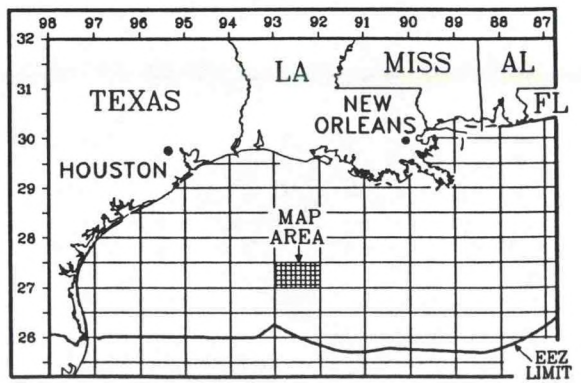
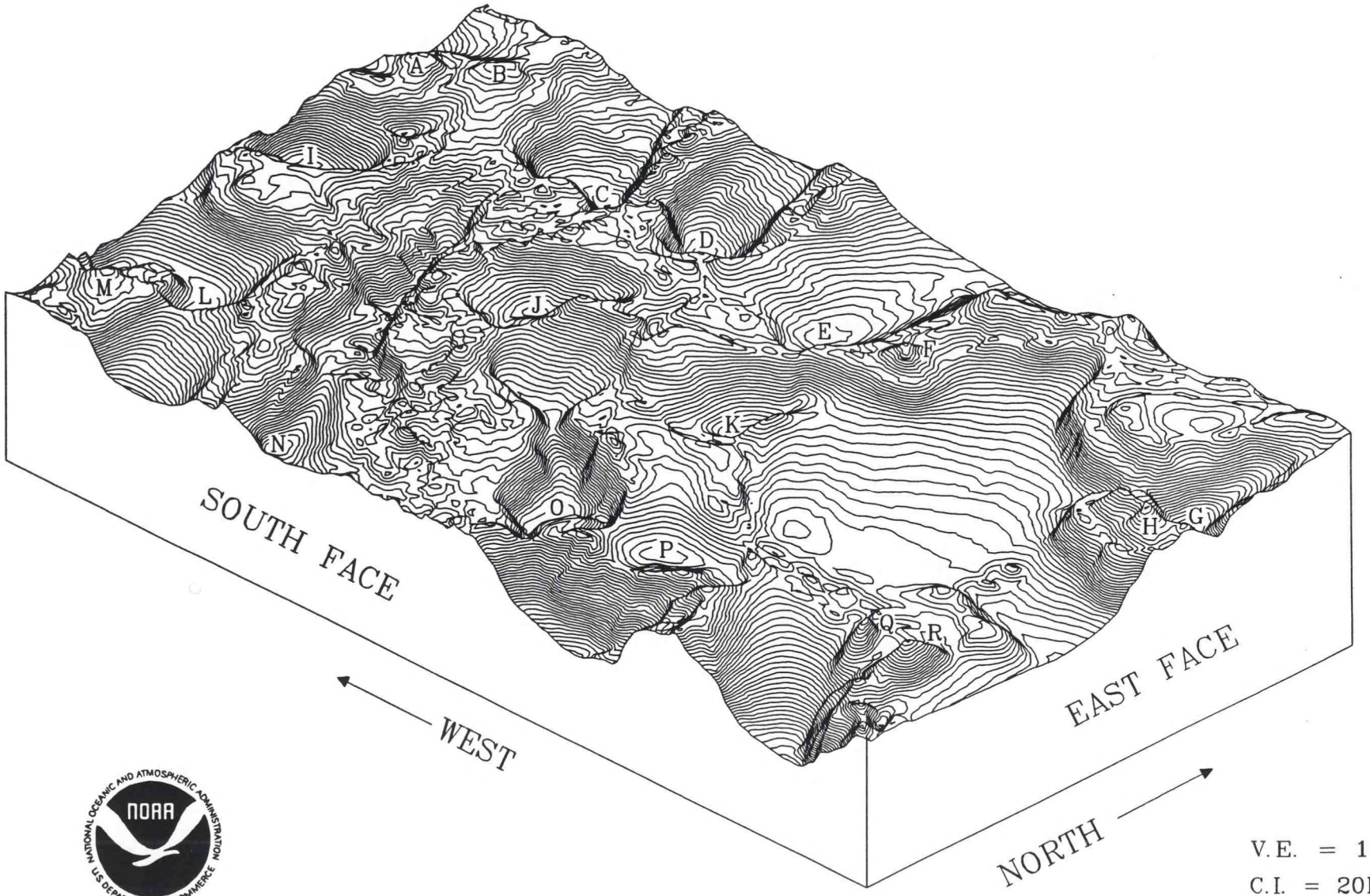


CENTRAL SLOPE MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

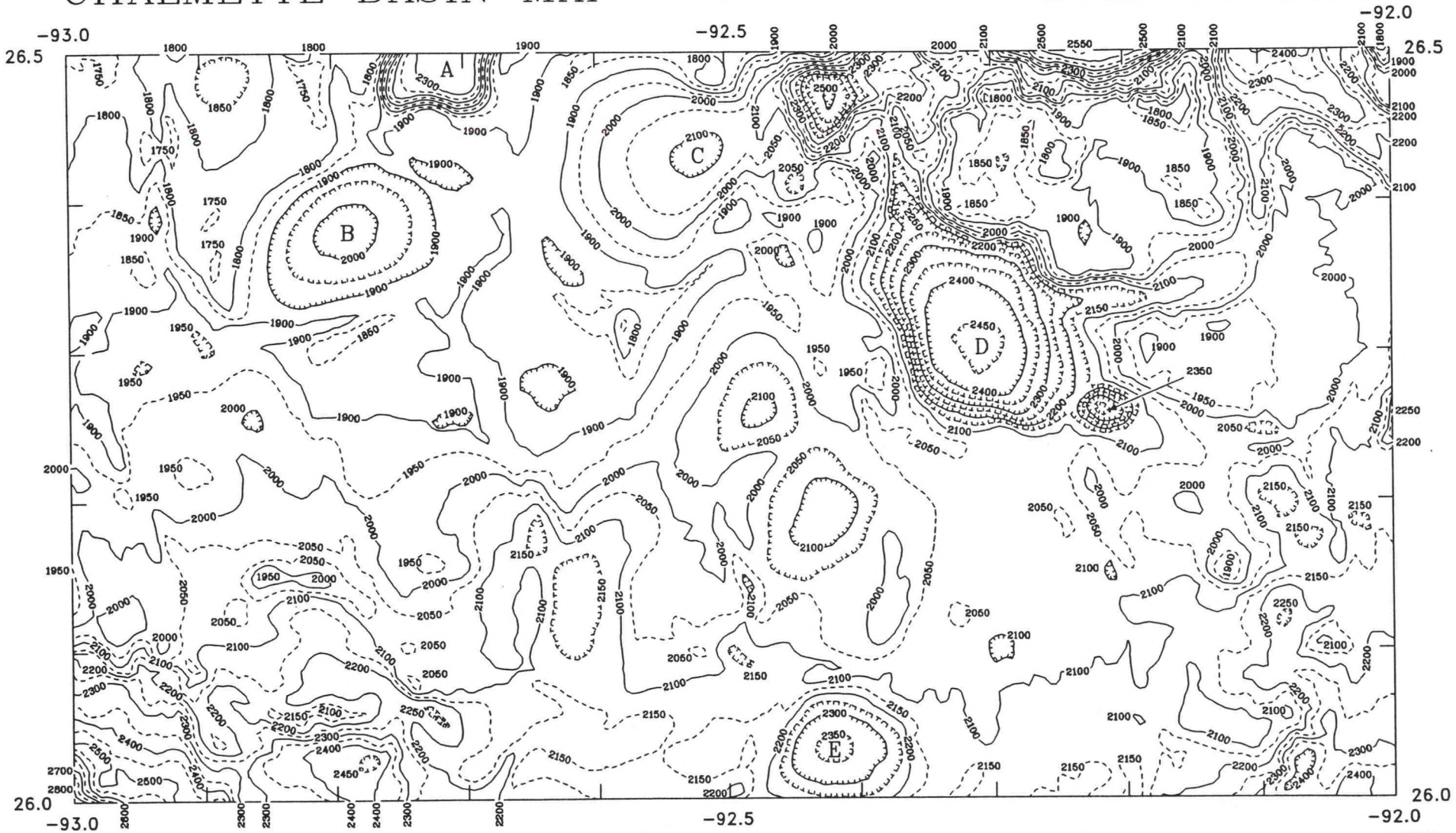
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE CENSLPSA.DWG

CHALMETTE BASIN MAP A14 GULF OF MEXICO



FILE CHALMTTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

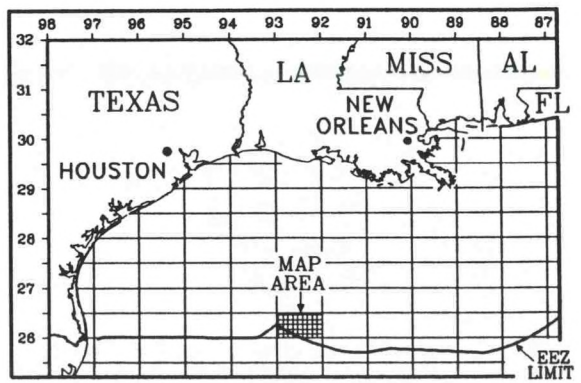
NEW NOAA/NOS NAMES A COOKE BASIN B LYONS BASIN
C LA SALLE BASIN D CHALMETTE BASIN E NETTLETON BASIN

MAP DESIGNATION

LM172

K I L O M E T E R S

0 10 20 30 40 50

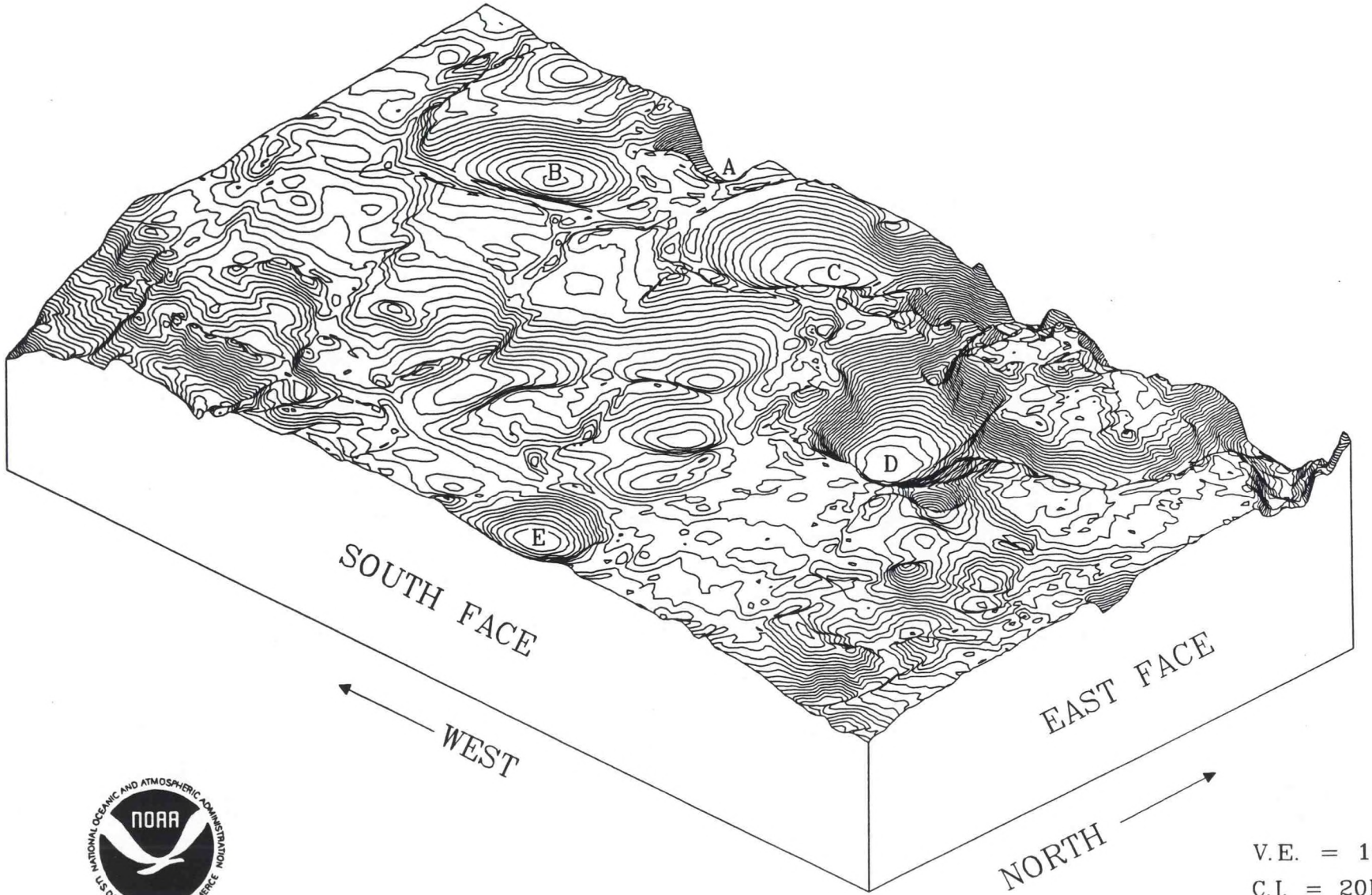


CHALMETTE BASIN MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE

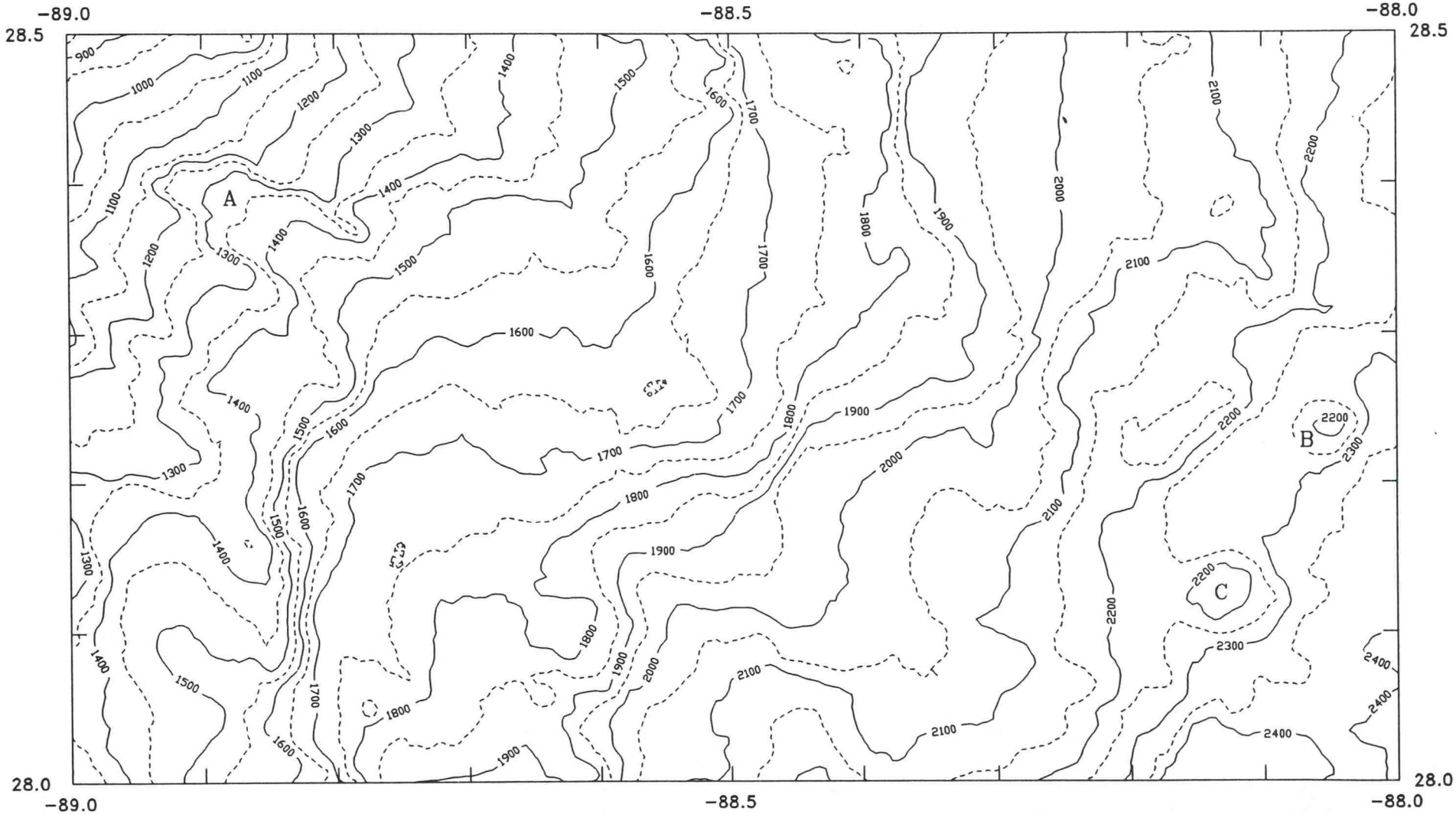


V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE CHALMTSA.DWG

CHANDELEUR VALLEY MAP A16

GULF OF MEXICO



FILE CHANDVTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

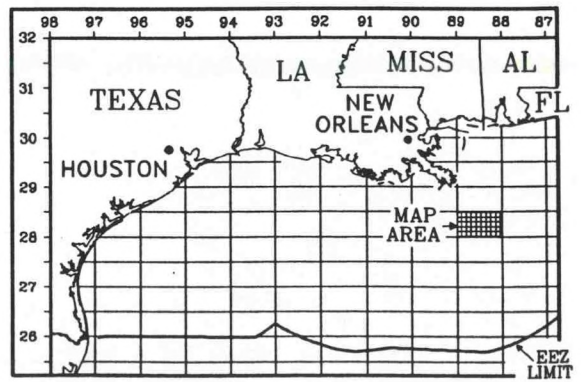
NEW NOAA/NOS NAMES A CHANDELEUR VALLEY
B CURLEW MOUND C GRAND GOSIER MOUND

MAP DESIGNATION

LM142

KILOMETERS

0 10 20 30 40 50

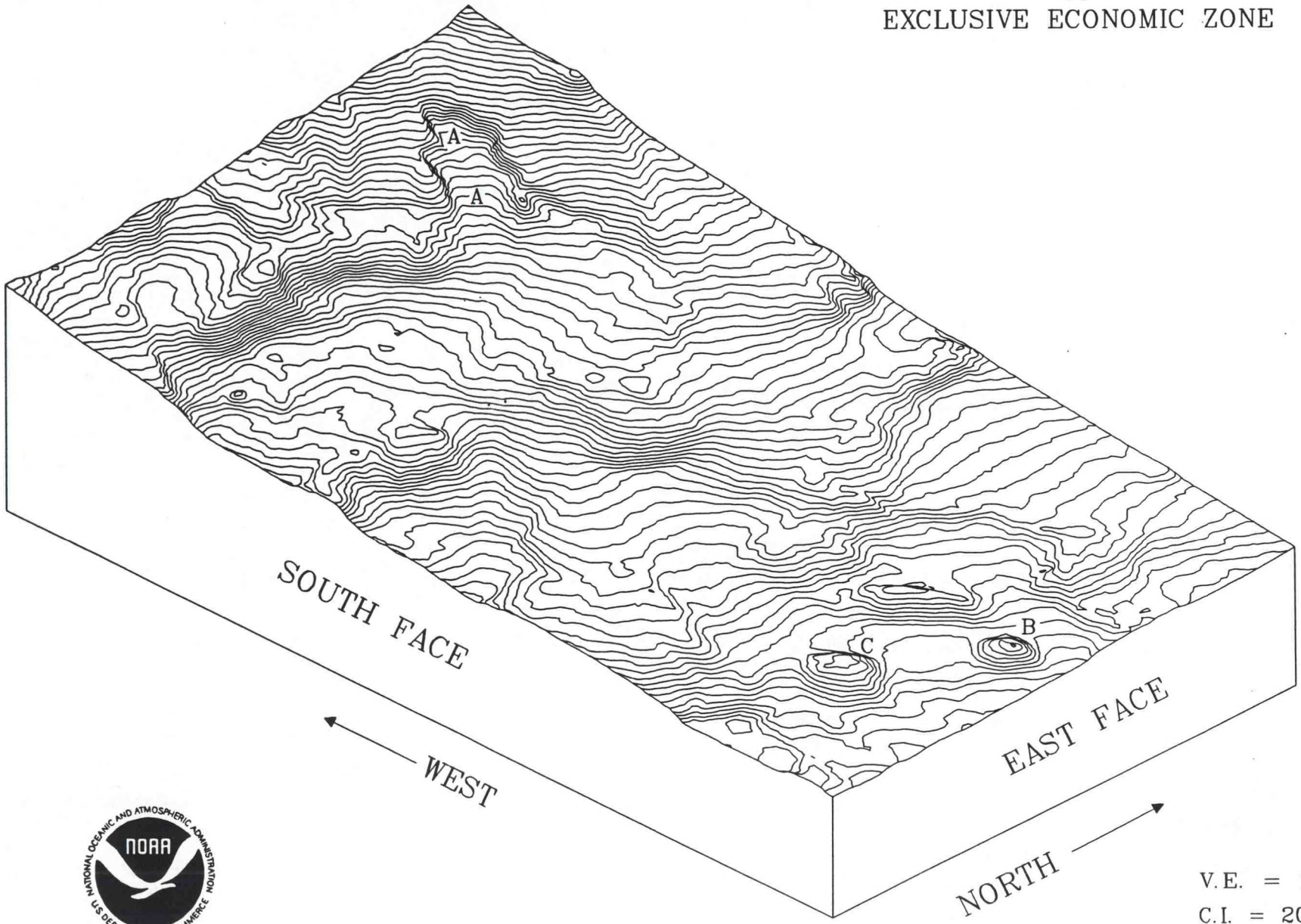


CHANDELEUR VALLEY MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

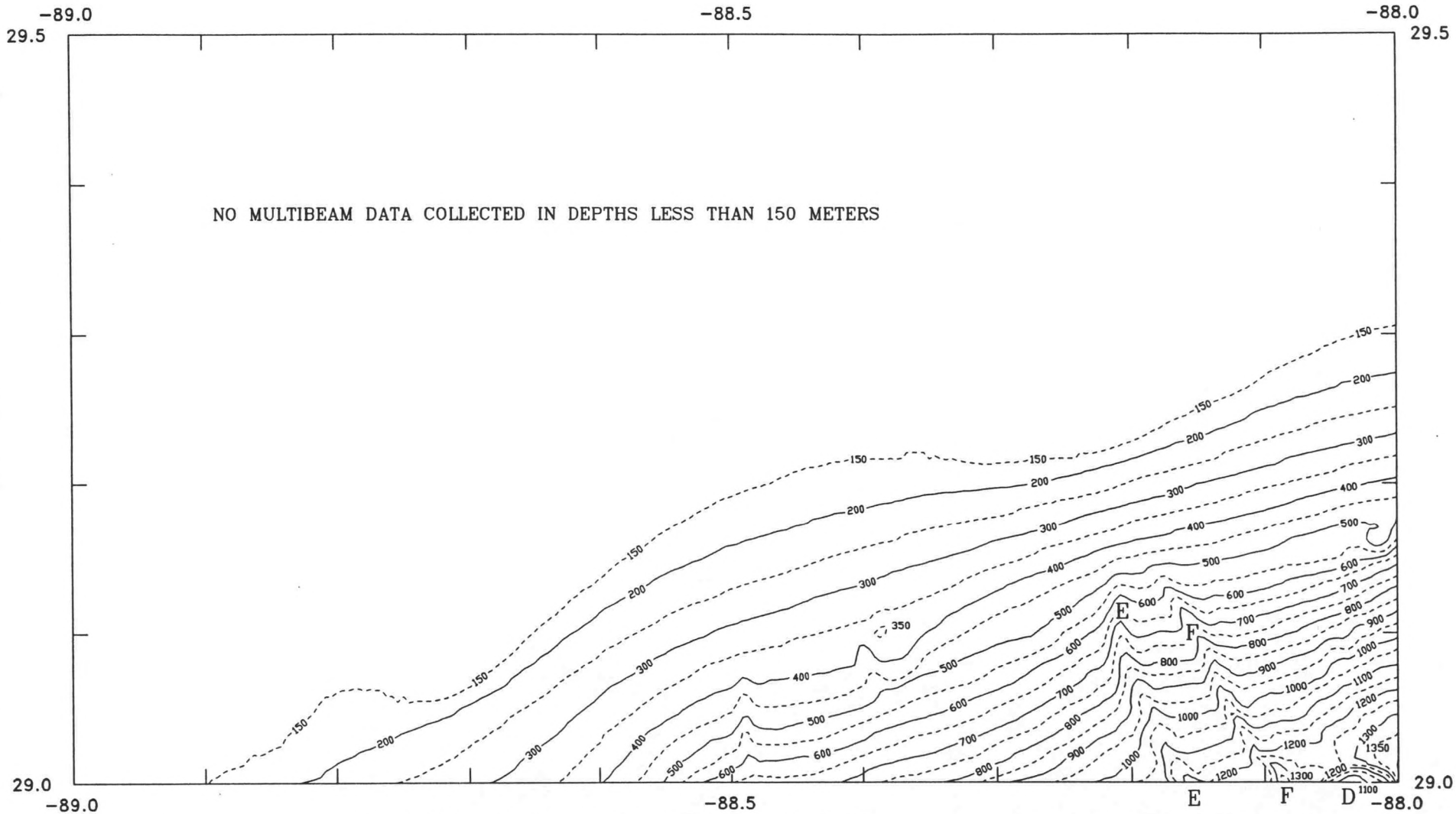
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE CHANDVSA.DWG

DORSEY CANYON MAP A18 GULF OF MEXICO



FILE DORSEYTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

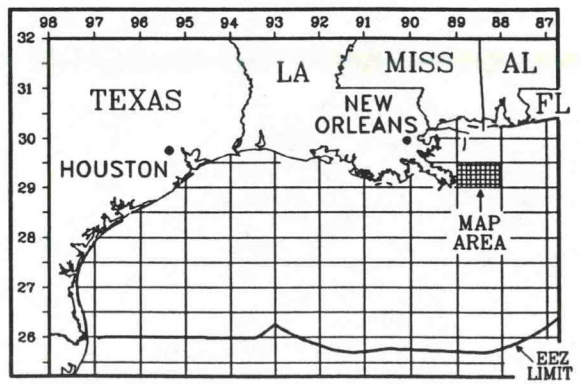
NEW NOAA/NOS NAMES D PASCAGOULA DOME
E DORSEY CANYON F SOUNDER CANYON

MAP DESIGNATION

LM140

K I L O M E T E R S

0 10 20 30 40 50

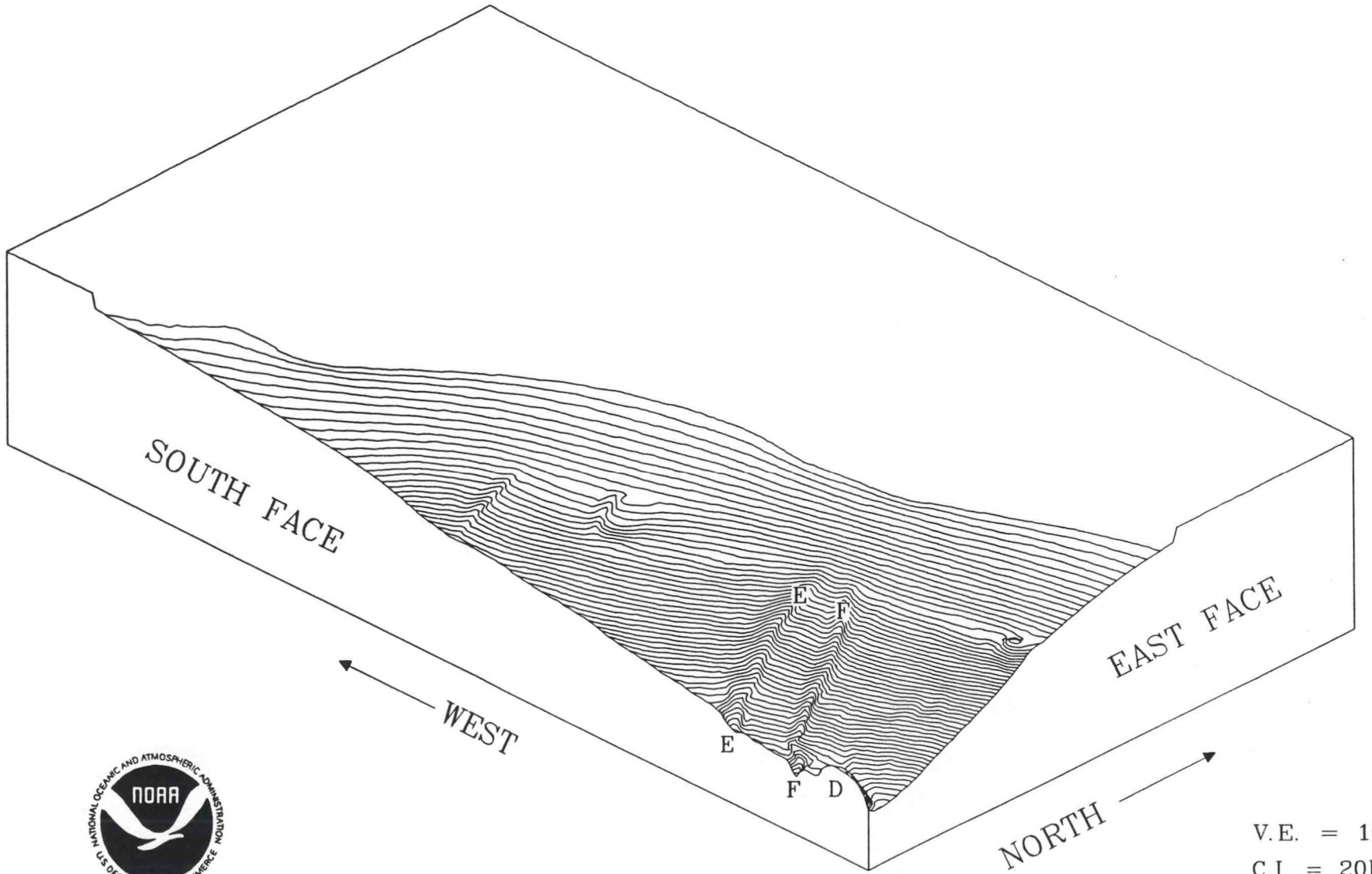


DORSEY CANYON MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

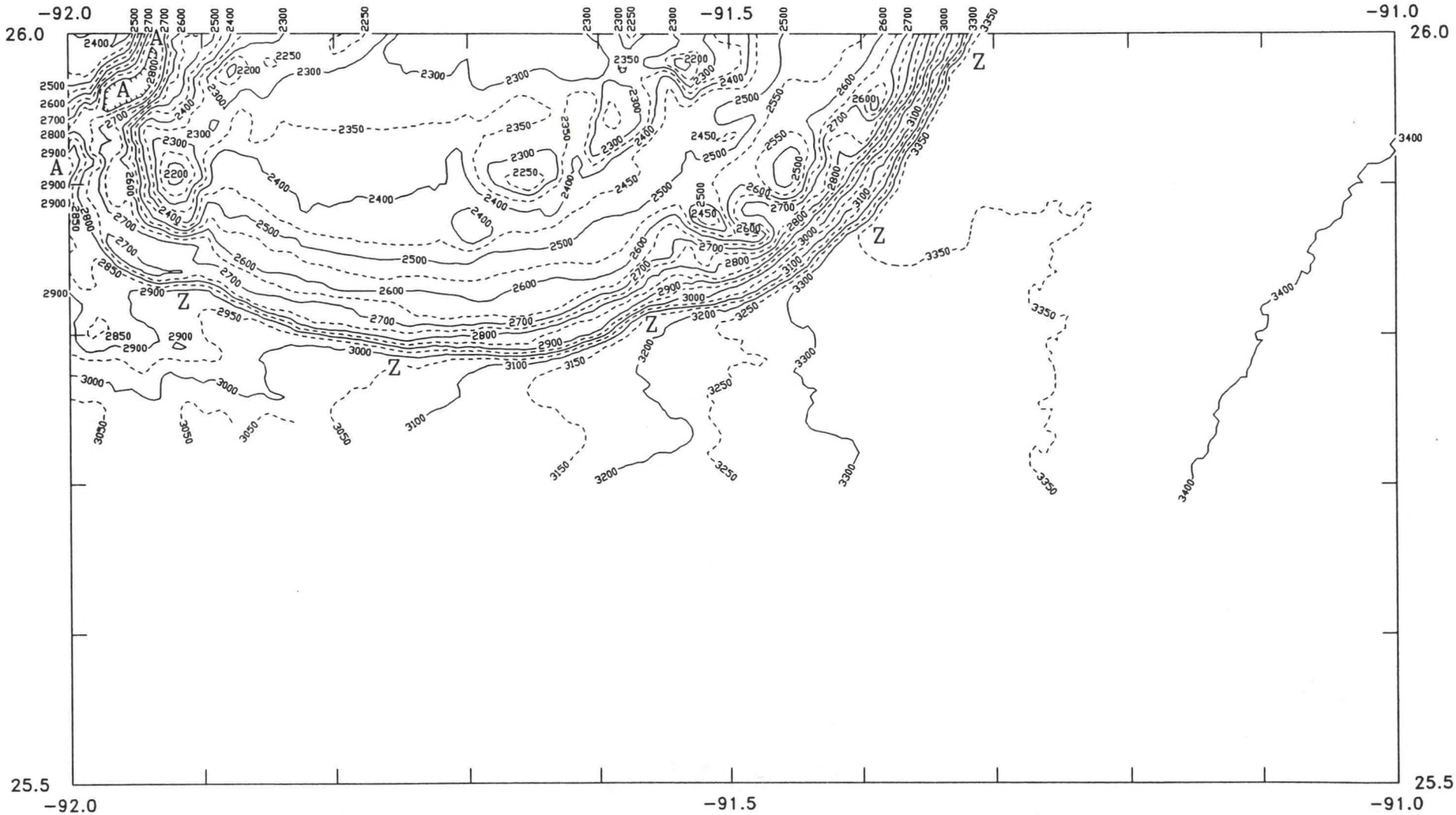
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE DORSEYSA.DWG

ESCARPMENT MAP A20 GULF OF MEXICO



FILE ESCARPTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES Z SIGSBEE ESCARPMENT

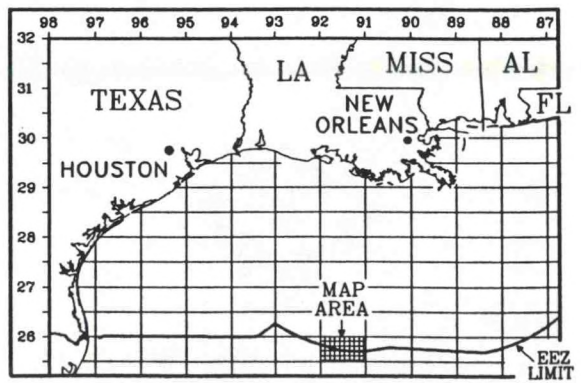
NEW NOAA/NOS NAMES A BRYANT CANYON

MAP DESIGNATION

LM152

KILOMETERS

0 10 20 30 40 50

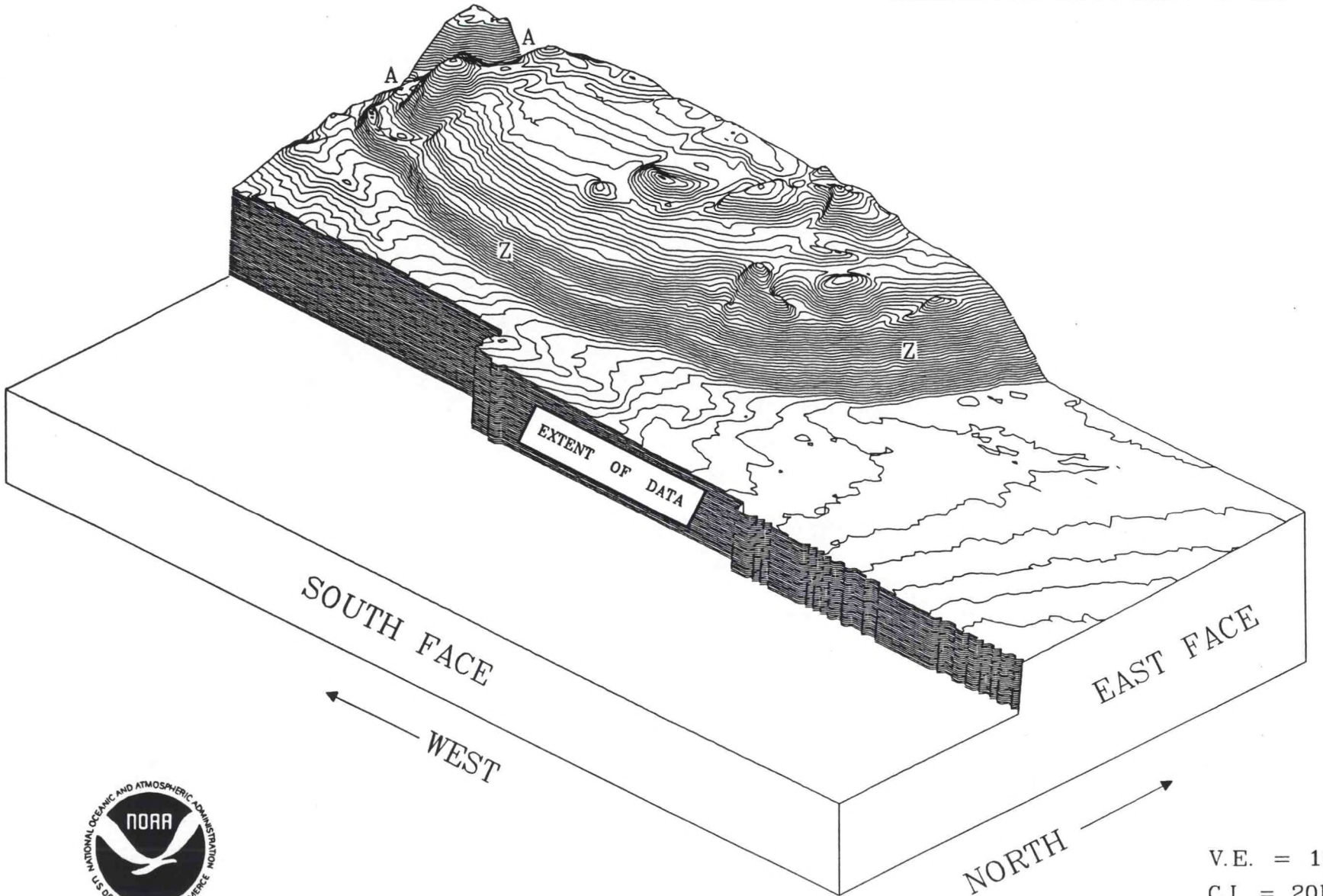


ESCARPMENT MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

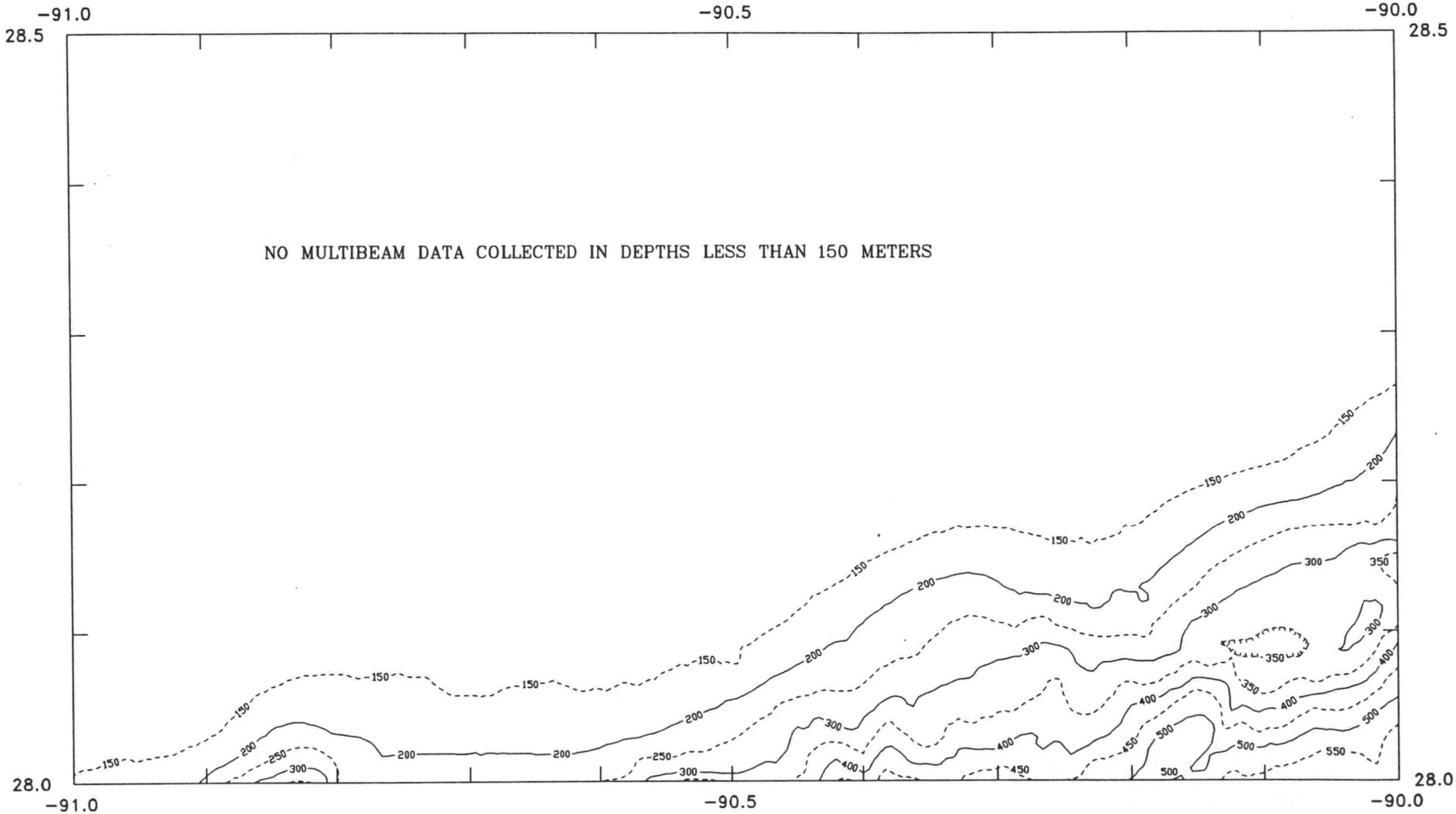
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE ESCARPSA.DWG

EWING BANK SE MAP A22 GULF OF MEXICO



FILE EWINGBTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY

DEPTHS IN METERS

RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

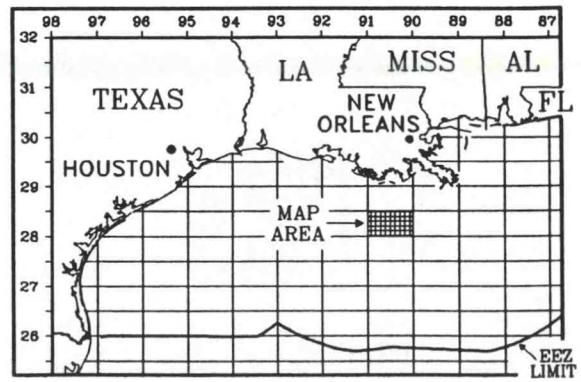
NOAA/NOS NAMES NONE

MAP DESIGNATION

LM091

K I L O M E T E R S

0 10 20 30 40 50

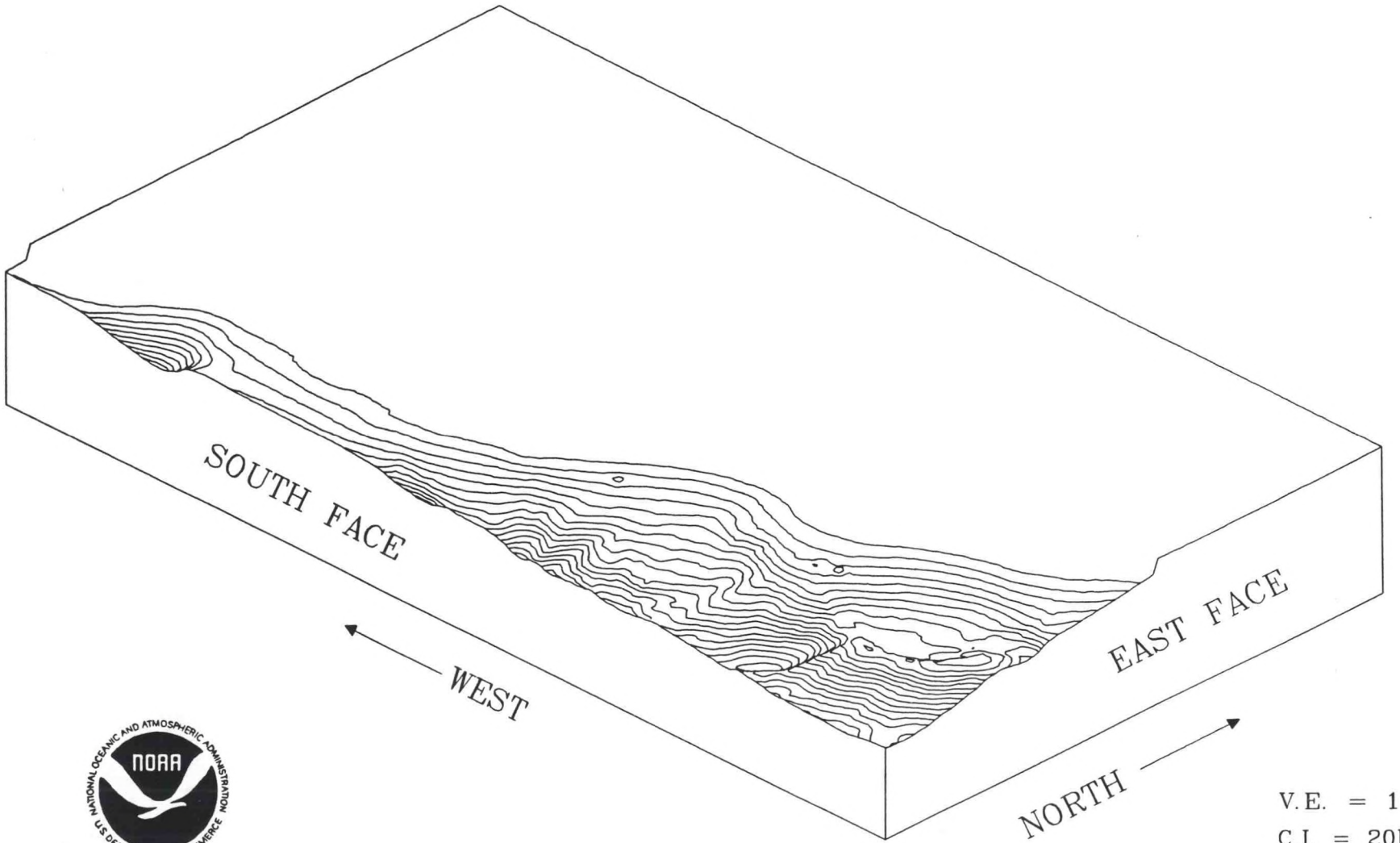


EWING BANK SE MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

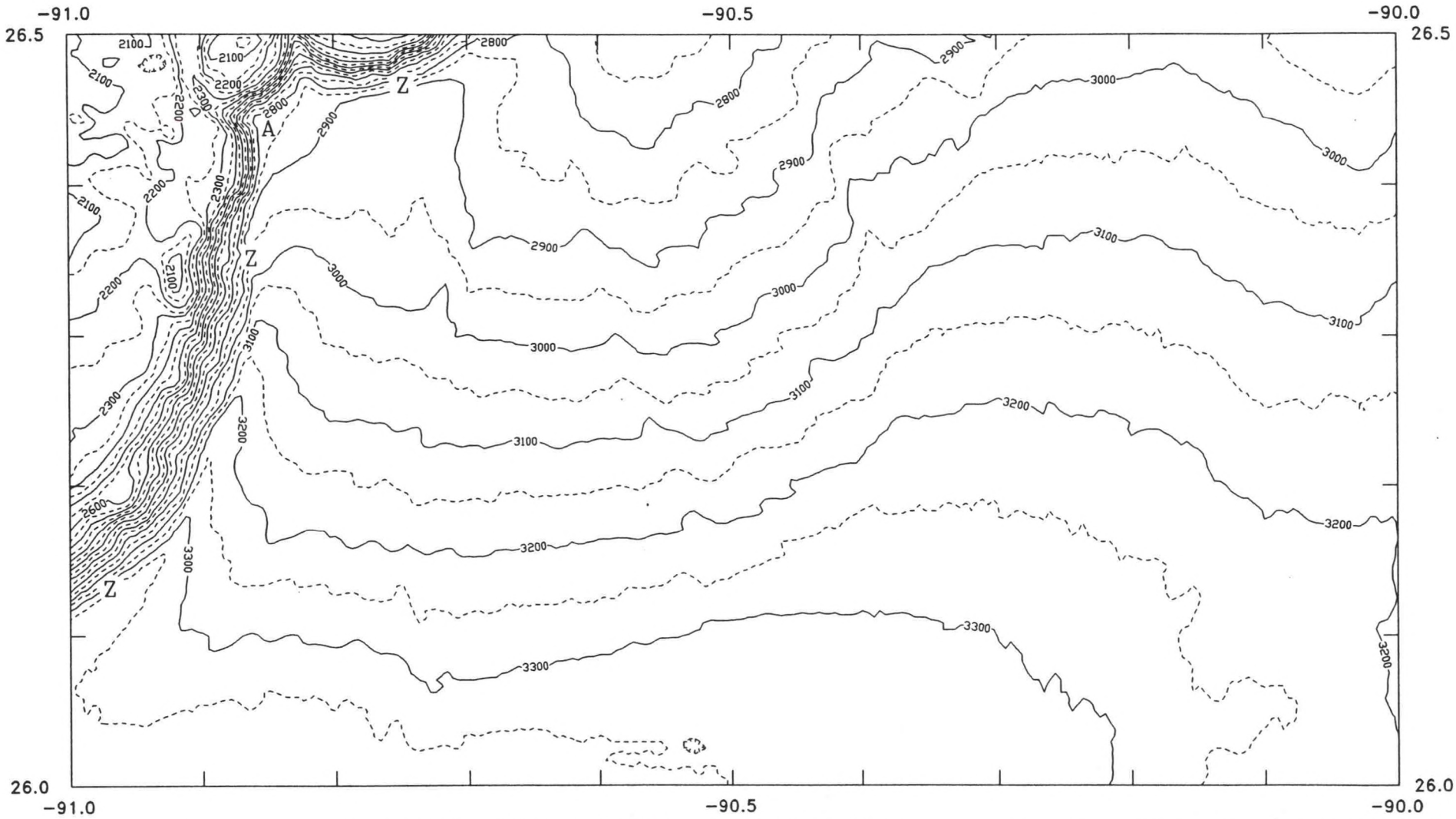
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE EWINGBSA.DWG

FARNELLA CANYON MAP A24 GULF OF MEXICO



FILE FARNELTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAME Z SIGSBEE ESCARPMENT

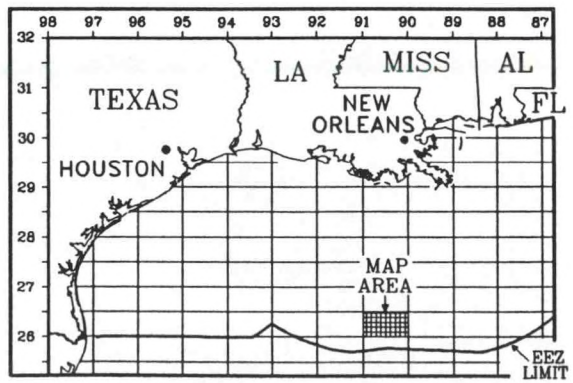
NEW NOAA/NOS NAME A FARNELLA CANYON

MAP DESIGNATION

LM145

KILOMETERS

0 10 20 30 40 50

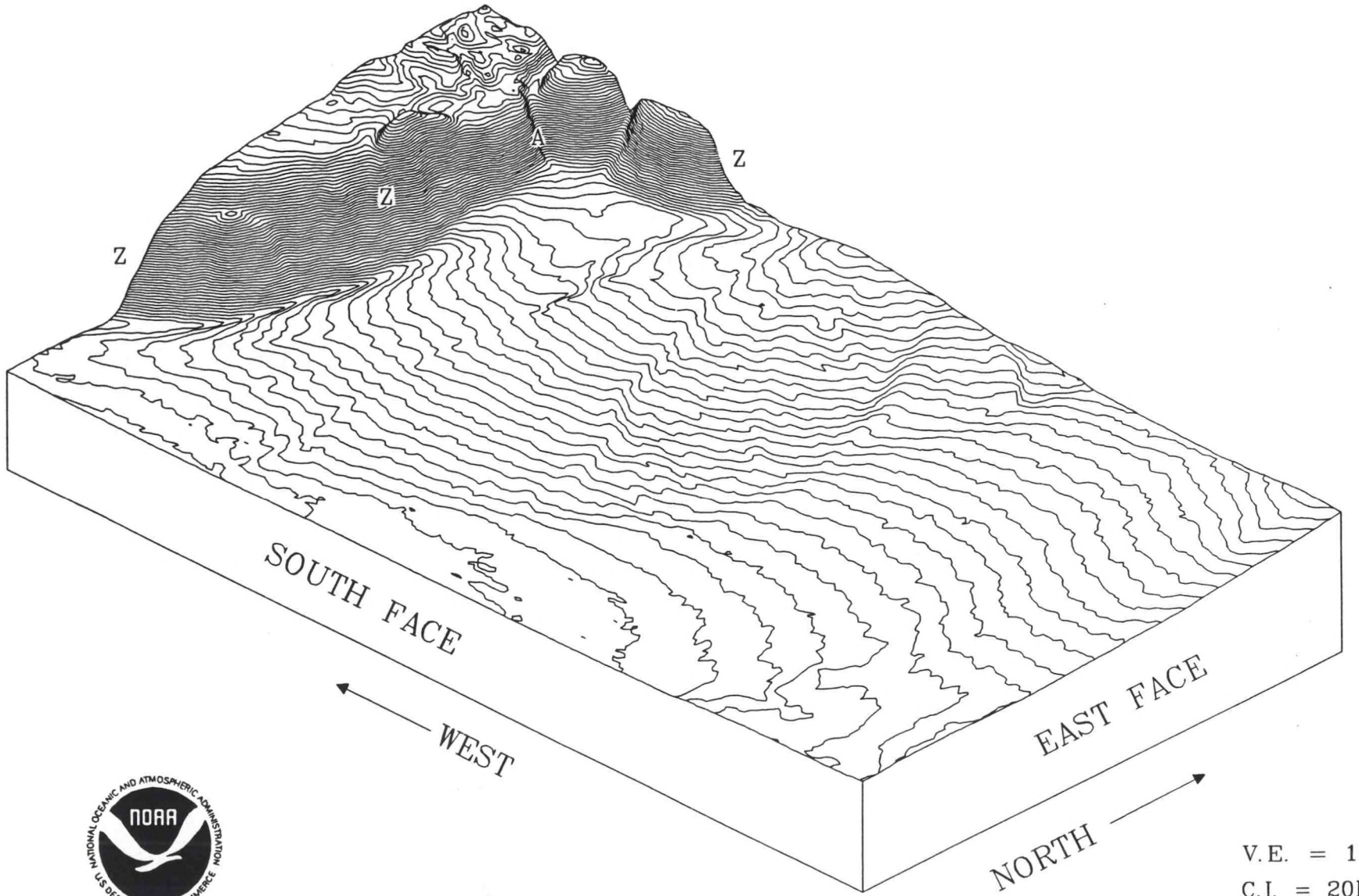


FARNELLA CANYON MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

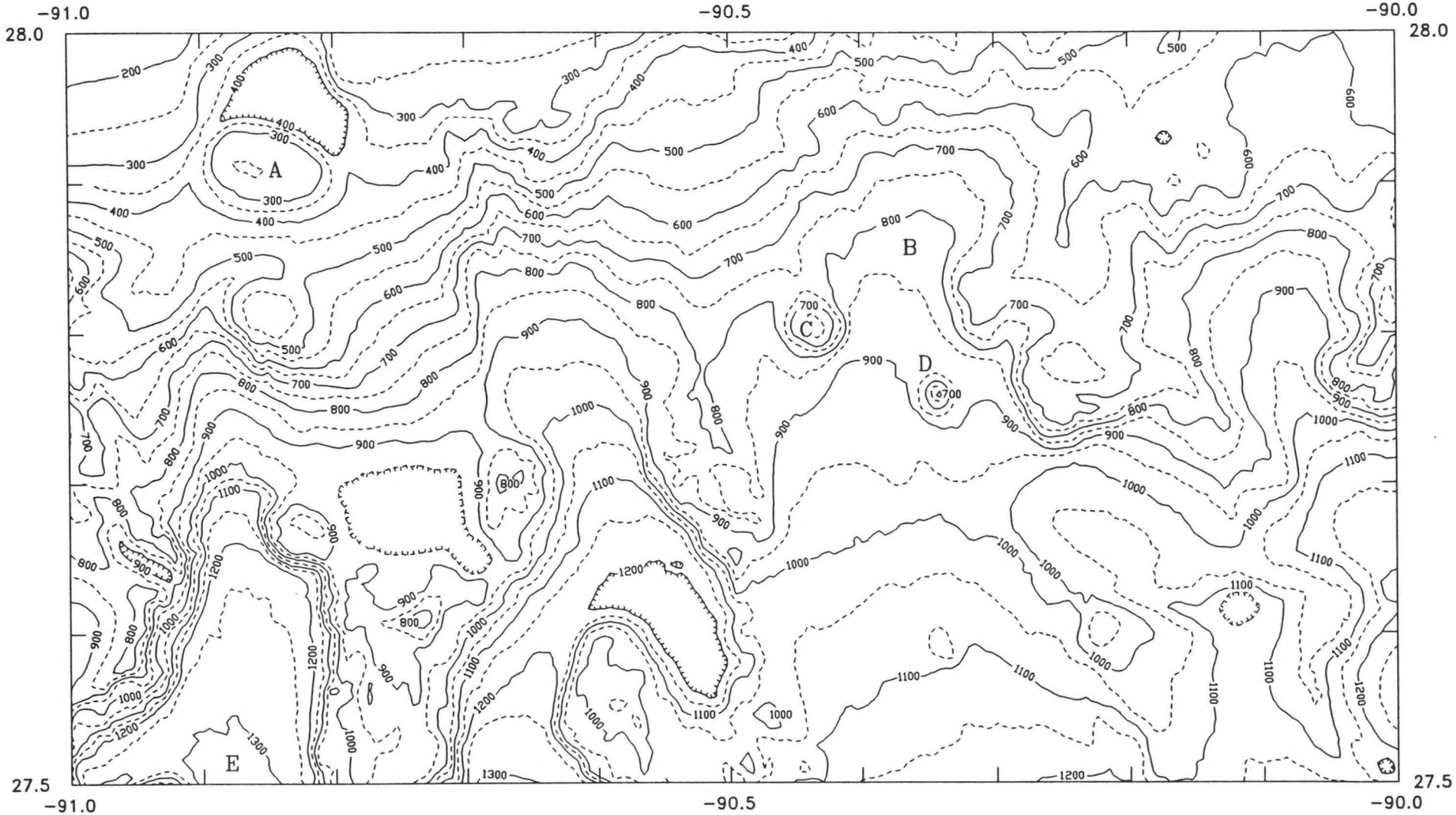
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE FARNELSA.DWG

HOUMA VALLEY MAP A26 GULF OF MEXICO



FILE HOUMAVTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

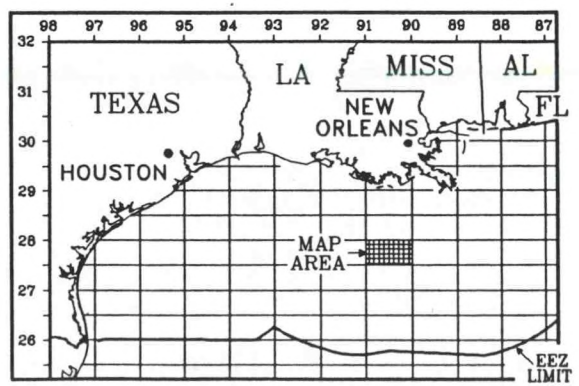
NEW NOAA/NOS NAMES A DERNIERES DOME B HOUMA VALLEY
C CAILLOU MOUND D CALUMET MOUND E THIBODAUX BASIN

MAP DESIGNATION

LM168

KILOMETERS

0 10 20 30 40 50

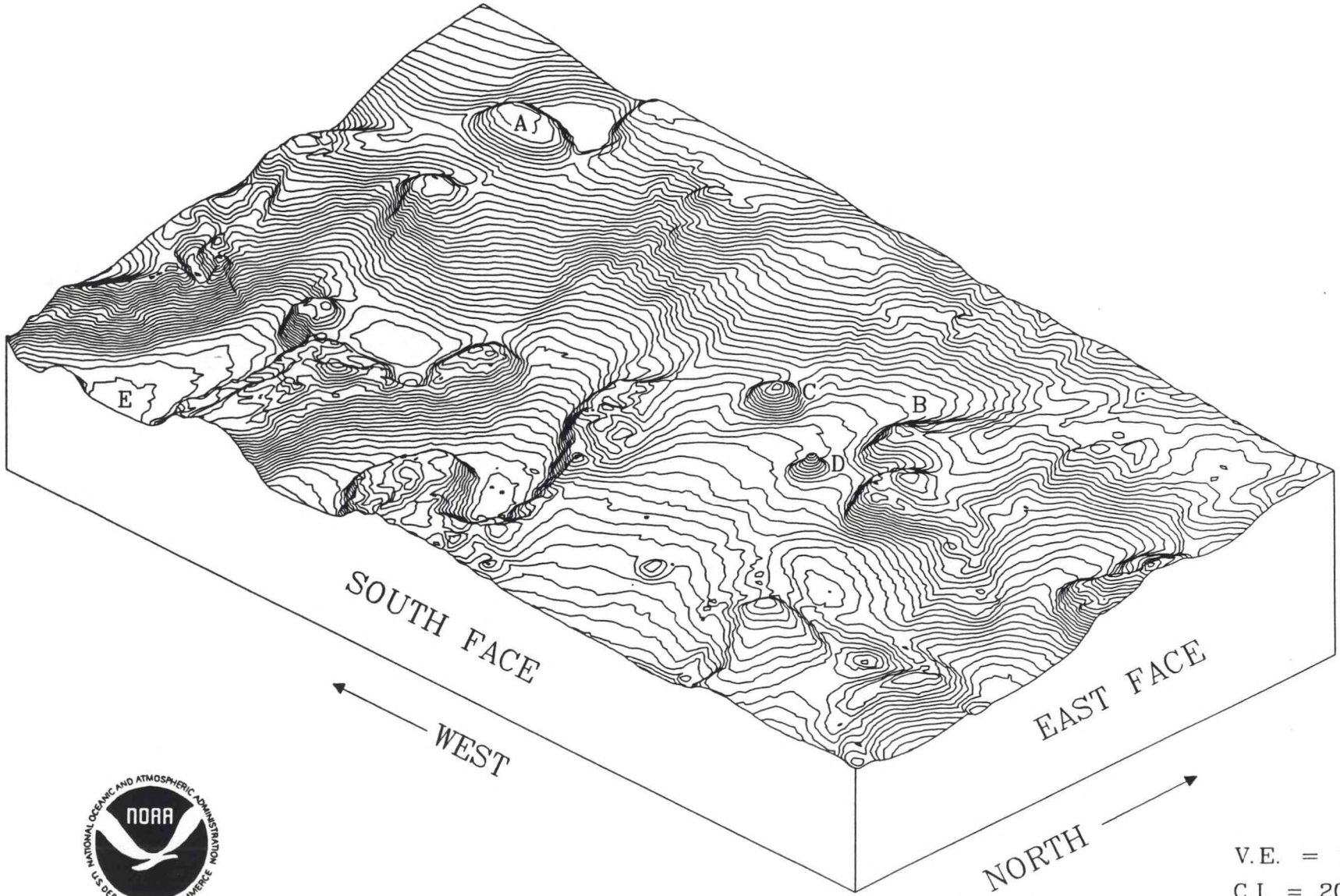


HOUMA VALLEY MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

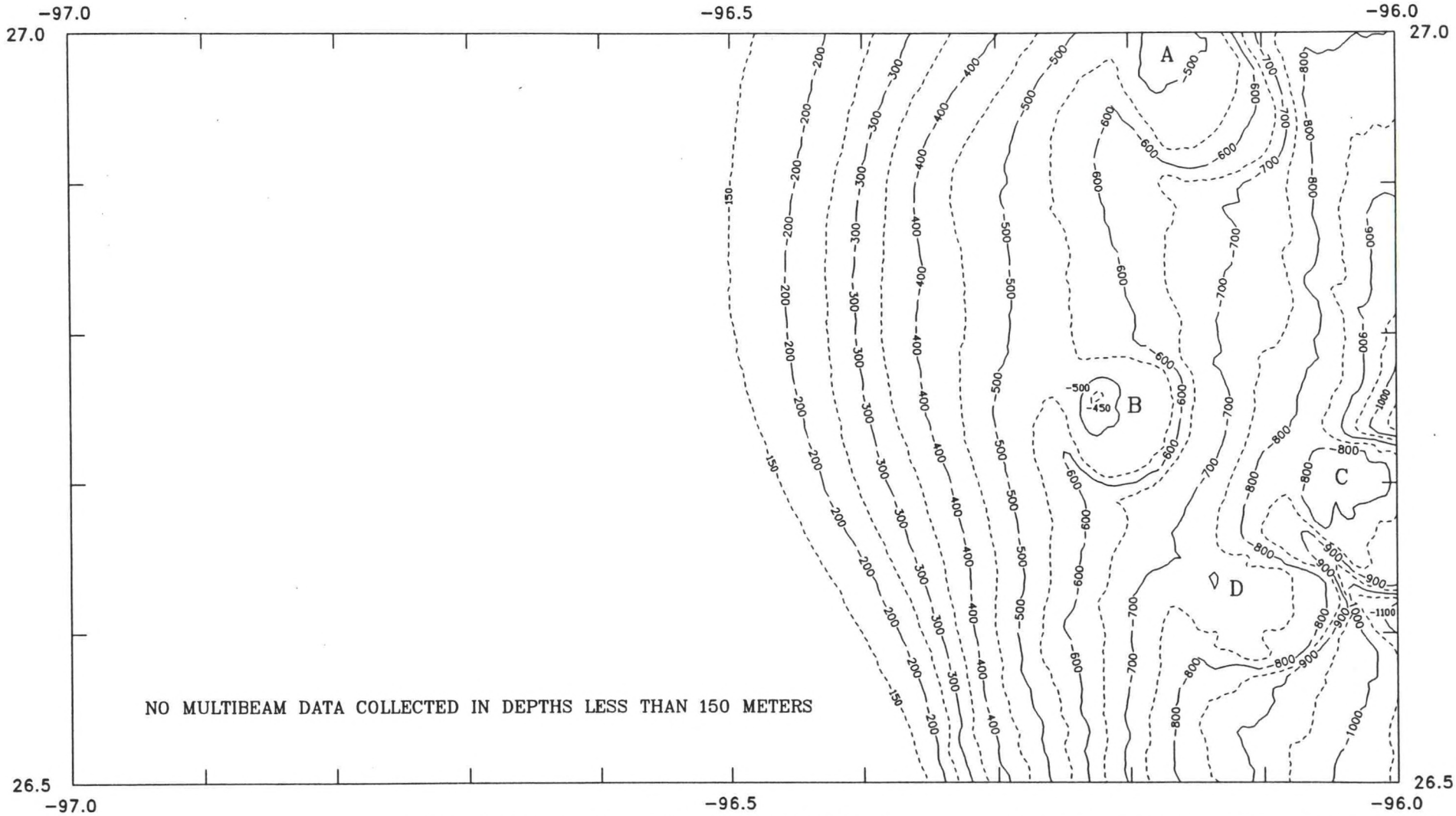
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE HOUMAVSA.DWG

MADRE MAP A28 GULF OF MEXICO



FILE MADREETA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

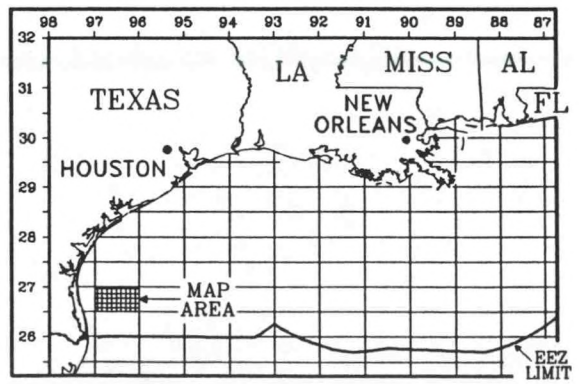
NOAA/NOS NAMES A NUECES DOME B KLEBERG DOME
C WILLACY DOME D MANSFIELD DOME

MAP DESIGNATION

LM180

K I L O M E T E R S

0 10 20 30 40 50

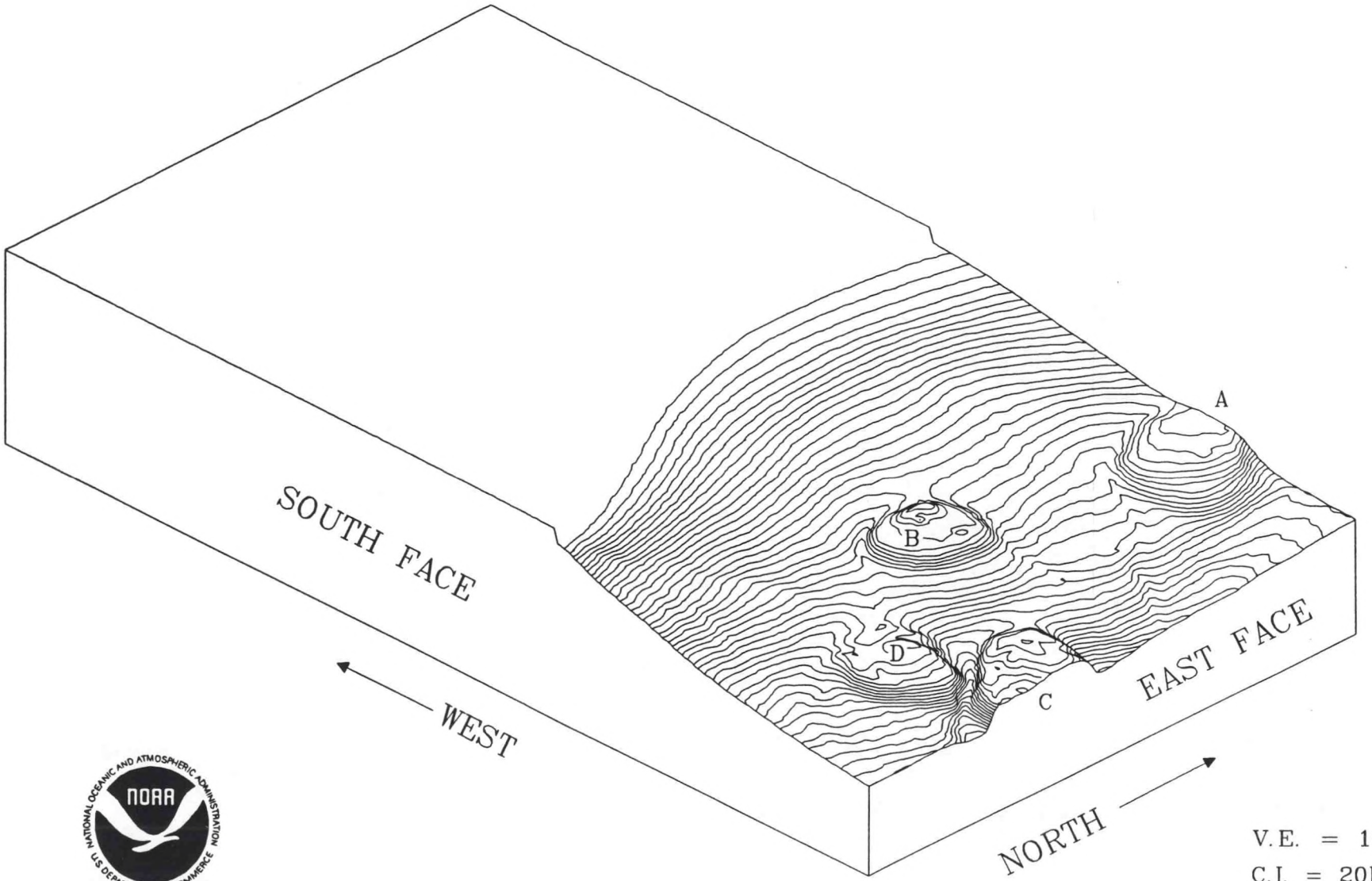


MADRE MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE

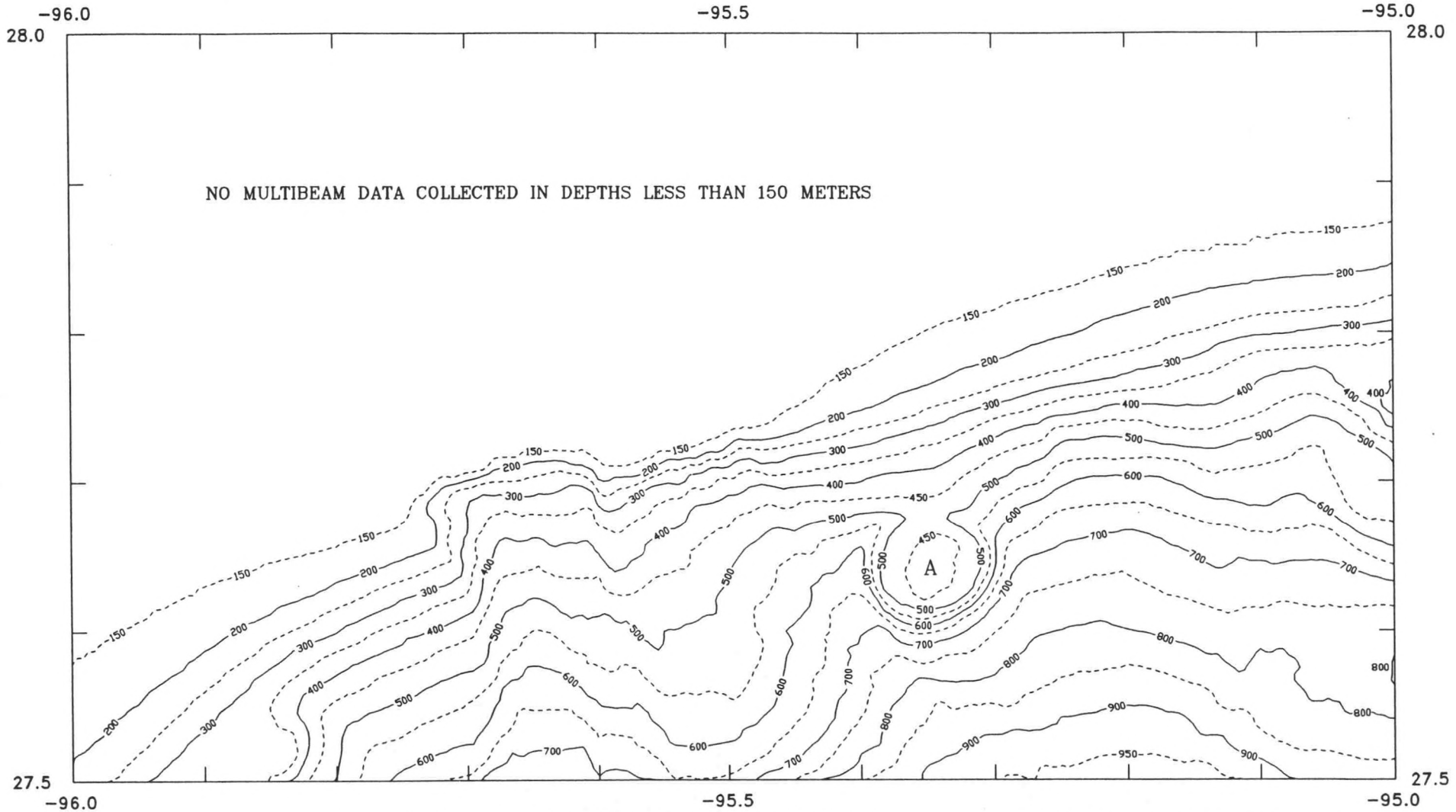


NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE MADREESA.DWG

MATAGORDA MAP A30 GULF OF MEXICO



FILE MGORDATA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

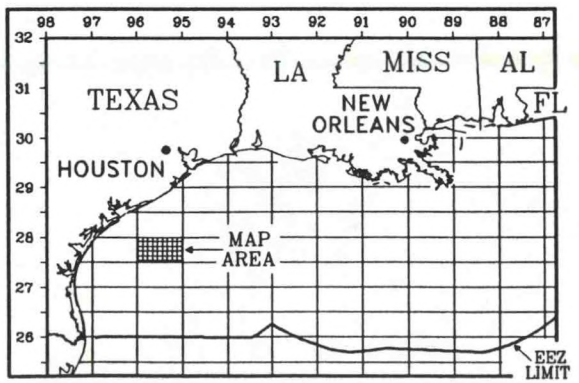
NEW NOAA/NOS NAMES A CALHOUN DOME

MAP DESIGNATION

LM178

K I L O M E T E R S

0 10 20 30 40 50

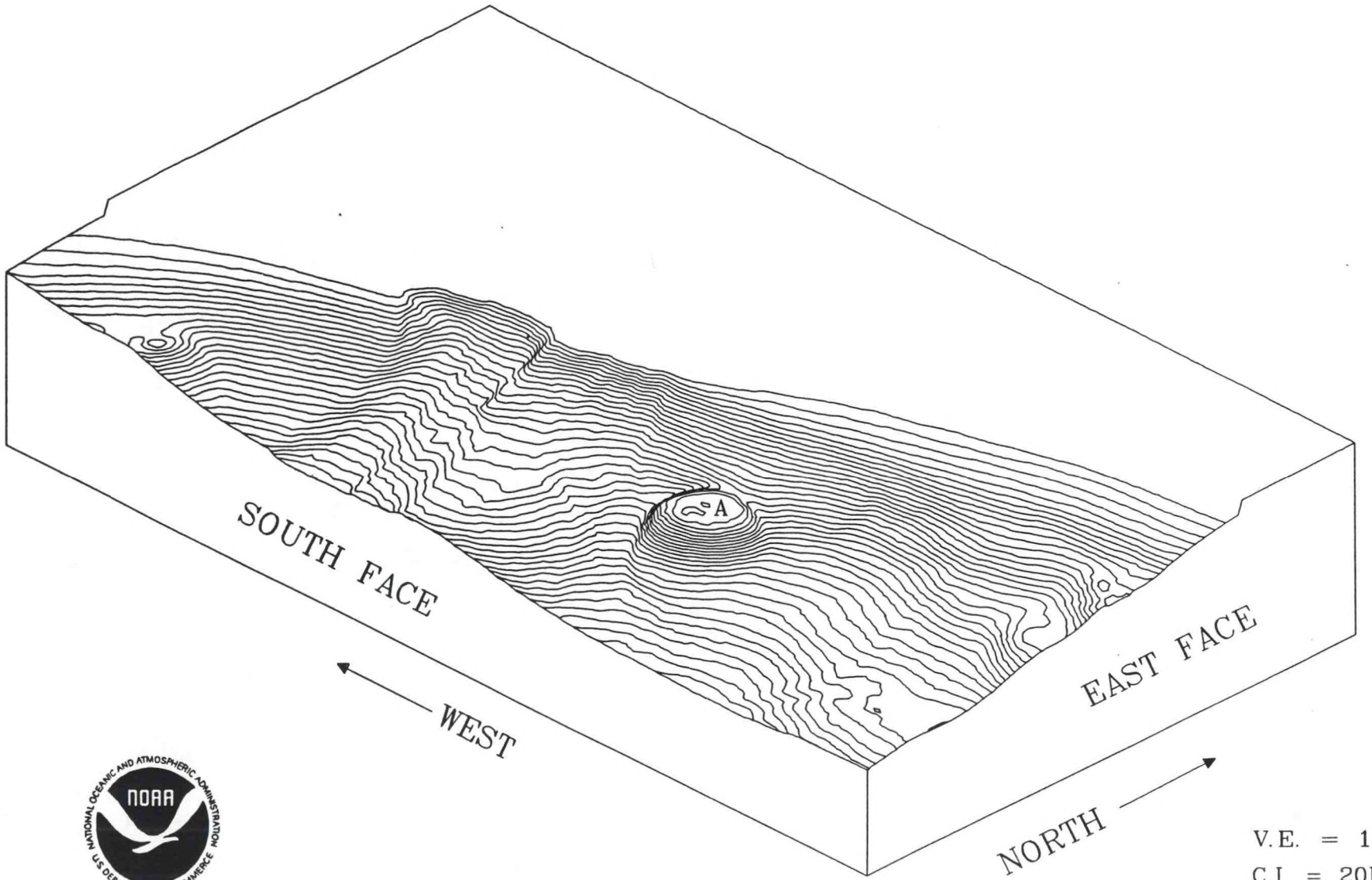


MATAGORDA MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

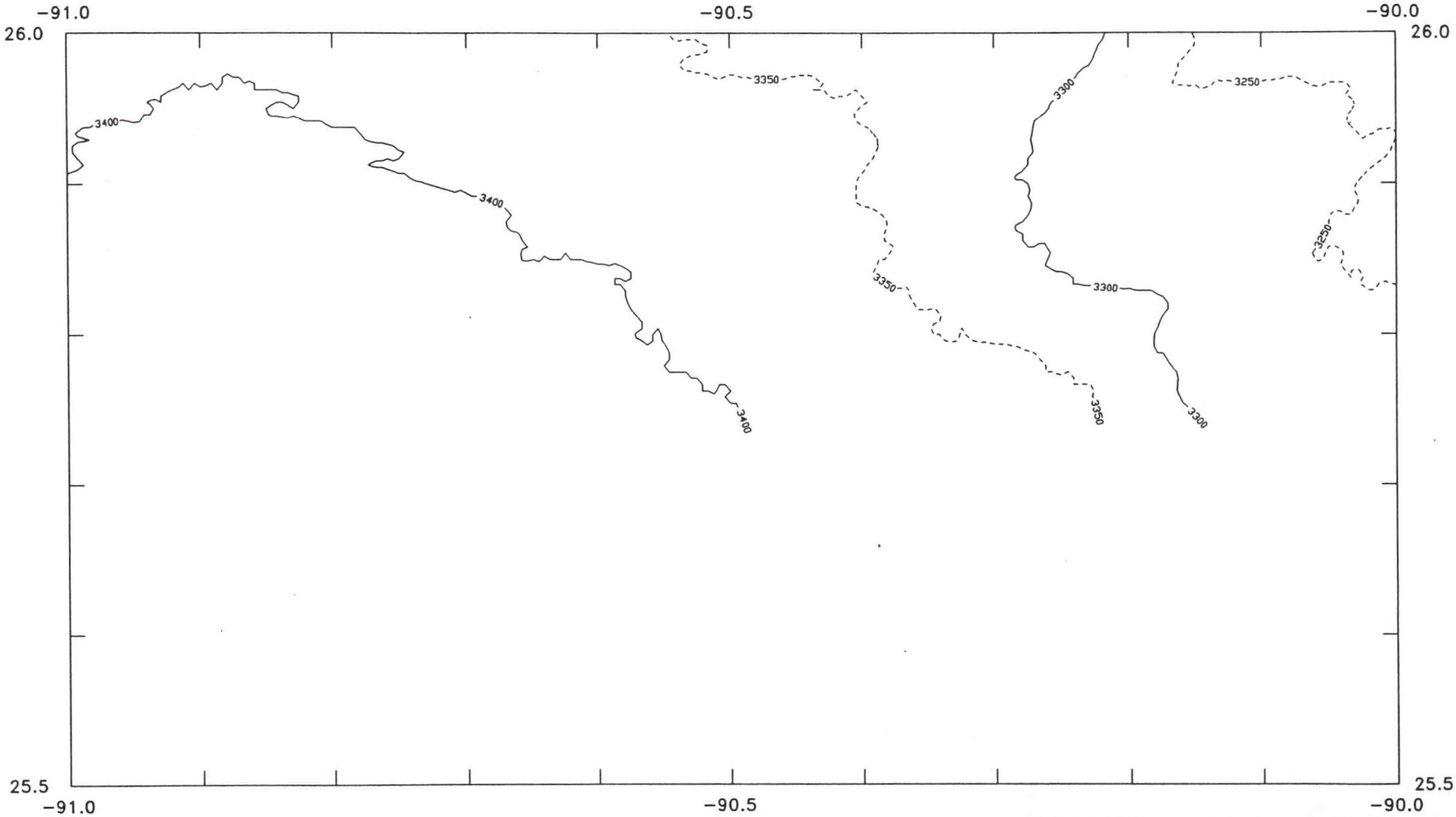
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE MGORDASA.DWG

MEXICO BASIN NE MAP A32 GULF OF MEXICO



FILE MEXBASTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

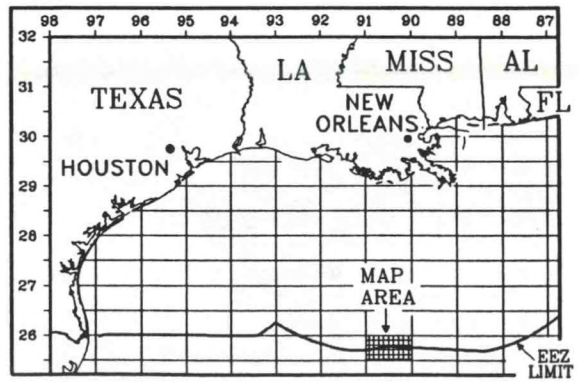
NEW NOAA/NOS NAMES NONE

MAP DESIGNATION

LM146

KILOMETERS

0 10 20 30 40 50

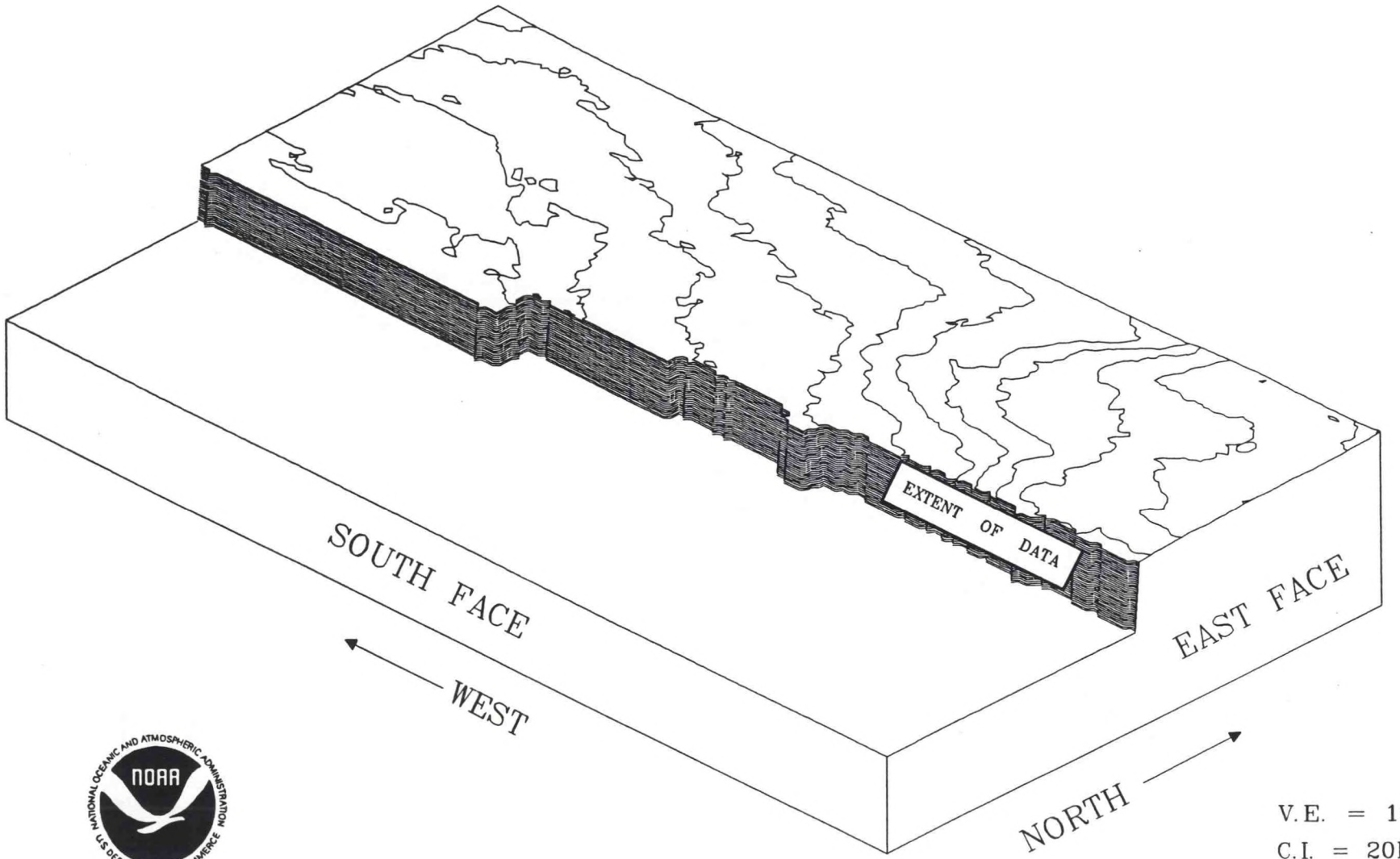


MEXICO BASIN NE MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

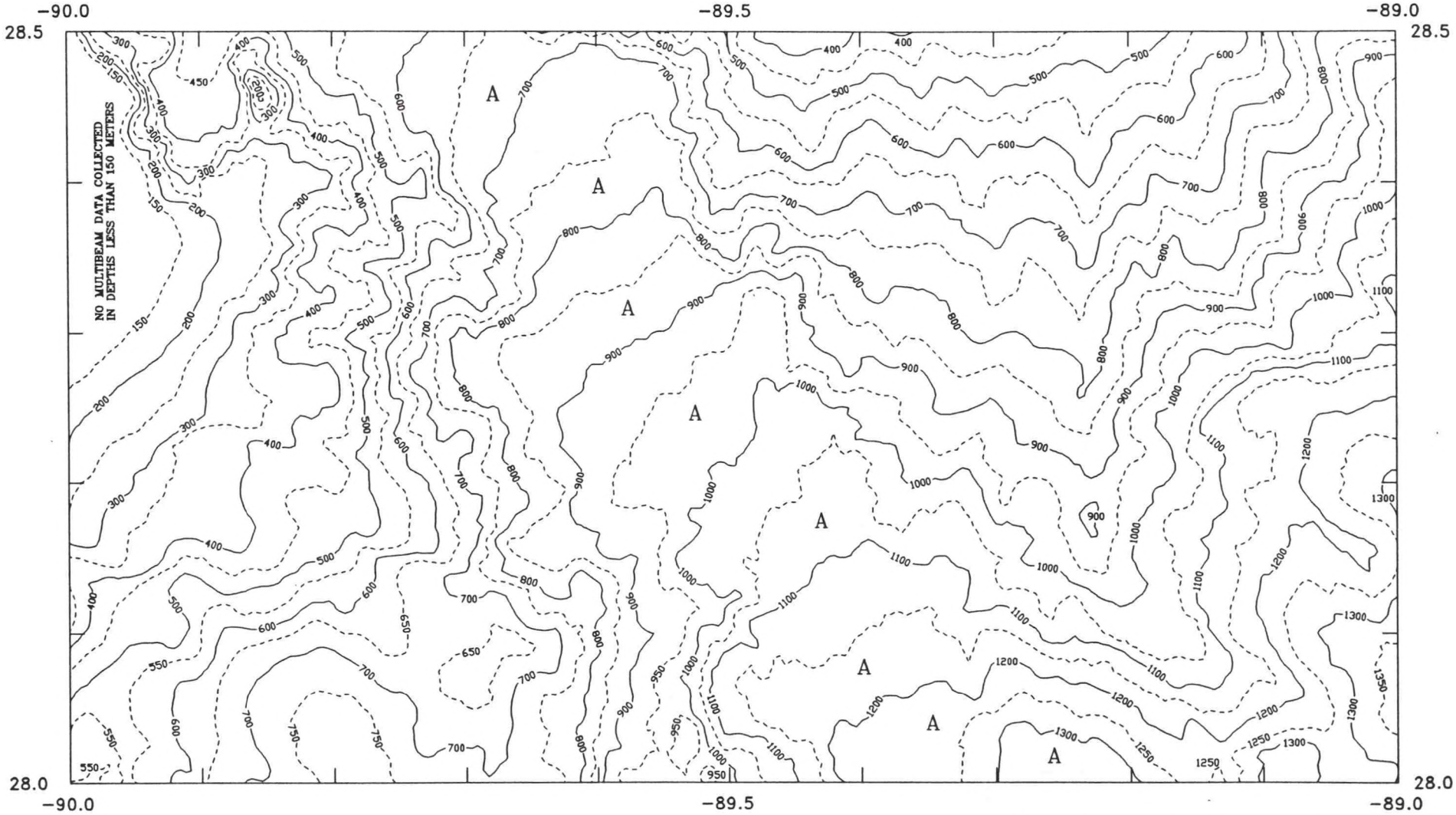
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE MEXBASSA.DWG

MISSISSIPPI CANYON SW MAP A34 GULF OF MEXICO



FILE MISCANTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES A MISSISSIPPI CANYON

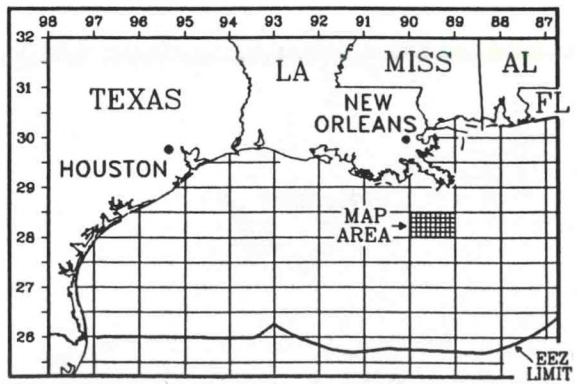
NEW NOAA/NOS NAMES NONE

MAP DESIGNATION

LM147

K I L O M E T E R S

0 10 20 30 40 50

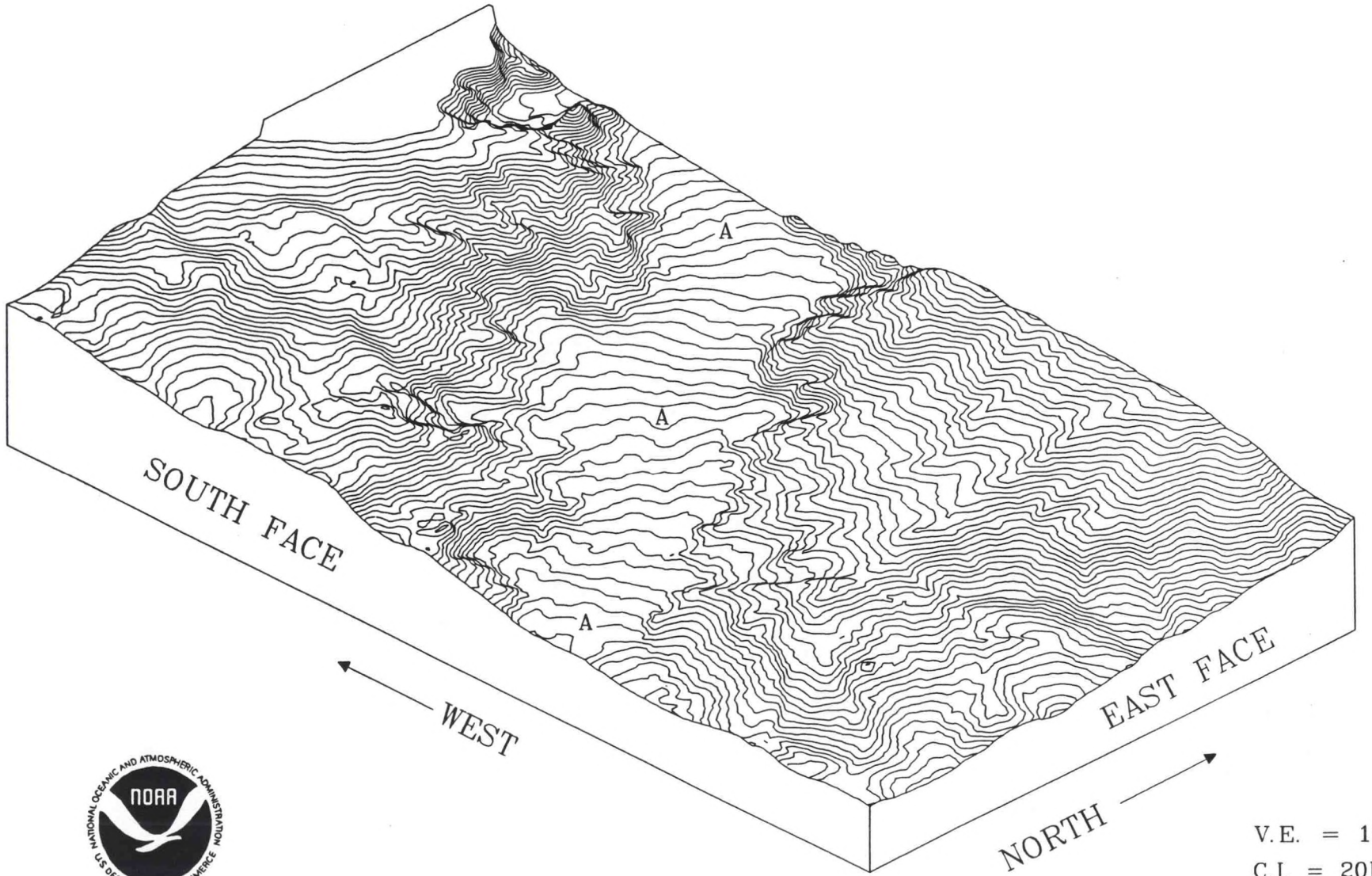


MISSISSIPPI CANYON SW MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

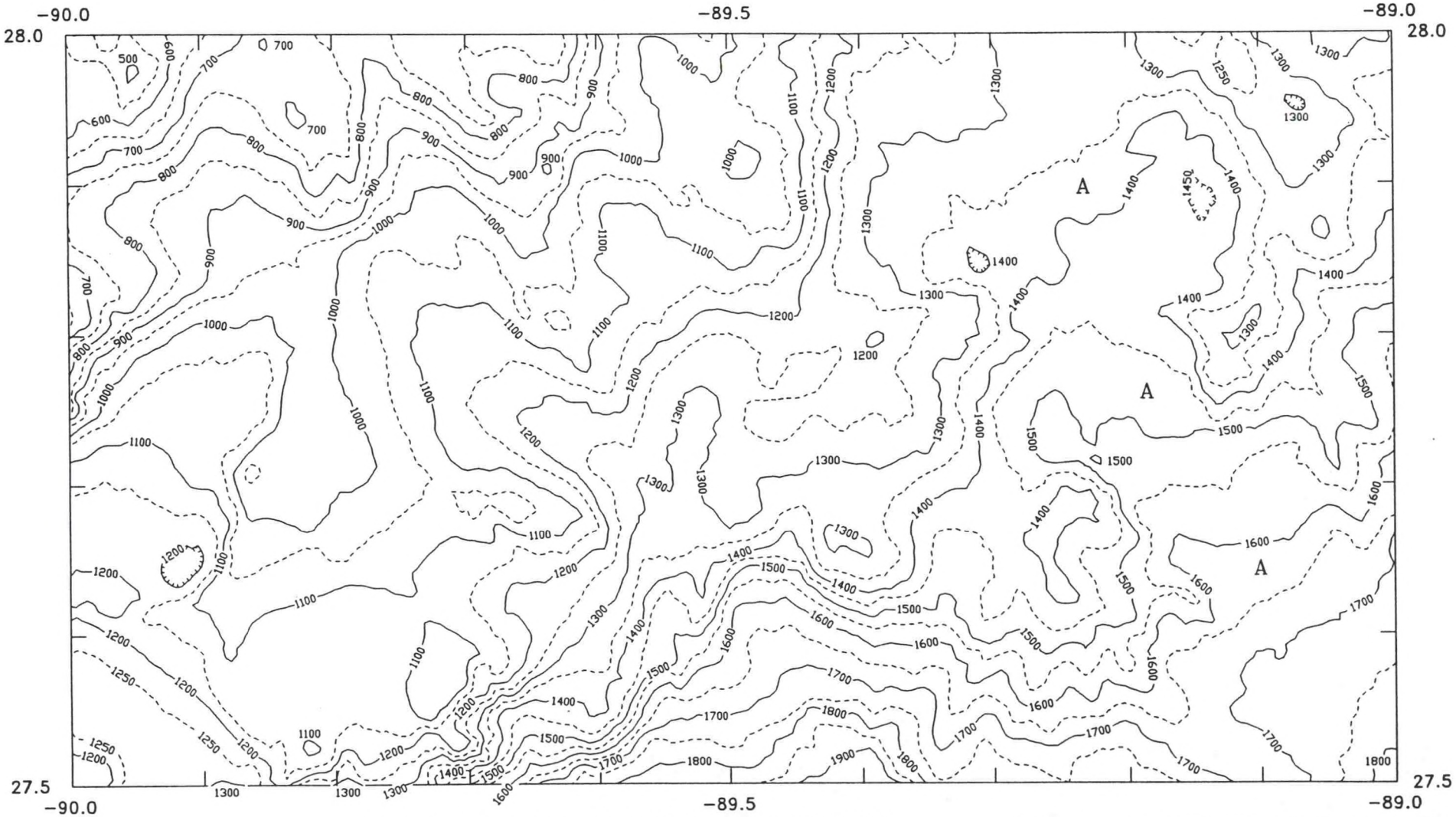
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE MISCANSA.DWG

MISSISSIPPI SLOPE MAP A36 GULF OF MEXICO



FILE MISLOPTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAME A MISSISSIPPI CANYON

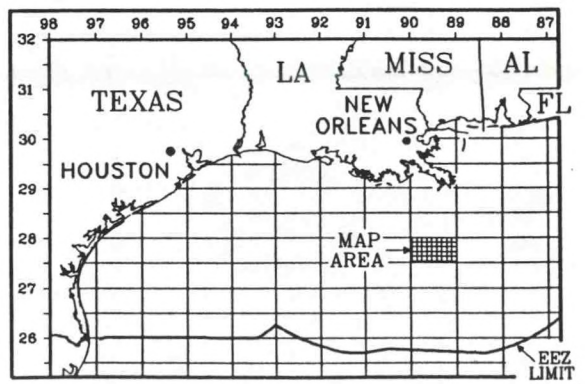
NEW NOAA/NOS NAMES NONE

MAP DESIGNATION

LM148

KILOMETERS

0 10 20 30 40 50

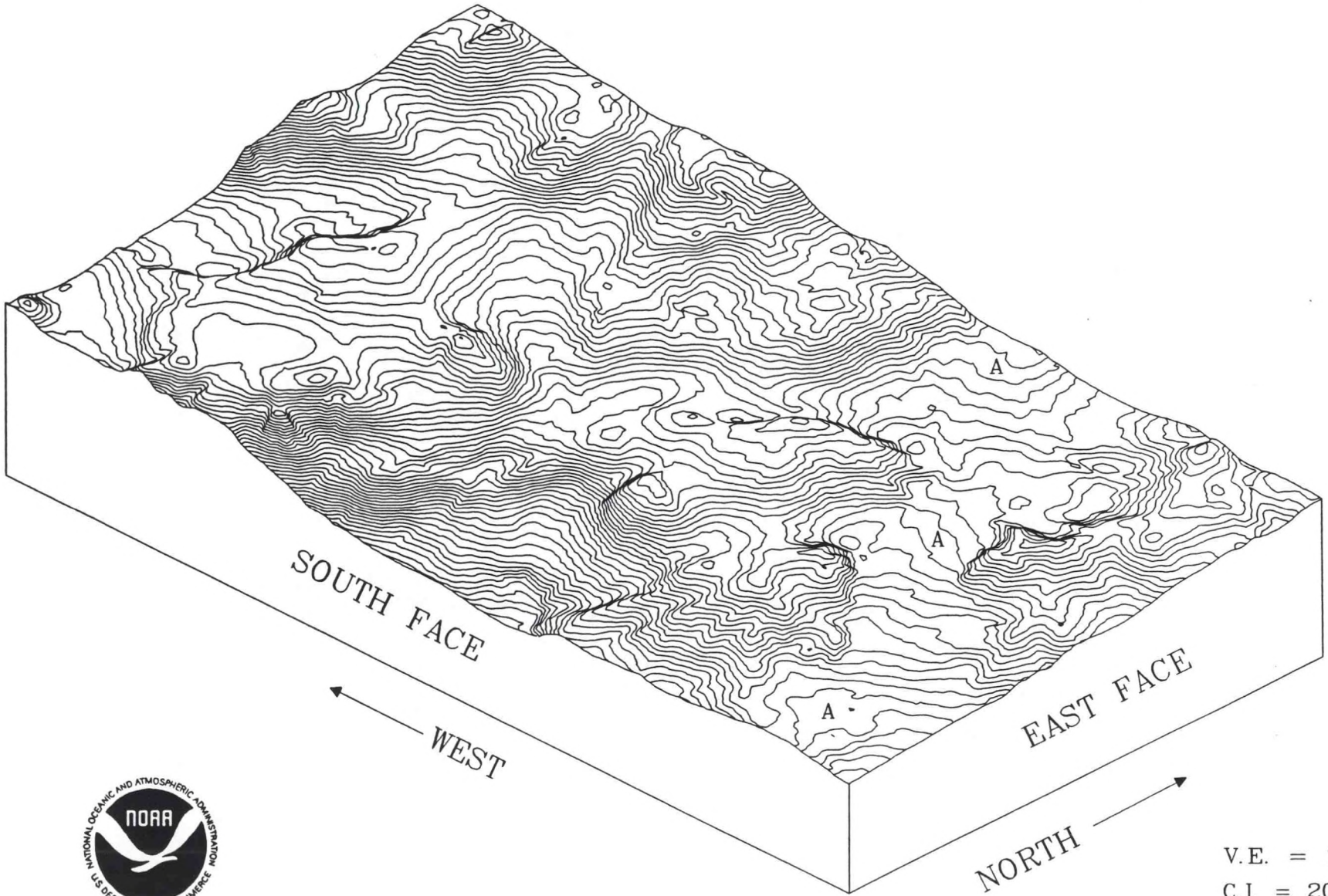


MISSISSIPPI SLOPE MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

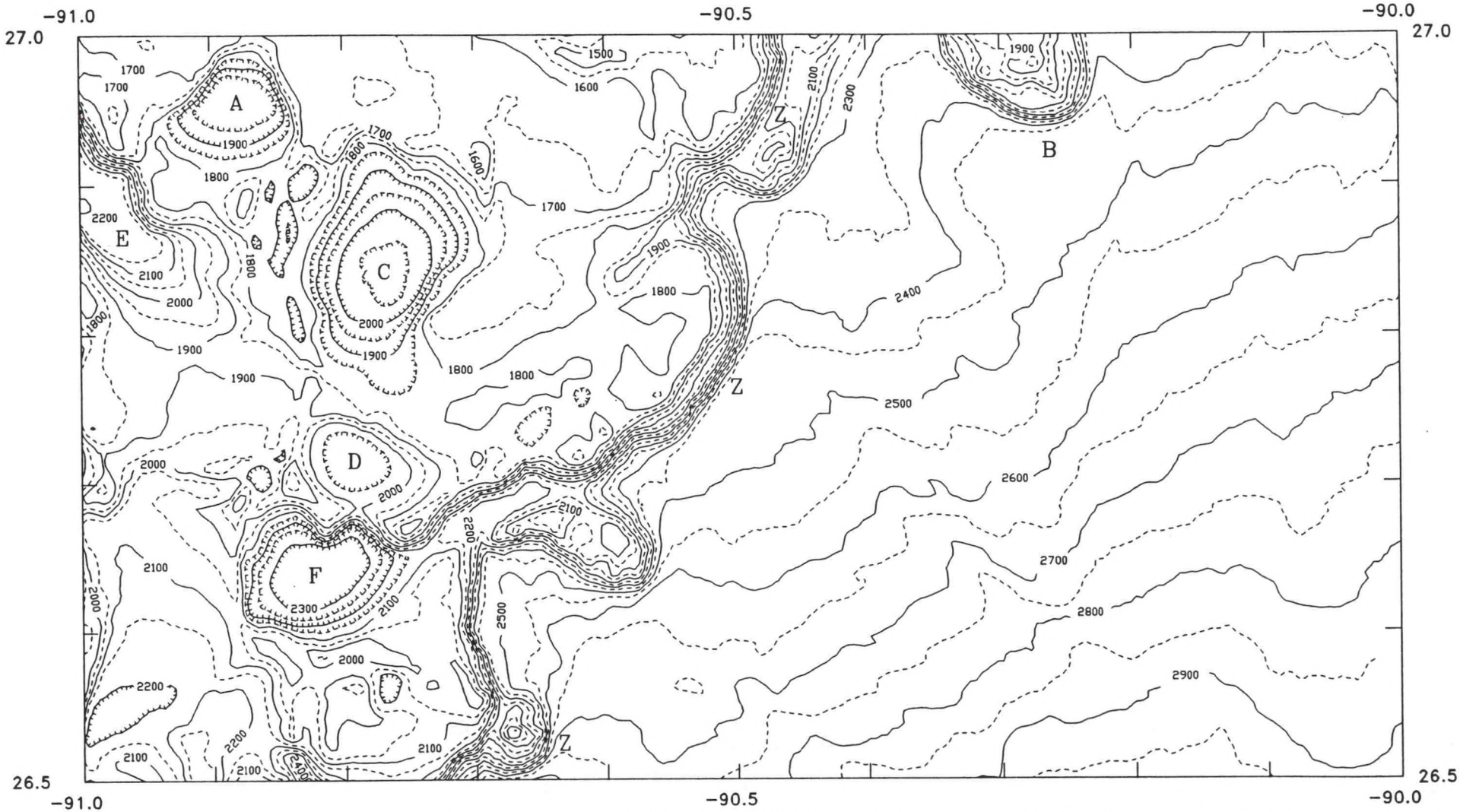
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE MISLOPSA.DWG

MITCHELL BASIN MAP A38 GULF OF MEXICO



FILE MTCHBNTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES B GREEN KNOLL Z SIGSBEE ESCARPMENT

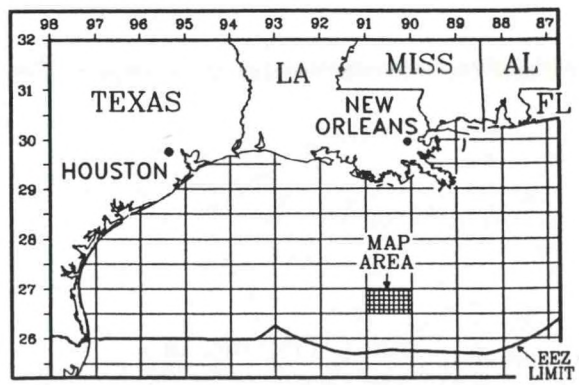
NEW NOAA/NOS NAMES A PILLSBURY BASIN C MITCHELL BASIN
D MATTISON BASIN E AGASSIZ BASIN
F HYDROGRAPHER BASIN

MAP DESIGNATION

LM144

K I L O M E T E R S

0 10 20 30 40 50

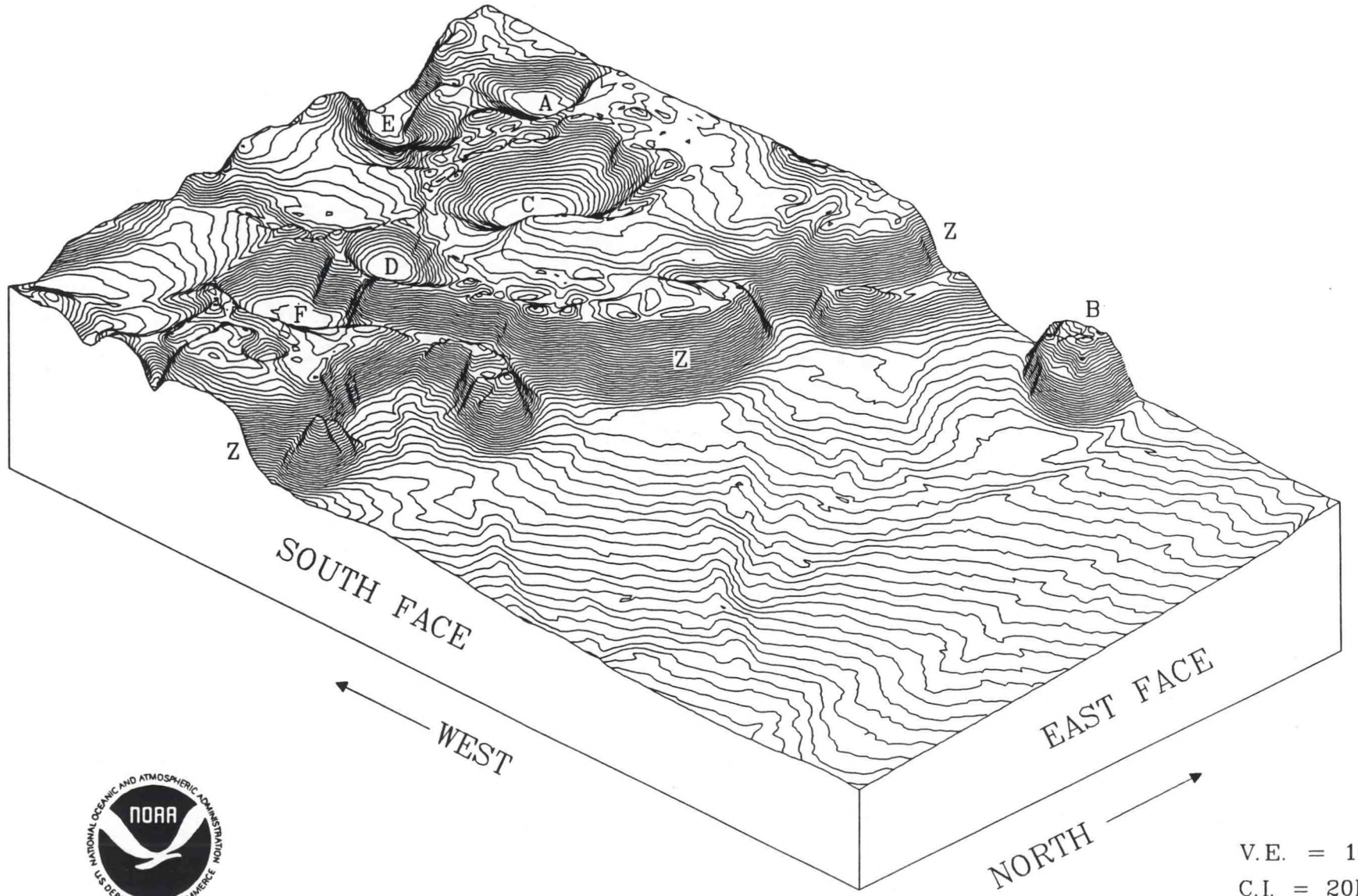


MITCHELL BASIN MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



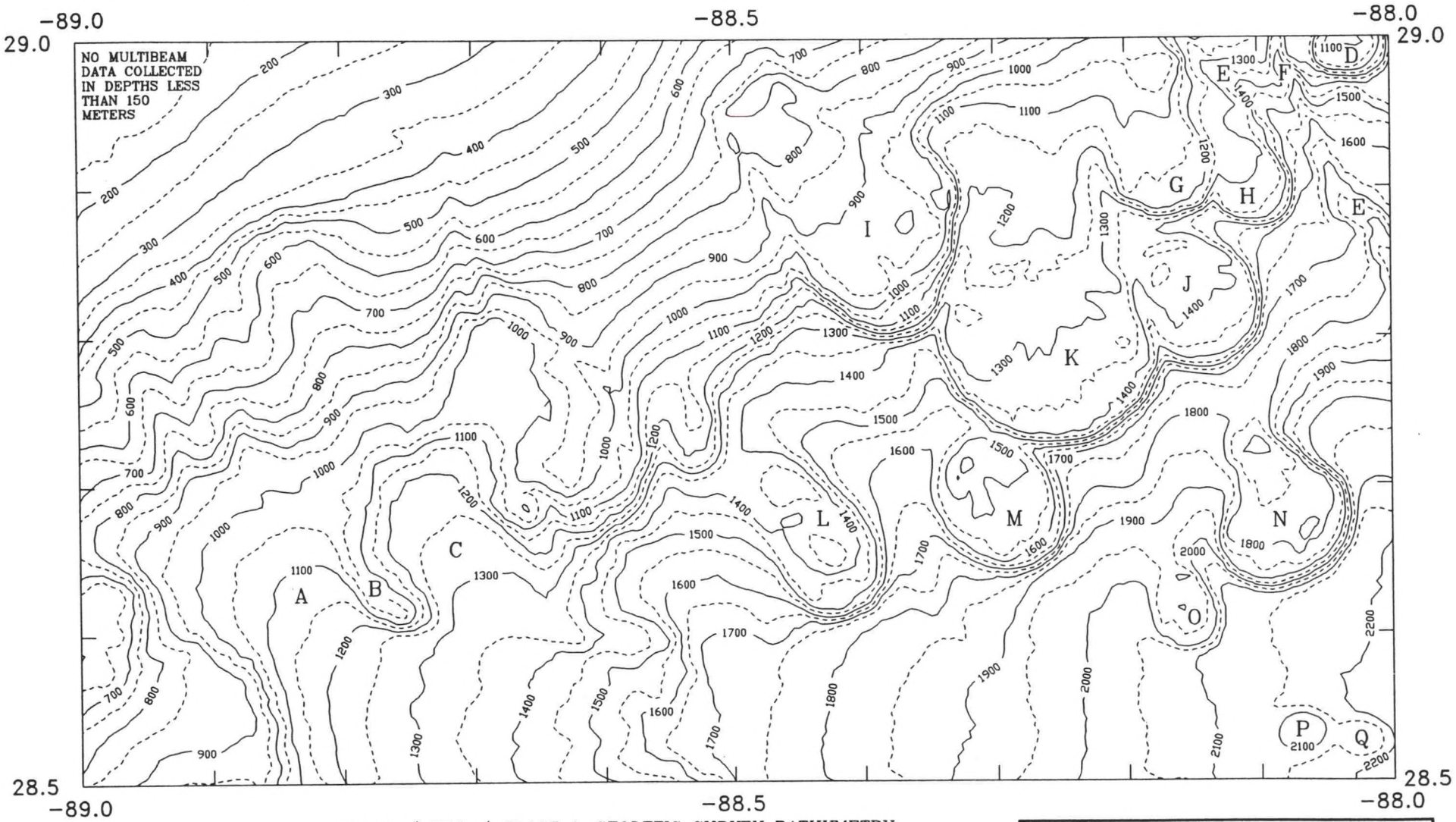
V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE MTCHBNSA.DWG

MITCHELL DOME MAP

A40

GULF OF MEXICO



FILE MCHDOMTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY

DEPTHS IN METERS

RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

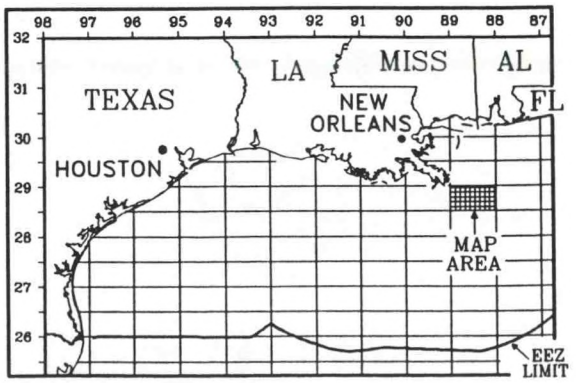
NEW NOAA/NOS NAMES A GULFPORT VALLEY B BRETON SPUR C REDFISH VALEY
D PASCAGOULA DOME E DORSEY CANYON F SOUNDER CANYON G HORN DOME
H PETIT BOIS DOME I WHITING DOME J FARNELLA DOME K MITCHELL DOME
L BILOXI DOME M GLORIA DOME N MOBILE DOME O DAUPHIN DOME
P HERONS MOUND Q BON SECOUR MOUND

MAP DESIGNATION

LM141

KILOMETERS

0 10 20 30 40 50

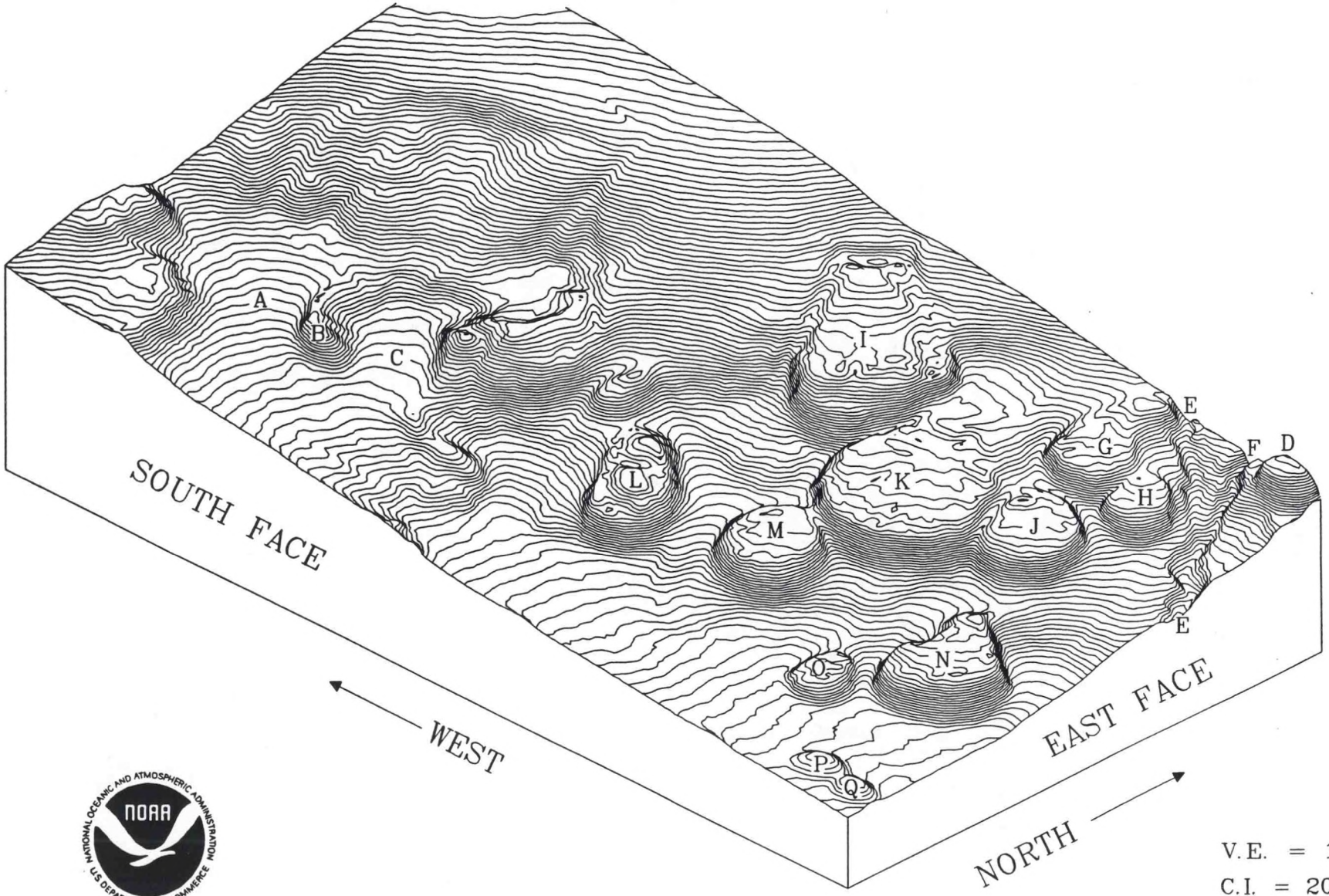


MITCHELL DOME MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

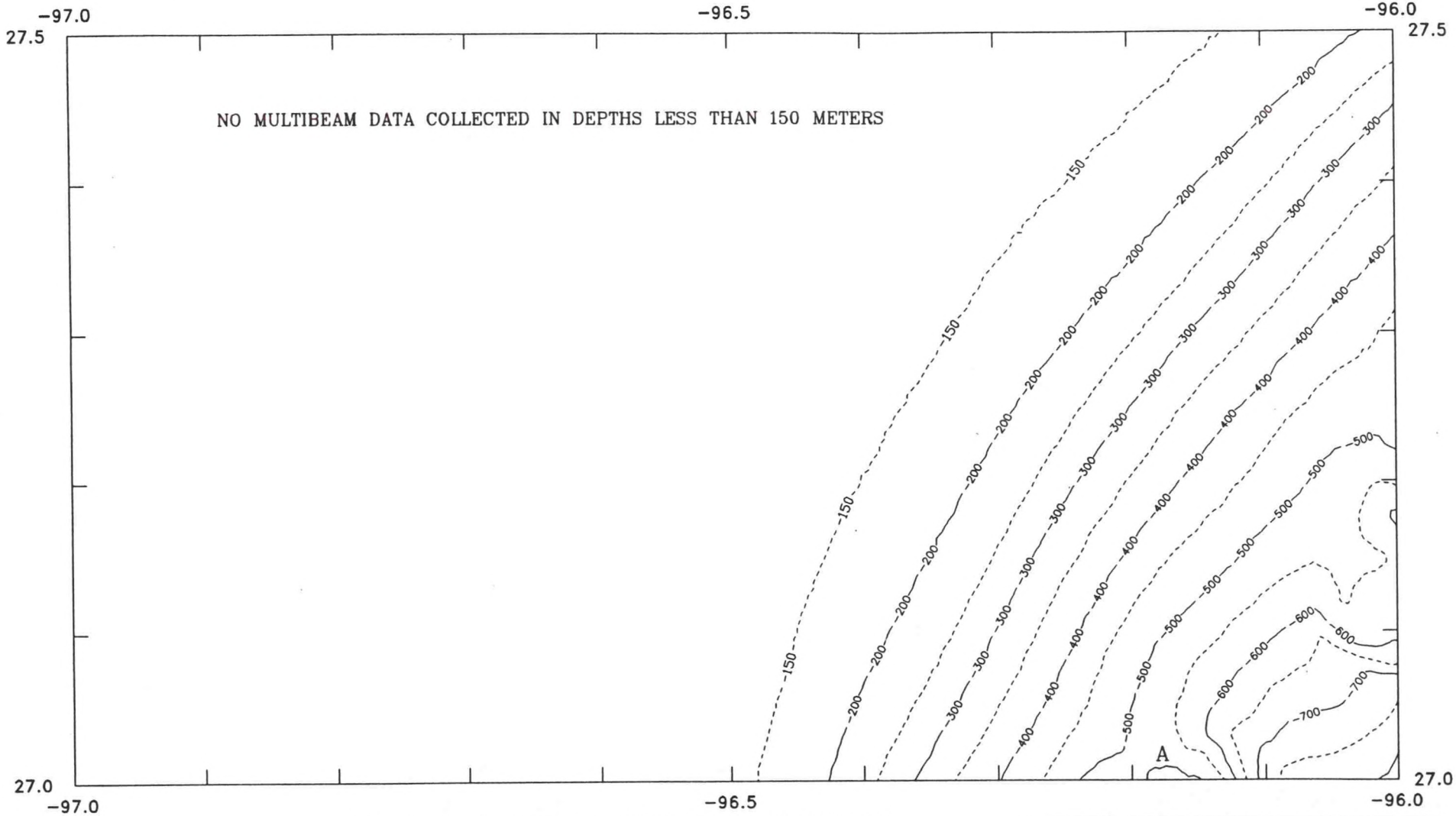
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE MCHDOMSA.DWG

MUSTANG MAP A42 GULF OF MEXICO



FILE MUSTNGTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

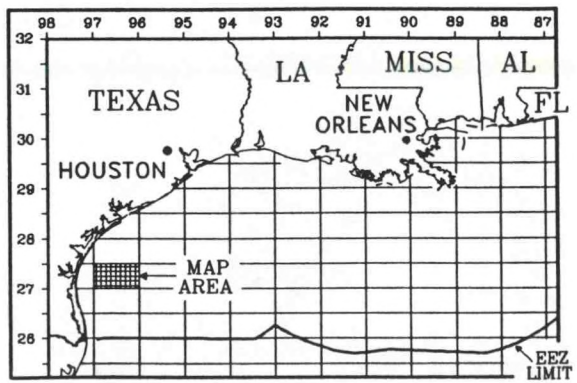
NEW NOAA/NOS NAMES NUECES DOME

MAP DESIGNATION

LM179

K I L O M E T E R S

0 10 20 30 40 50

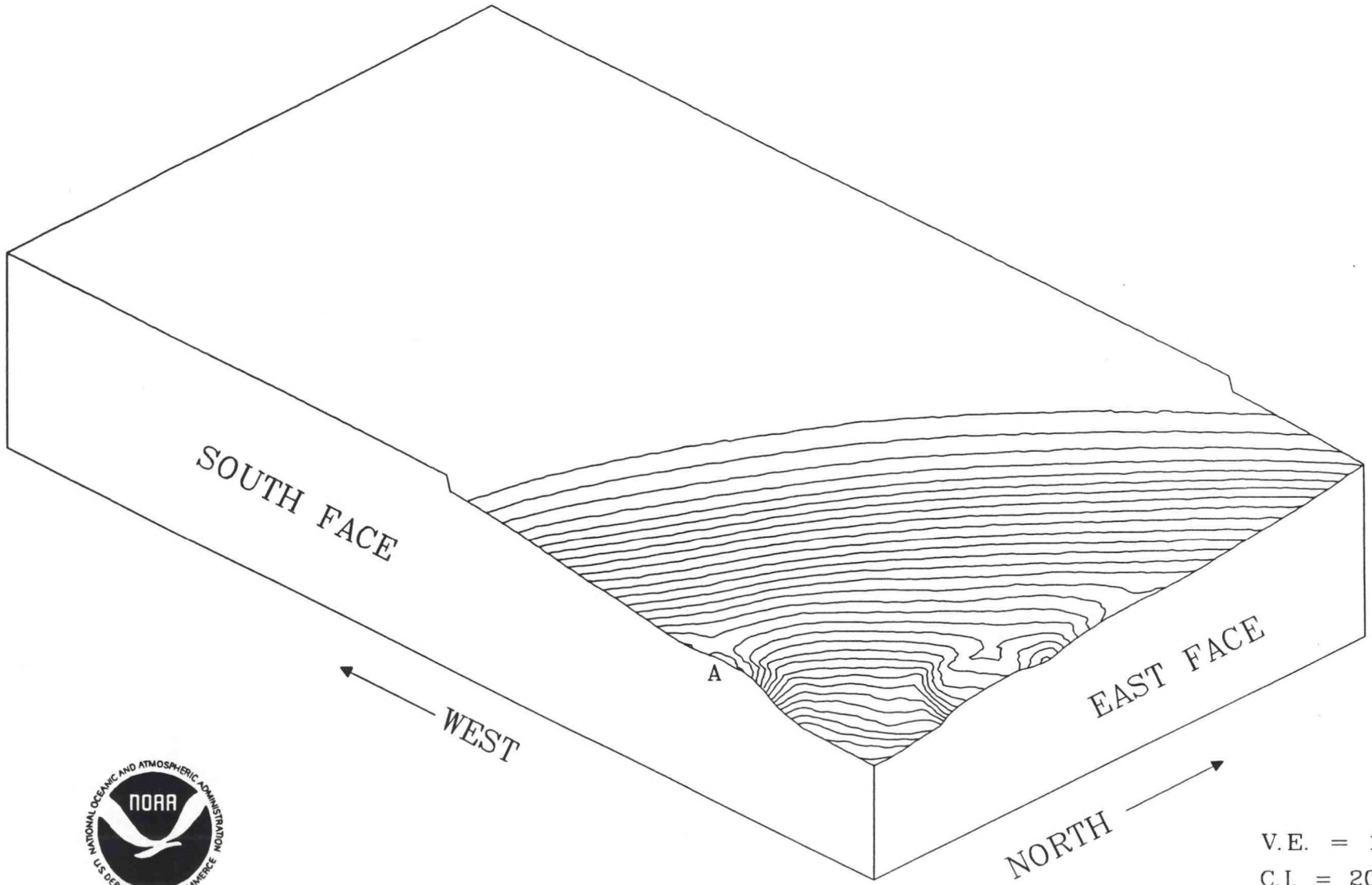


MUSTANG MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

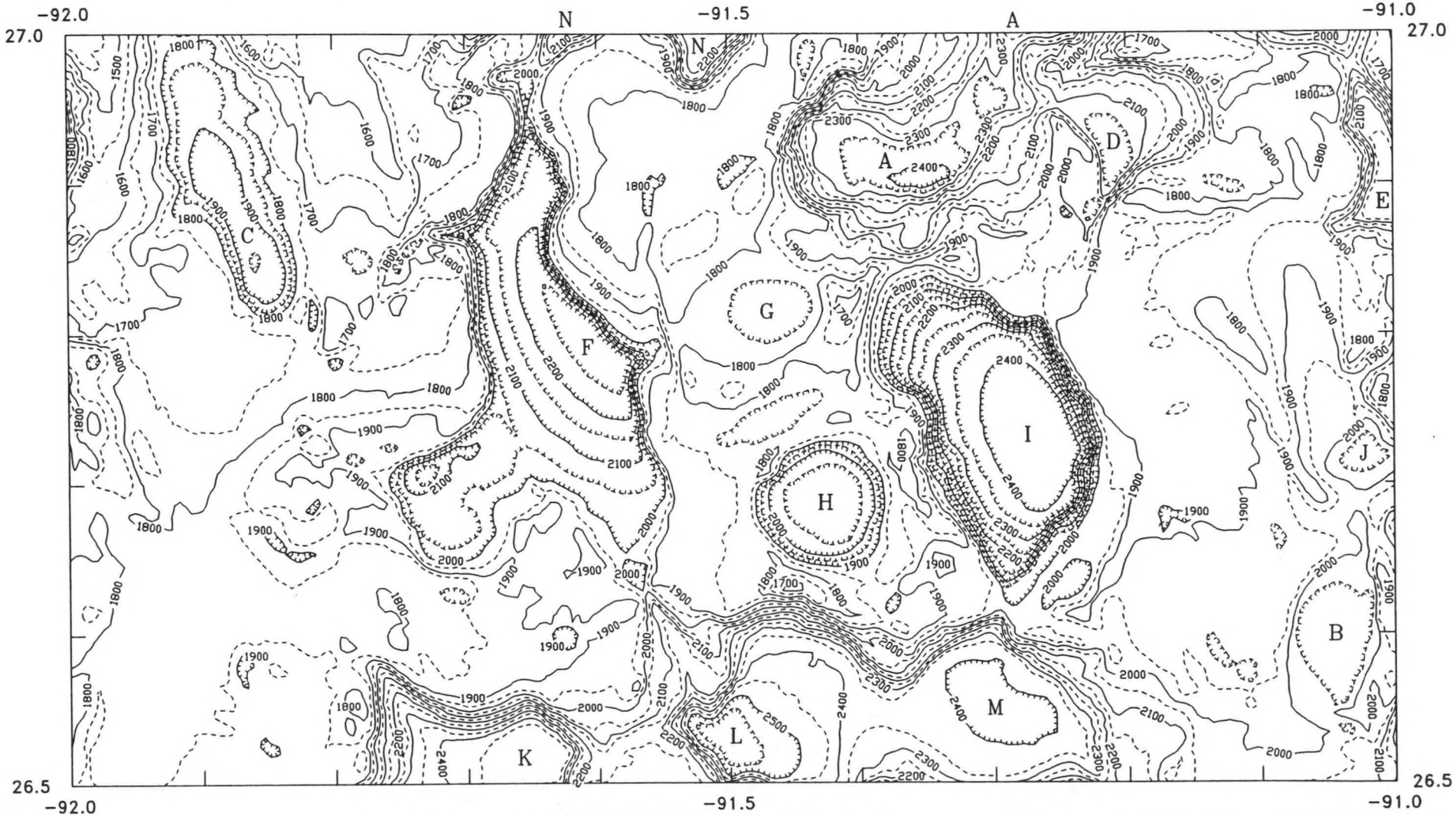
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE MUSTNGSA.DWG

ORCA BASIN MAP A44 GULF OF MEXICO



FILE ORCABNTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES A ORCA BASIN

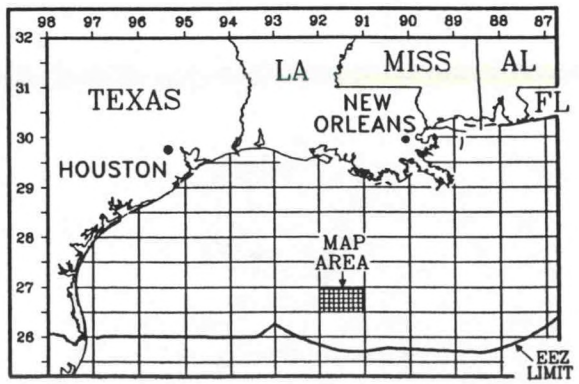
NEW NOAA/NOS NAMES B PLAQUEMINES BASIN C ST.MARY BASIN
D JEFFERSON BASIN E AGASSIZ BASIN F TERREBONNE BASIN G ATAKAPA BASIN
H NATCHEZ BASIN I CHOCTAW BASIN J ST. BERNARD BASIN K ATAKAPA BASIN
L WEST CHITIMACHA BASIN M EAST CHITIMACHA BASIN N NORTH TERREBONNE BASIN

MAP DESIGNATION

LM161

K I L O M E T E R S

0 10 20 30 40 50

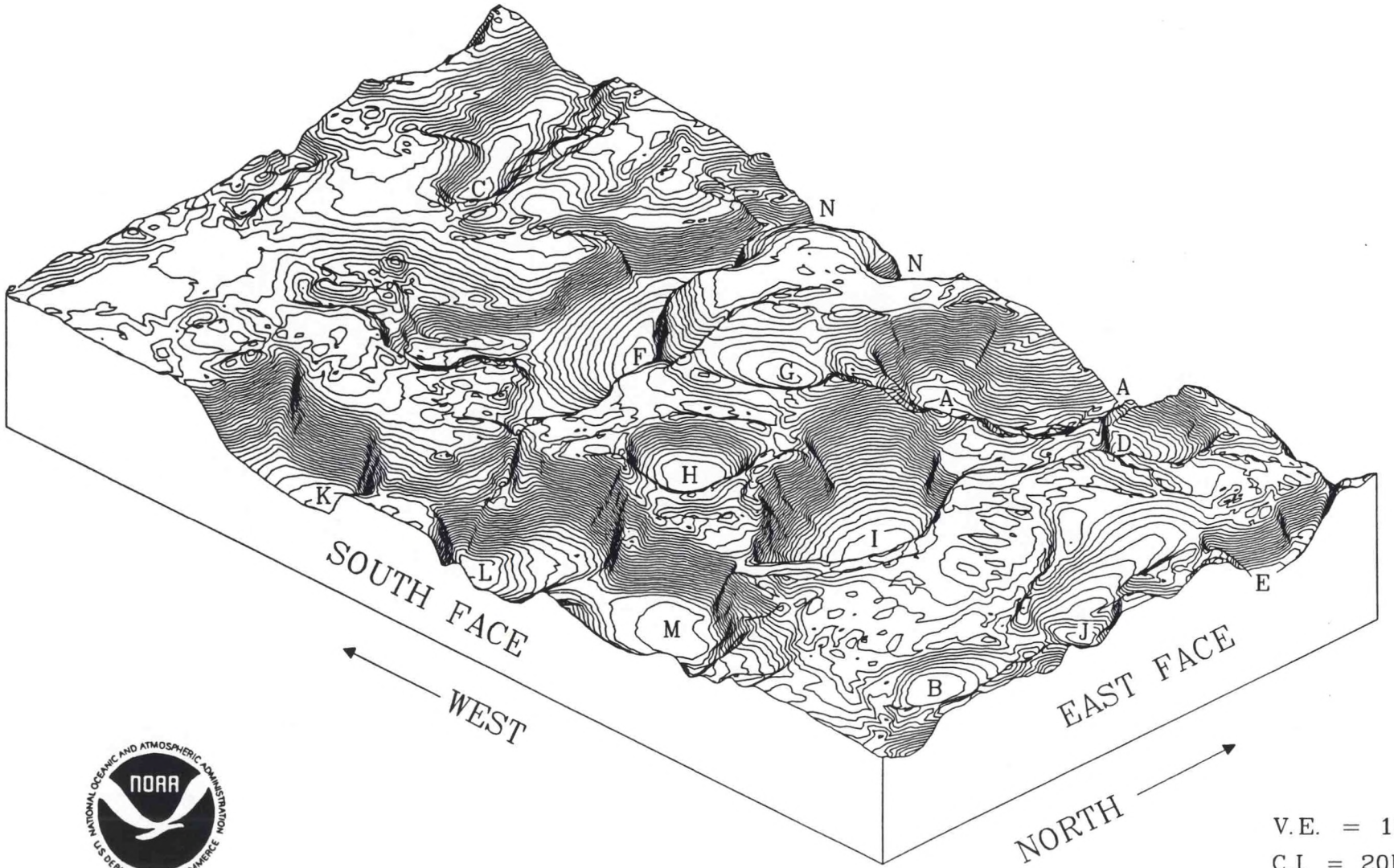


ORCA BASIN MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

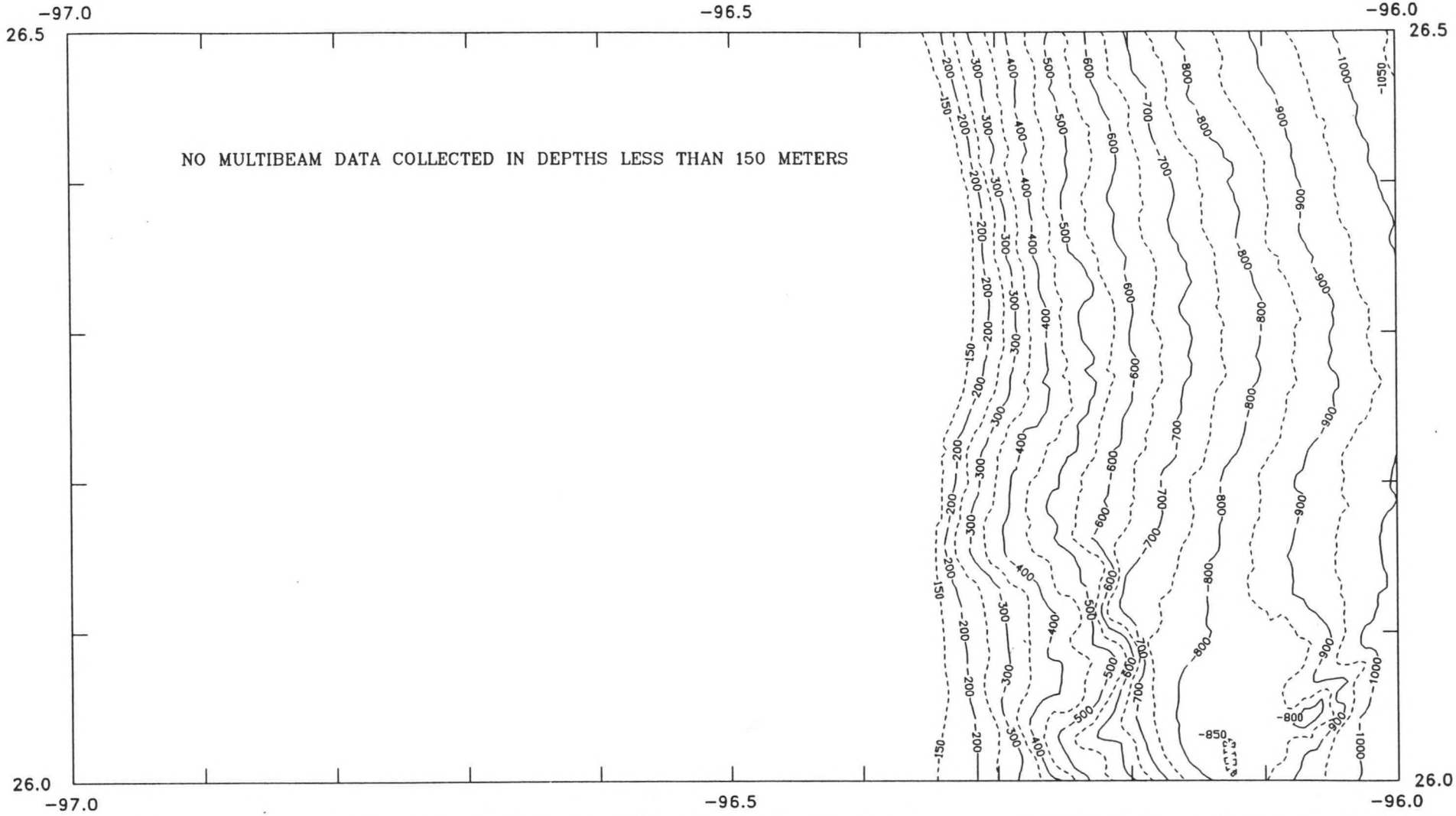
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE ORCABNSA.DWG

PADRE MAP A46 GULF OF MEXICO



FILE PADREETA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

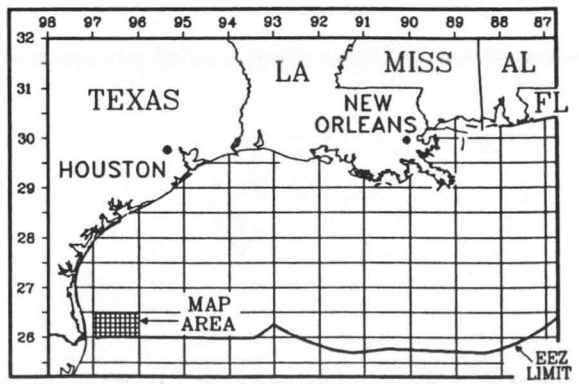
NEW NOAA/NOS NAMES NONE

MAP DESIGNATION

LM181

K I L O M E T E R S

0 10 20 30 40 50

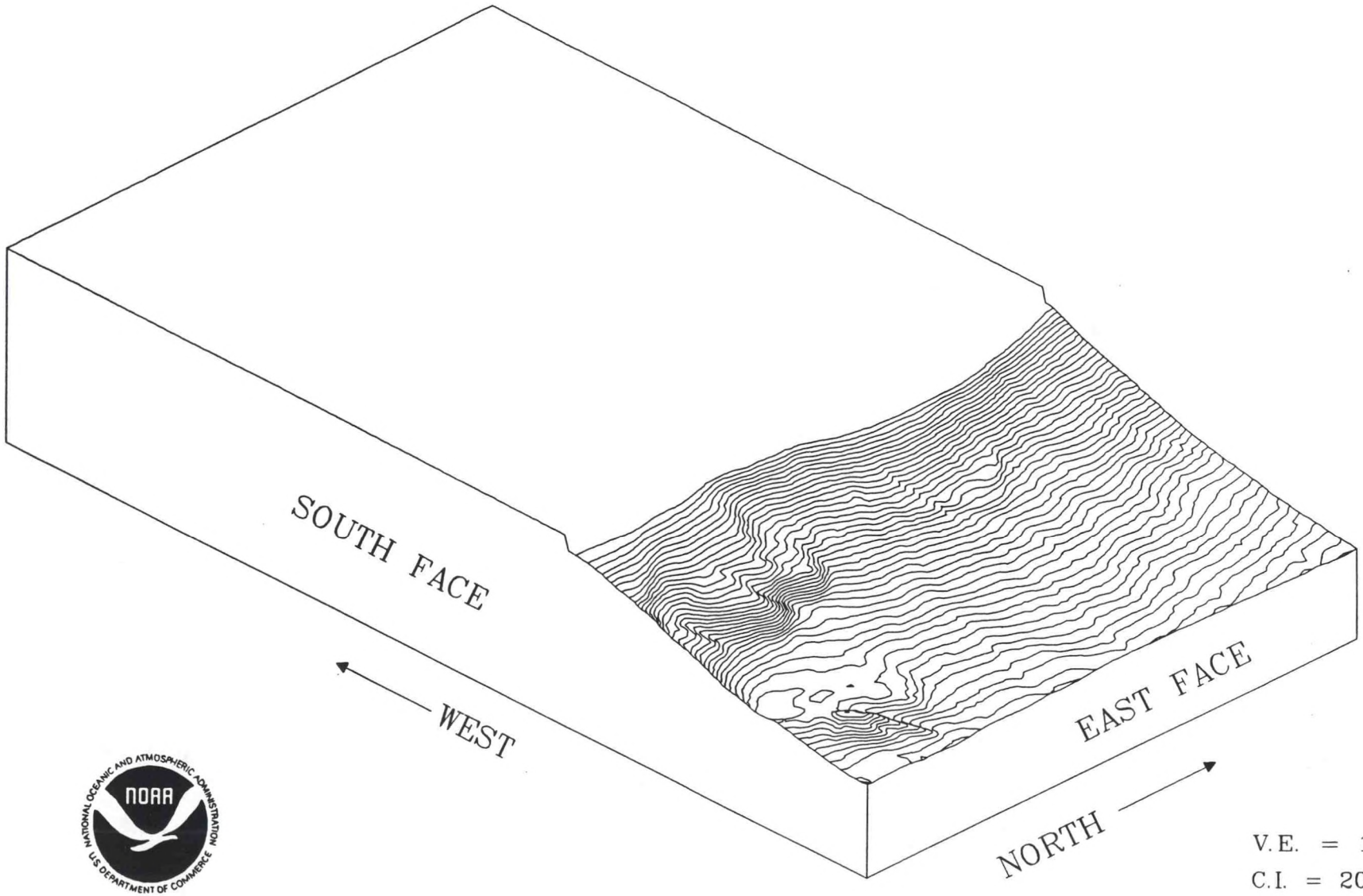


PADRE MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

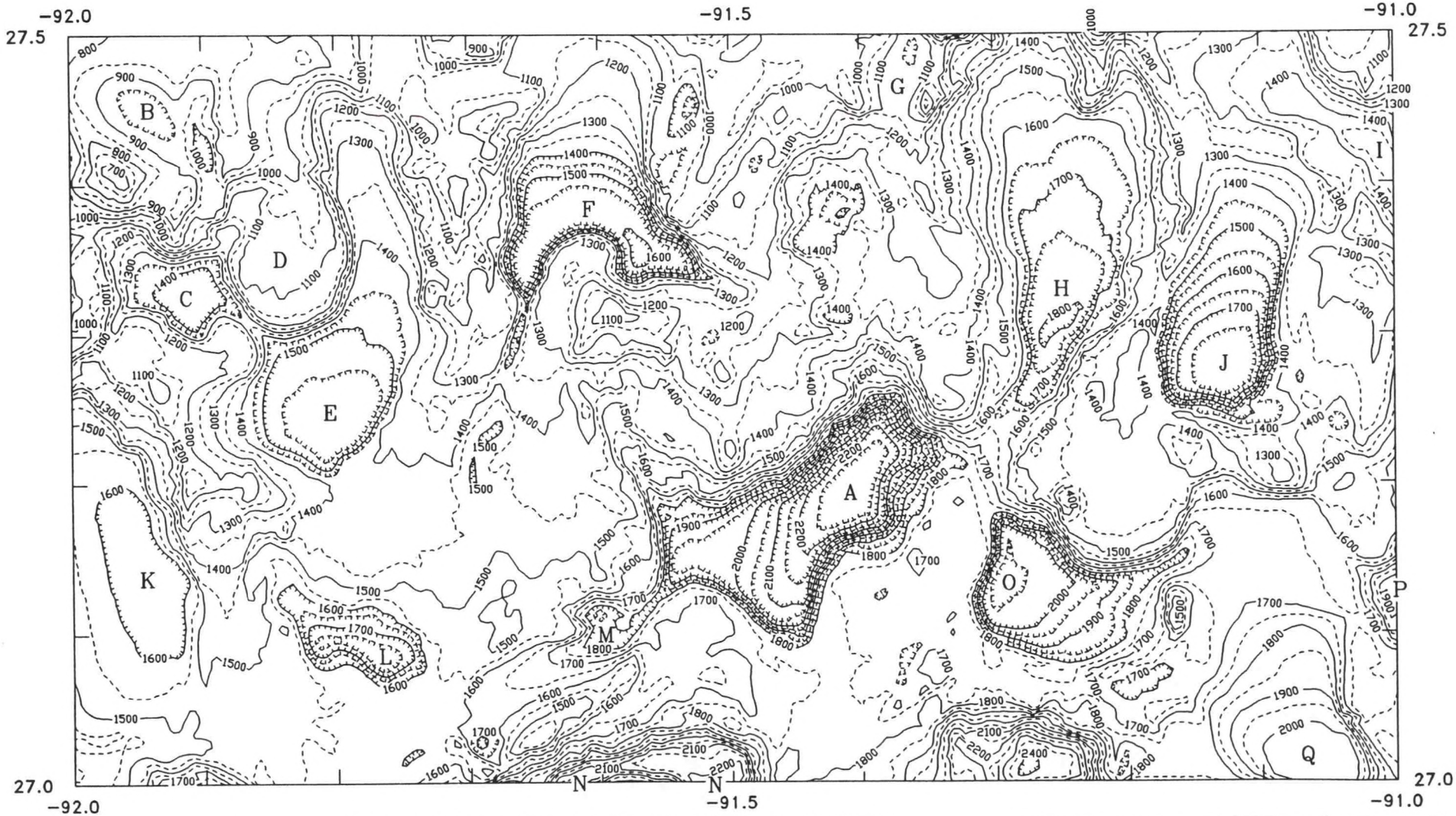
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE PADREESA.DWG

PIGMY BASIN MAP A48 GULF OF MEXICO



FILE PIGMYBTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAME A PIGMY BASIN

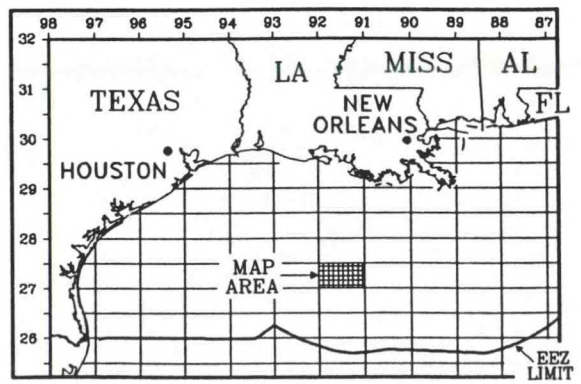
NEW NOAA/NOS NAMES B LEIPPER BASIN C WEST TAMU BASIN D TAMU DOME
E TAMU BASIN F LONGHORN BASIN G TIMBALIER BASIN H TIGER BASIN
I HARRISON BASIN J HANCOCK BASIN K CAMERON BASIN L VERMILION BASIN
M WEST PIGMY BASIN N NORTH TERREBONNE BASIN O ST. TAMMANY BASIN
P TISON BASIN Q ORLEANS BASIN

MAP DESIGNATION

LM165

K I L O M E T E R S

0 10 20 30 40 50

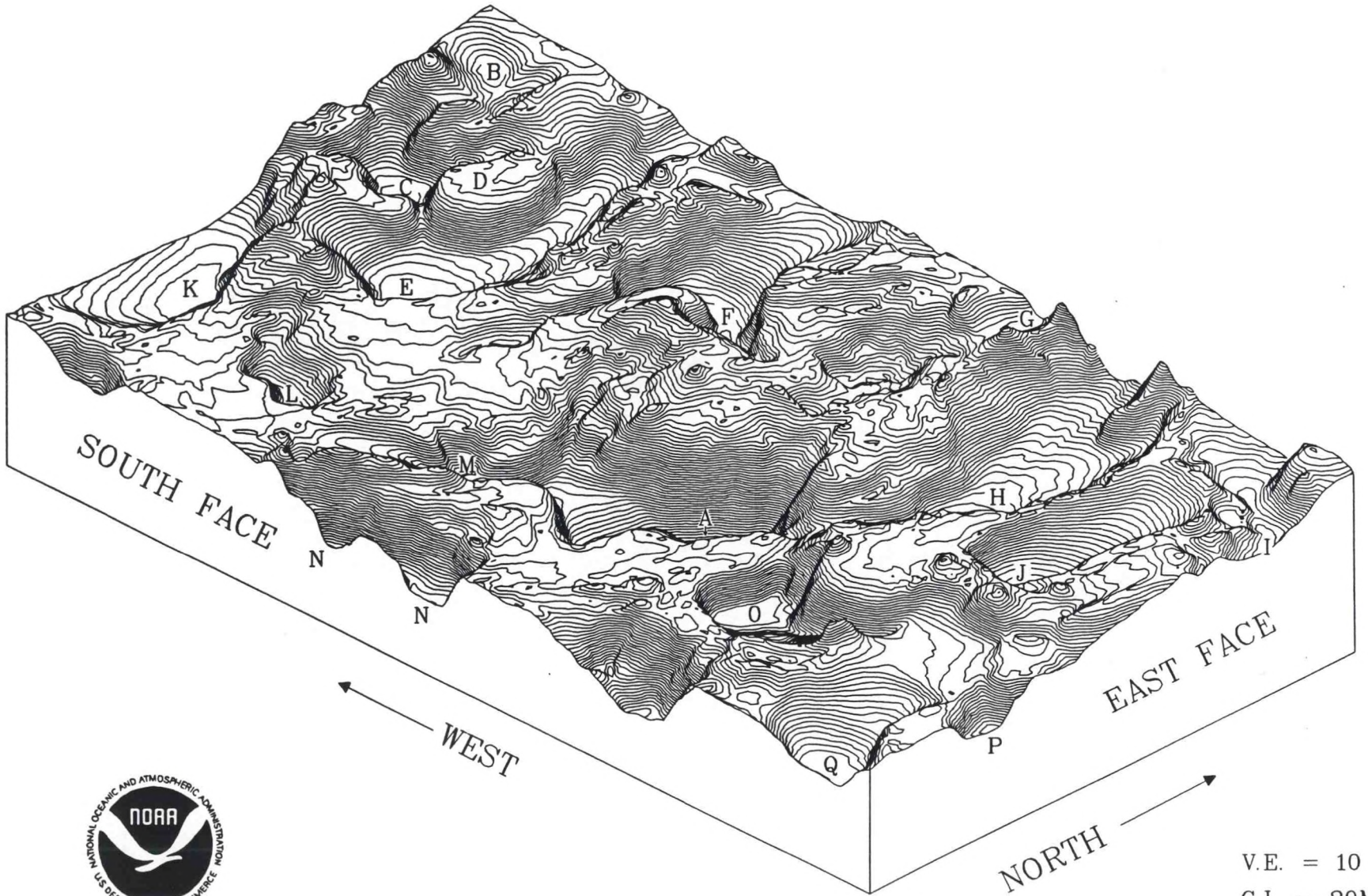


PIGMY BASIN MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE

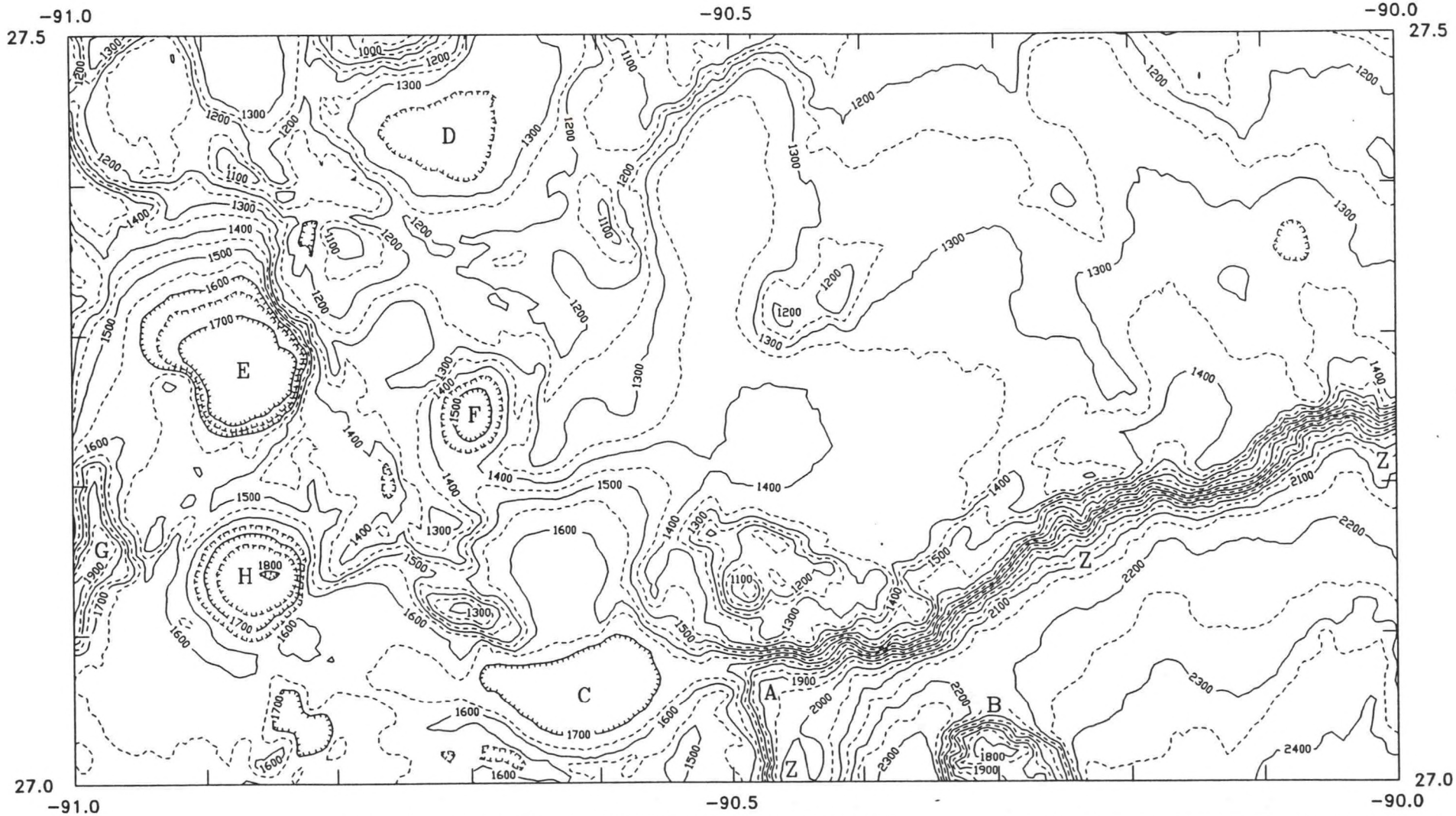


NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

FILE PIGMYBSA.DWG

V.E. = 10
C.I. = 20M
ELEV. = 30°

RESEARCHER BASIN MAP A50 GULF OF MEXICO



FILE RSHRBNTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES A GREEN CANYON B GREEN KNOLL
Z SIGSBEE ESCARPMENT

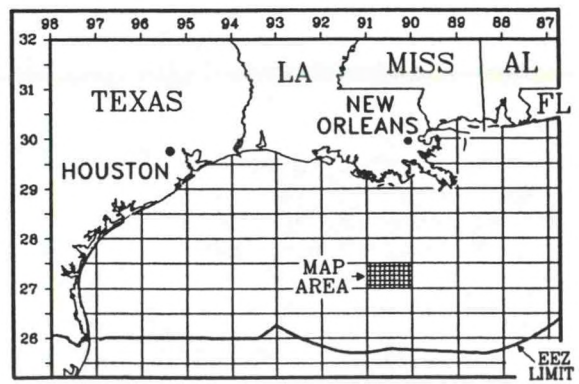
NEW NOAA/NOS NAMES C GREEN BASIN D STEWART BASIN
E SHIP BASIN F CAT BASIN G TISON BASIN
H RESEARCHER BASIN

MAP DESIGNATION

LM143

K I L O M E T E R S

0 10 20 30 40 50

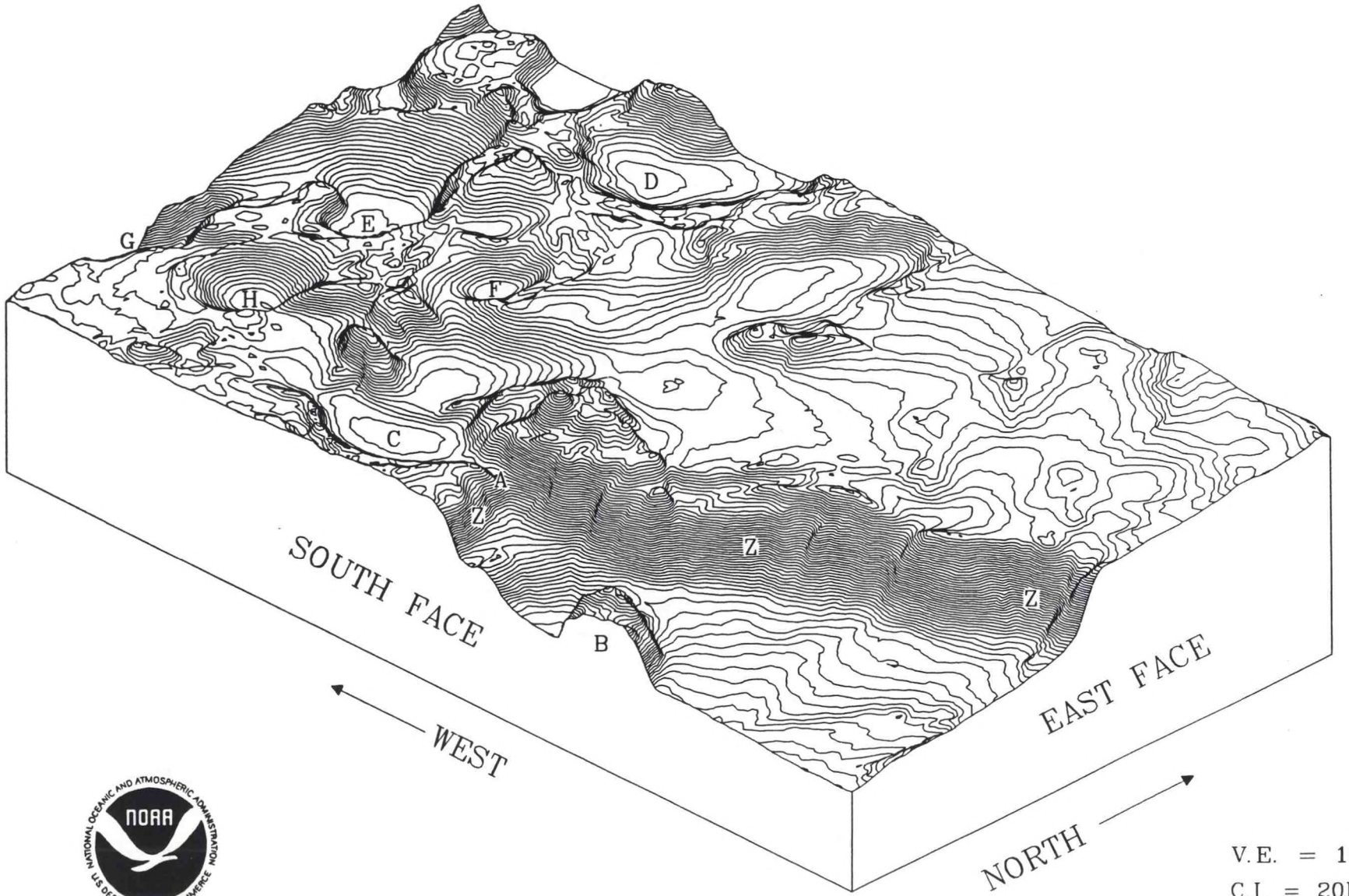


RESEARCHER BASIN MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

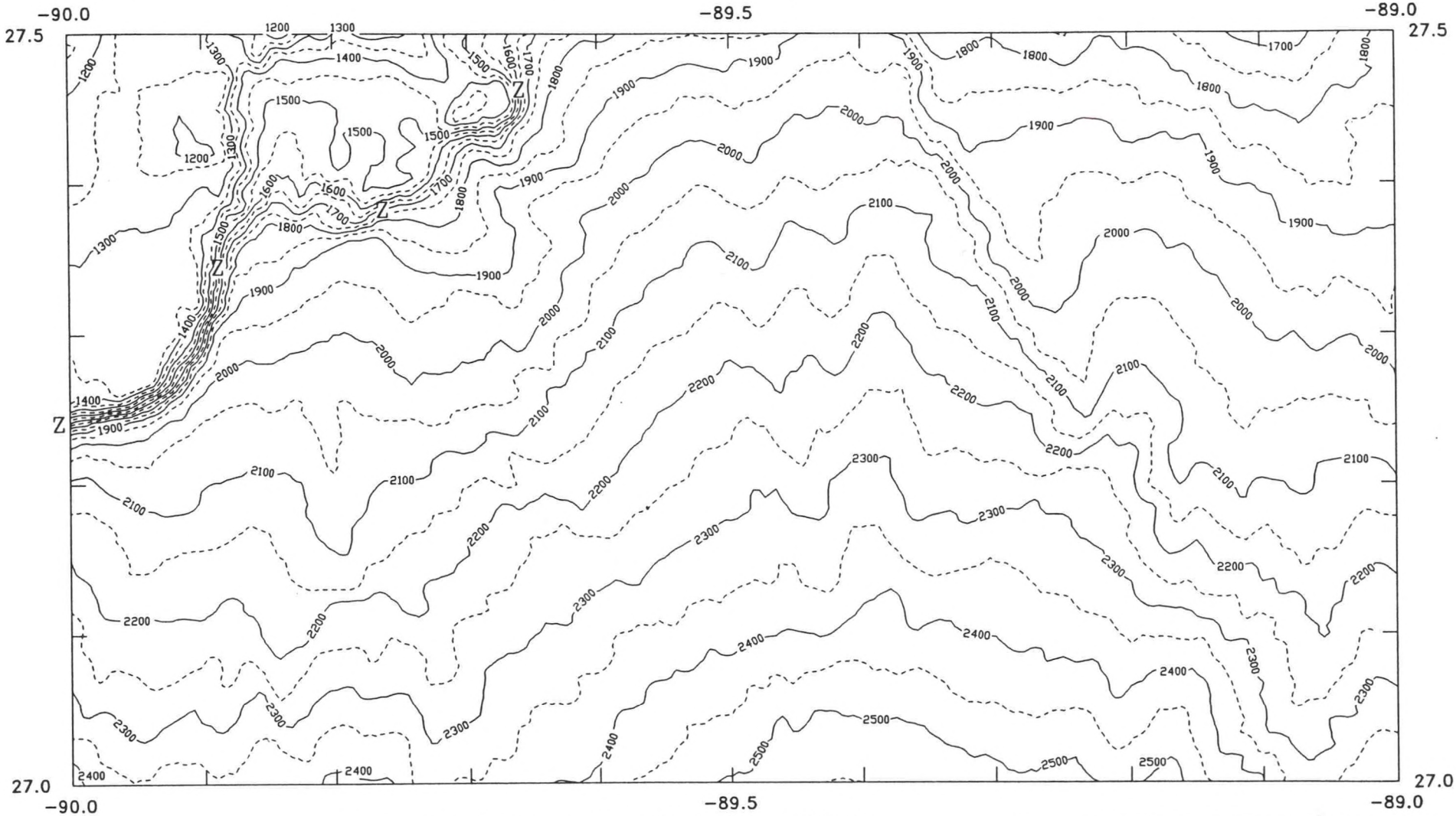
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE RSHRBNSA.DWG

SIGSBEE ESCARPMENT EAST MAP A52 GULF OF MEXICO



FILE SIGESCTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES Z SIGSBEE ESCARPMENT

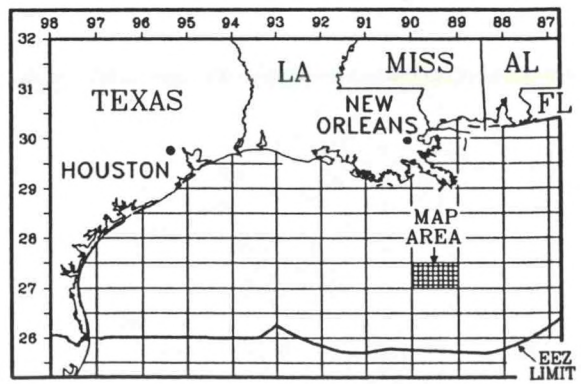
NEW NOAA/NOS NAMES NONE

MAP DESIGNATION

LM149

K I L O M E T E R S

0 10 20 30 40 50



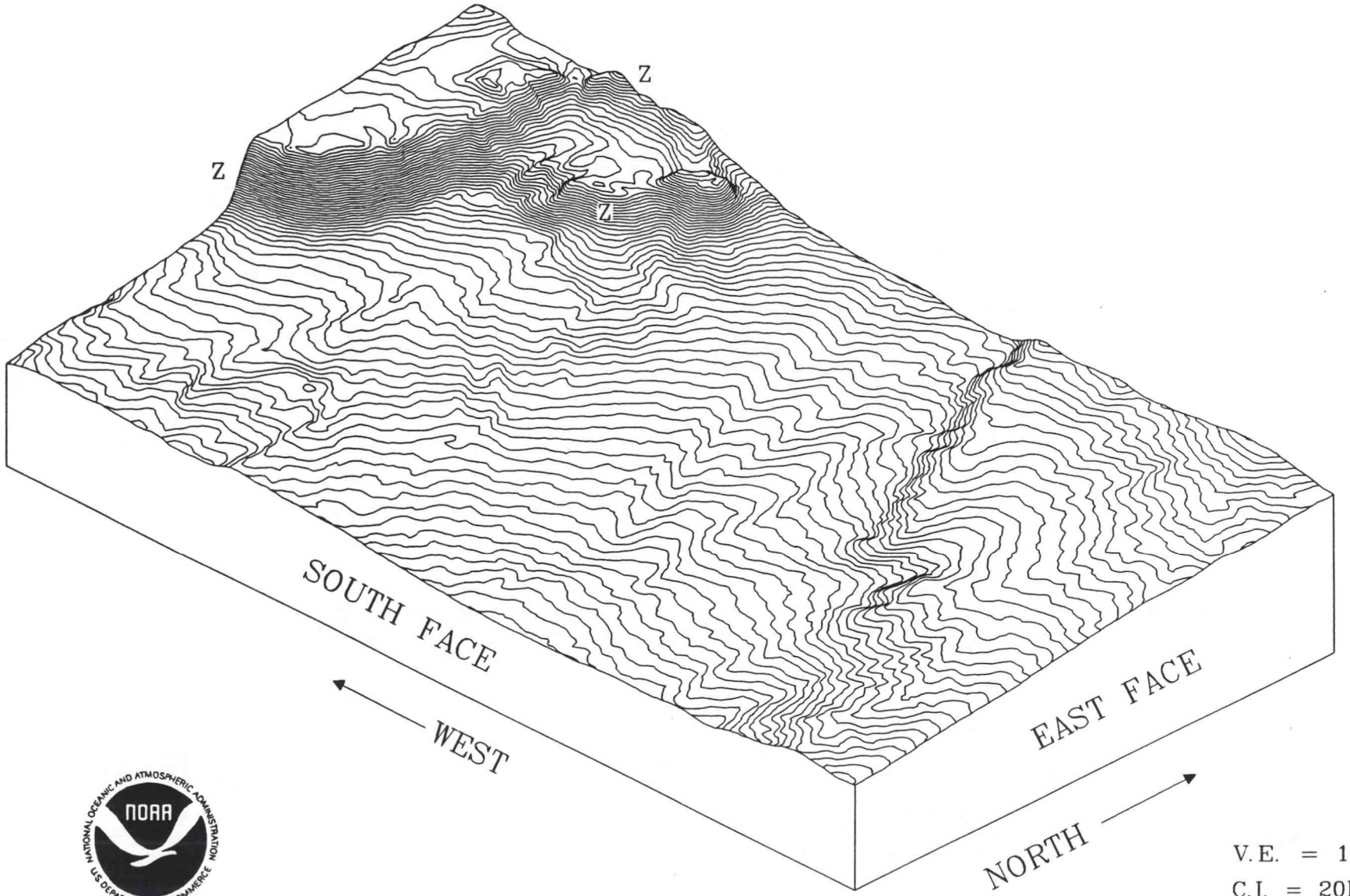
A53

SIGSBEE ESCARPMENT EAST MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

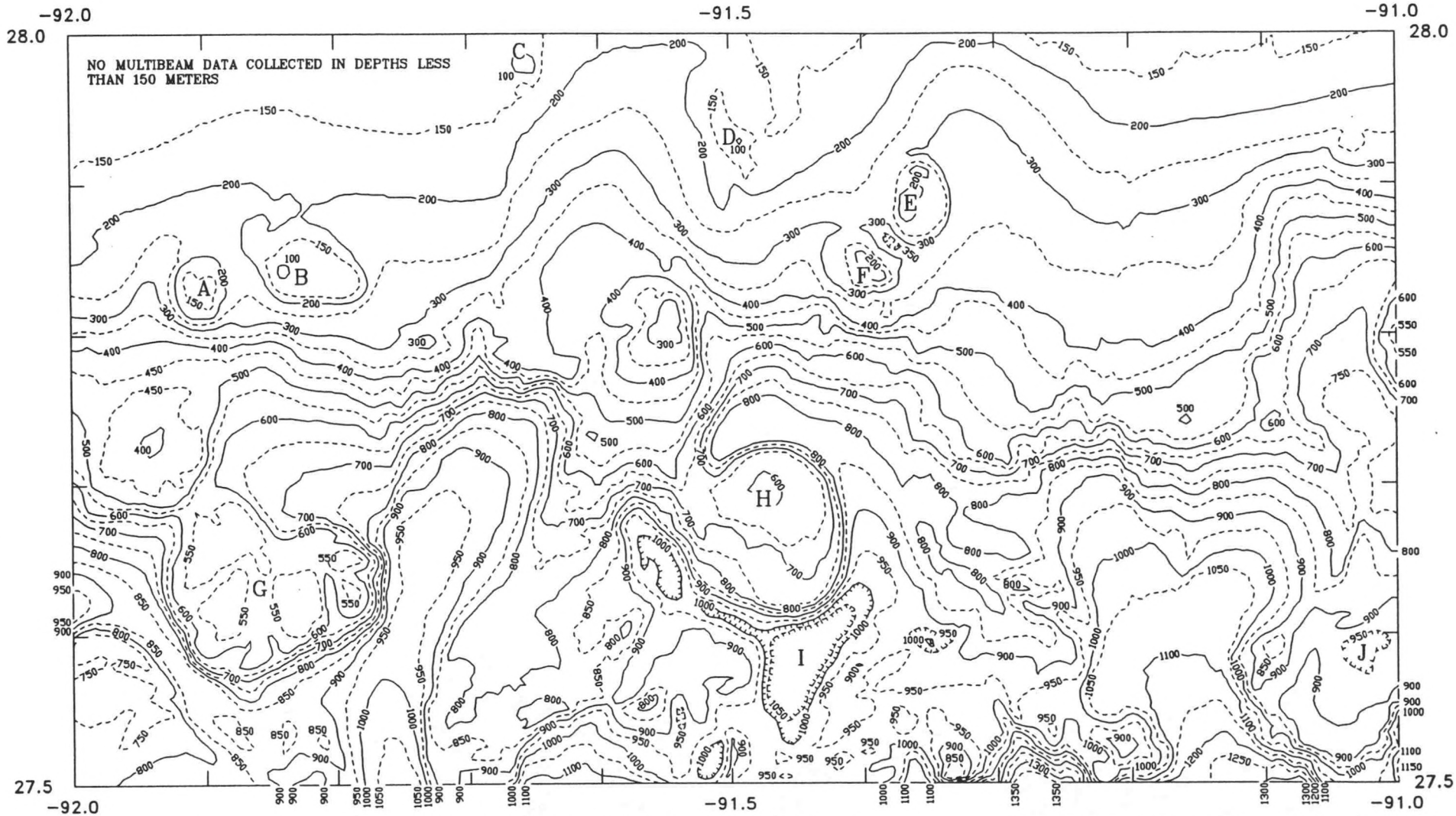
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE SIGESCSA.DWG

SWEET BANK MAP A54 GULF OF MEXICO

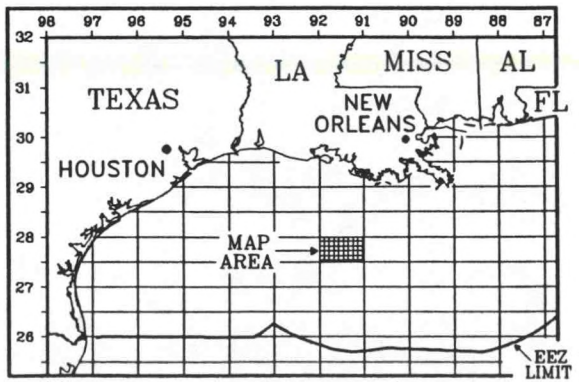


FILE SWEETBTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY
DEPTHS IN METERS
RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES A PHLEGER BANK B SWEET BANK

NEW NOAA/NOS NAMES C VERDUNVILLE BANK D ADELINE BANK
E PATTERSON BANK F BERWICK BANK G JEANERETTE DOME
H ASSUMPTION DOME I PORT HUDSON BASIN
J PENCHANT BASIN



MAP DESIGNATION

LM177

KILOMETERS

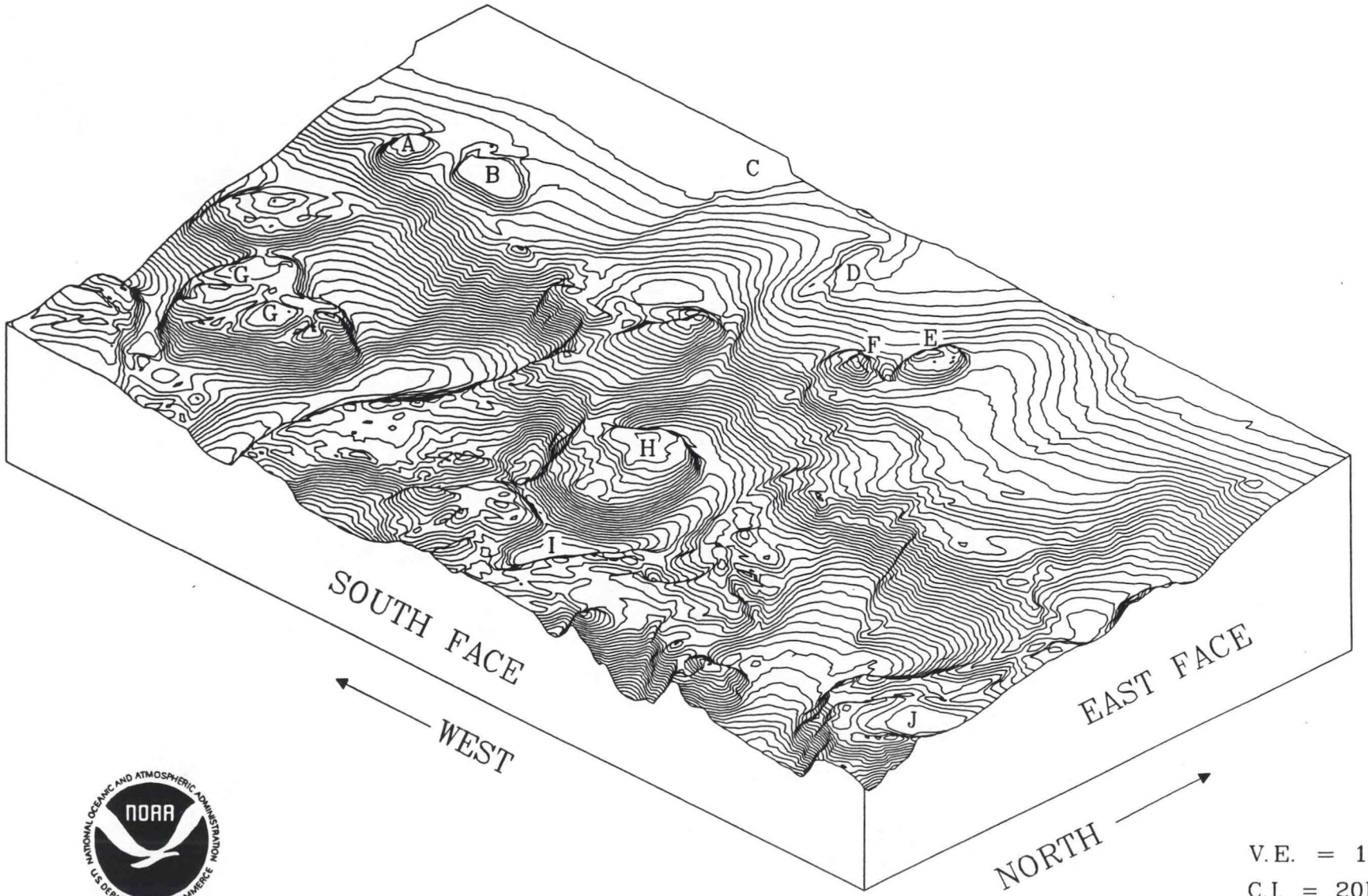
0 10 20 30 40 50

SWEET BANK MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



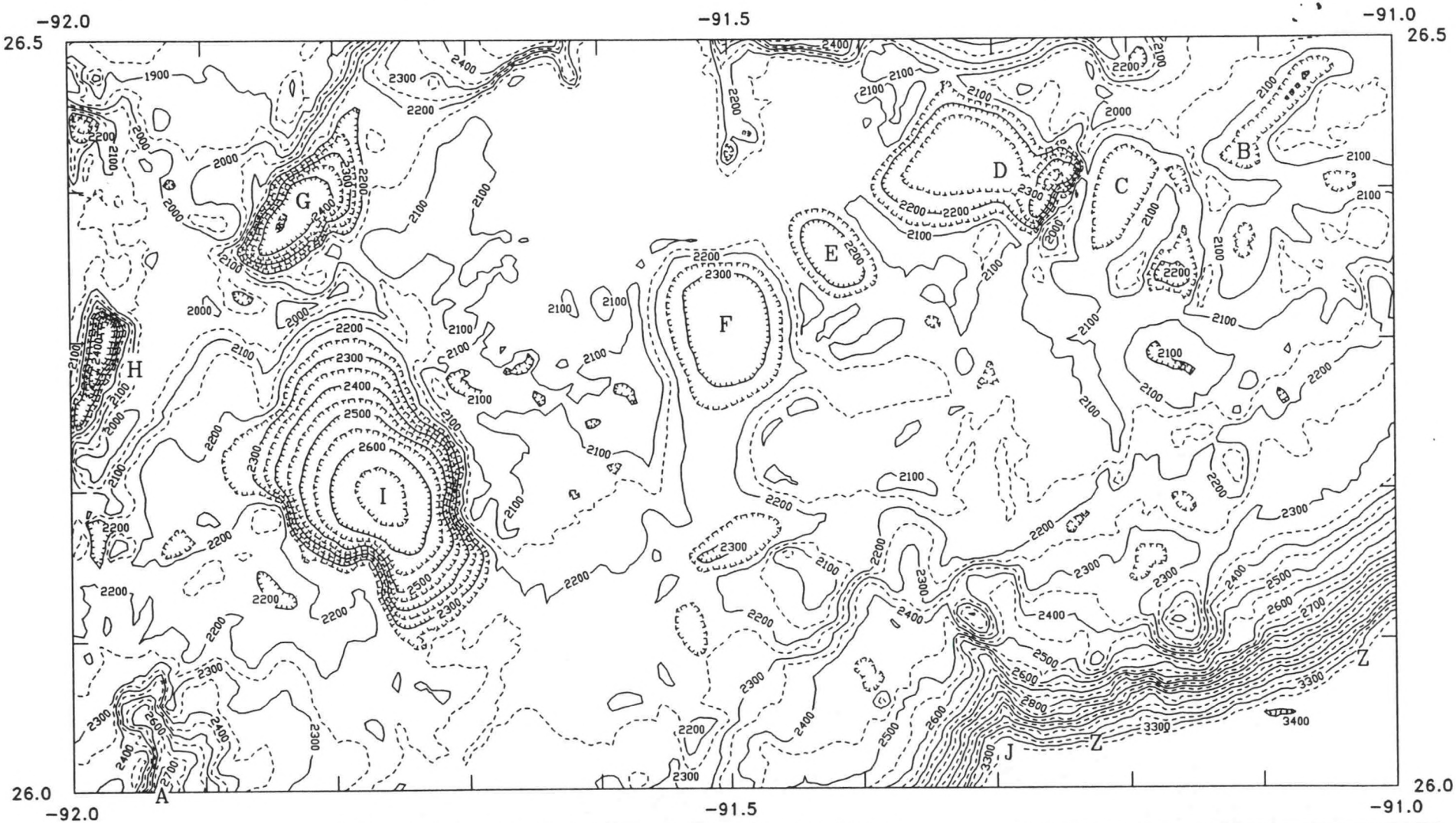
V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE SWEETBSA.DWG

VACA BASIN MAP

A56

GULF OF MEXICO



FILE VACABNTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY

DEPTHS IN METERS

RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES Z SIGSBEE ESCARPMENT

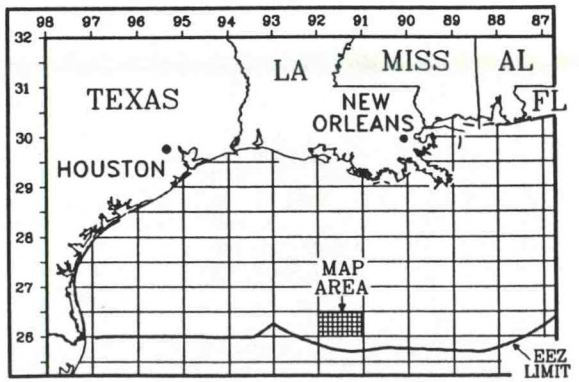
NEW NOAA/NOS NAMES A BRYANT CANYON B ARELLANO BASIN
C DE SOTO BASIN D DORANTES BASIN E CASTILLO BASIN
F ESTAVANICO BASIN G KARANKA BASIN H IBERIA BASIN
I VACA BASIN J CORTEZ CANYON

MAP DESIGNATION

LM162

K I L O M E T E R S

0 10 20 30 40 50

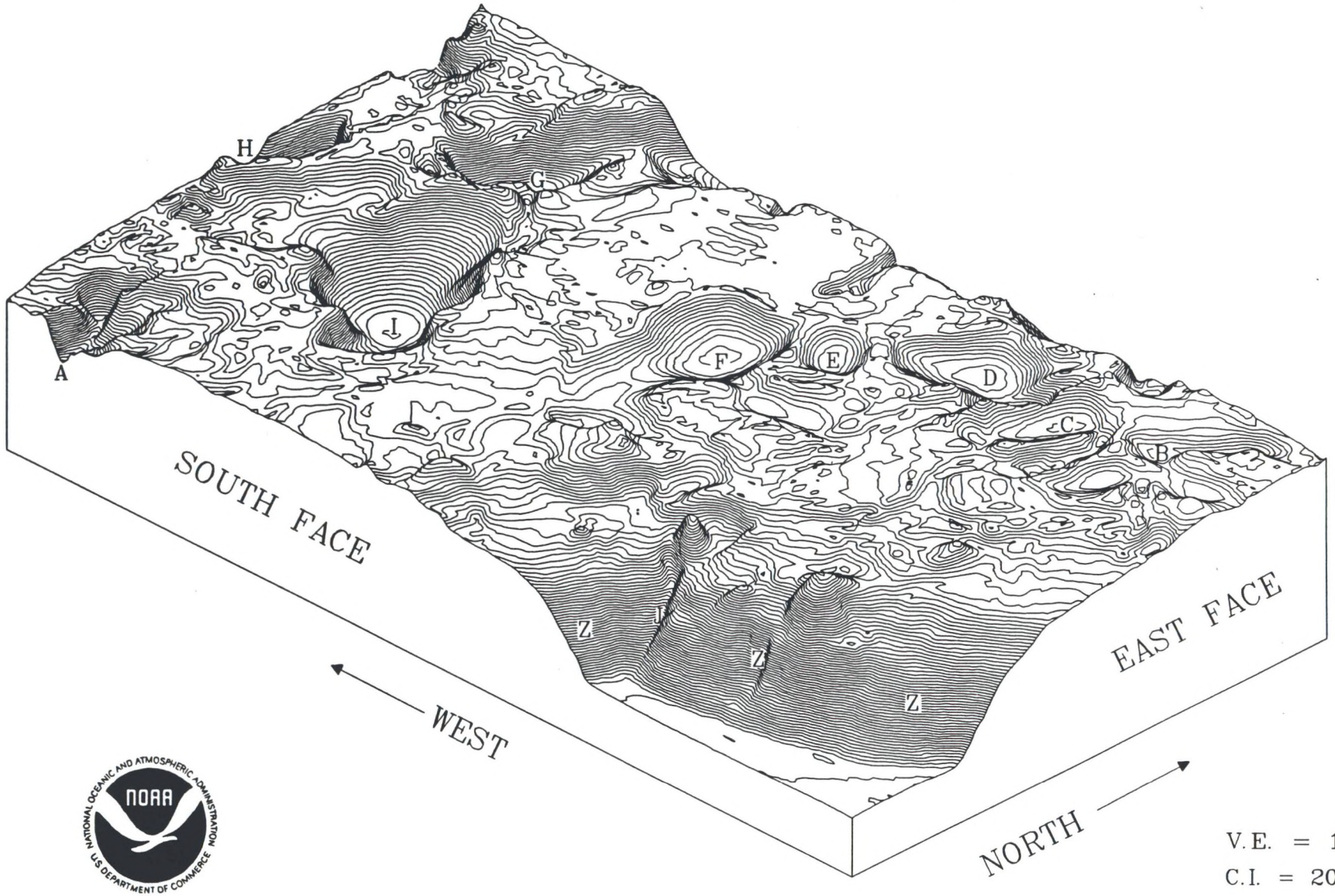


VACA BASIN MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

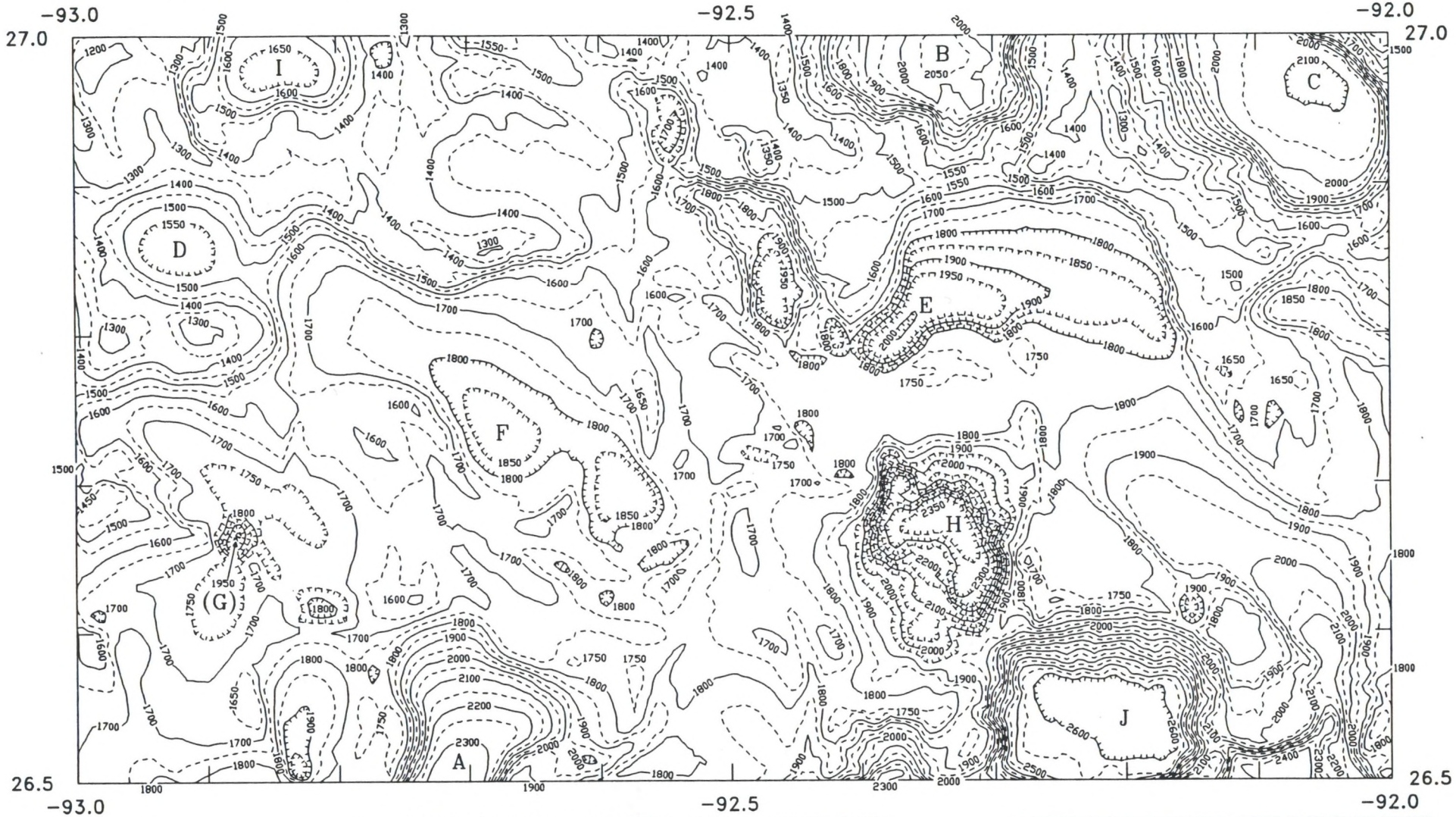
MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE VACABNSA.DWG

WORZEL BASIN MAP A58 GULF OF MEXICO



FILE WORZELTA.DWG

NOAA / NOS / COAST & GEODETIC SURVEY BATHYMETRY

DEPTHS IN METERS

RESULTS FROM MULTIBEAM MAPPING OF EXCLUSIVE ECONOMIC ZONE

ESTABLISHED NAMES NONE

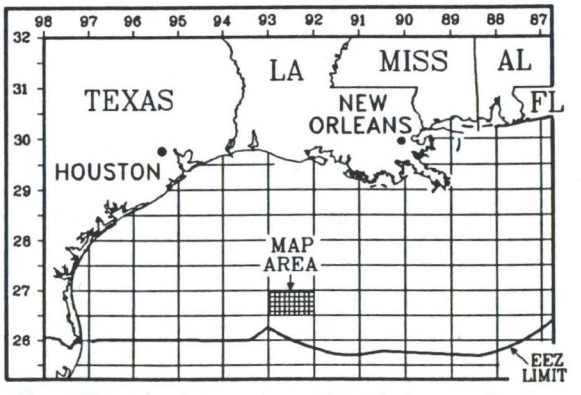
NEW NOAA/NOS NAMES A COOKE BASIN B CALCASIEU BASIN
C BIENVILLE BASIN D NECHES BASIN E HEDBERG BASIN
F WORZEL BASIN G MERMENTAU BASIN H BORNHAUSER BASIN
I HIDALGO BASIN J BEAUMONT BASIN

MAP DESIGNATION

LM173

K I L O M E T E R S

0 10 20 30 40 50

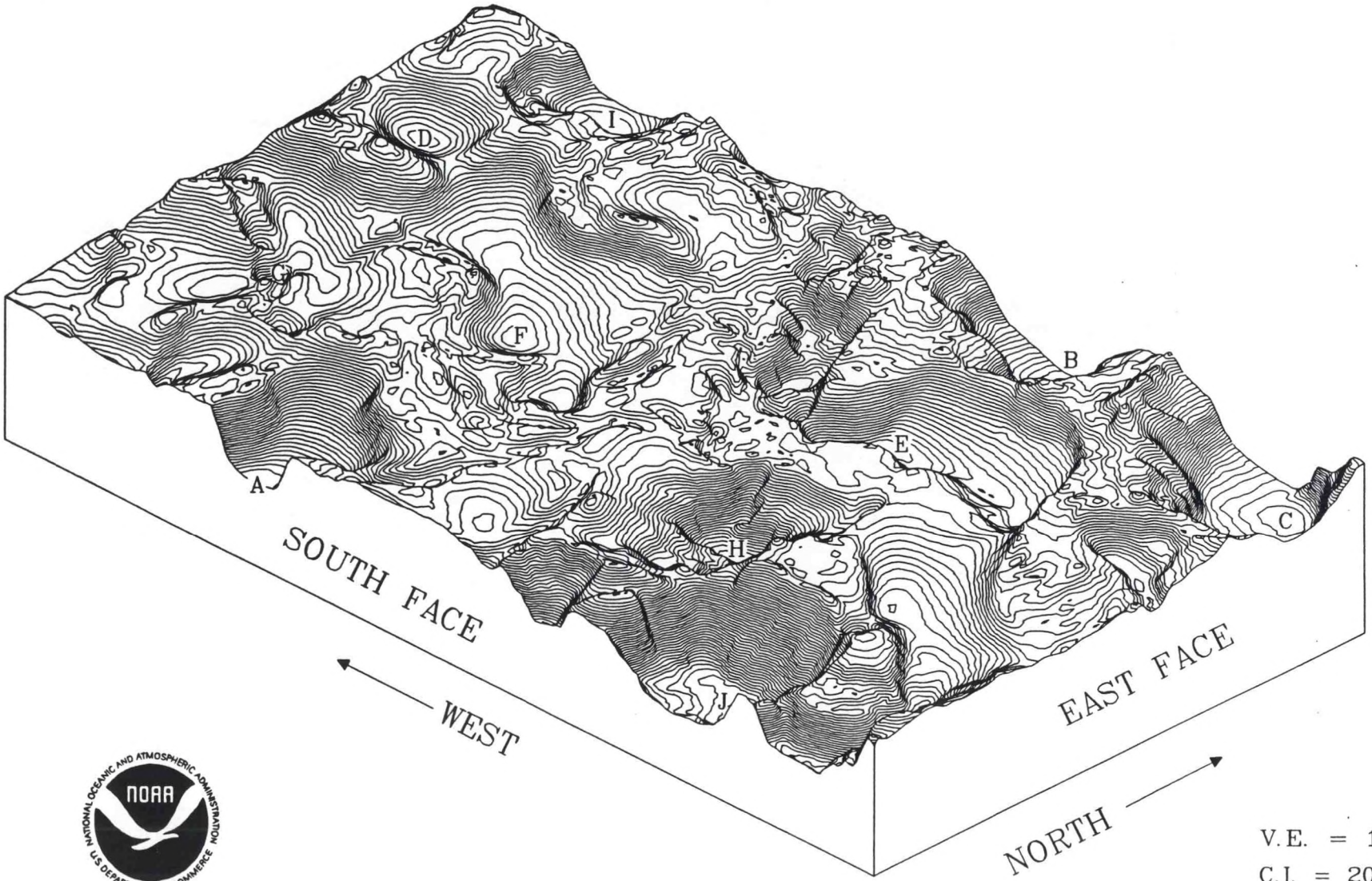


WORZEL BASIN MAP

GULF OF MEXICO

NOAA/NOS BATHYMETRY

MULTIBEAM MAPPING
OF
EXCLUSIVE ECONOMIC ZONE



V.E. = 10
C.I. = 20M
ELEV. = 30°

FILE WORZELSA.DWG