Pipelines in the OCS: Past, Present, and Future

Offshore Minerals Management
Minerals Management Service

March 2005

Offshore Oil and Gas Facilities and Production

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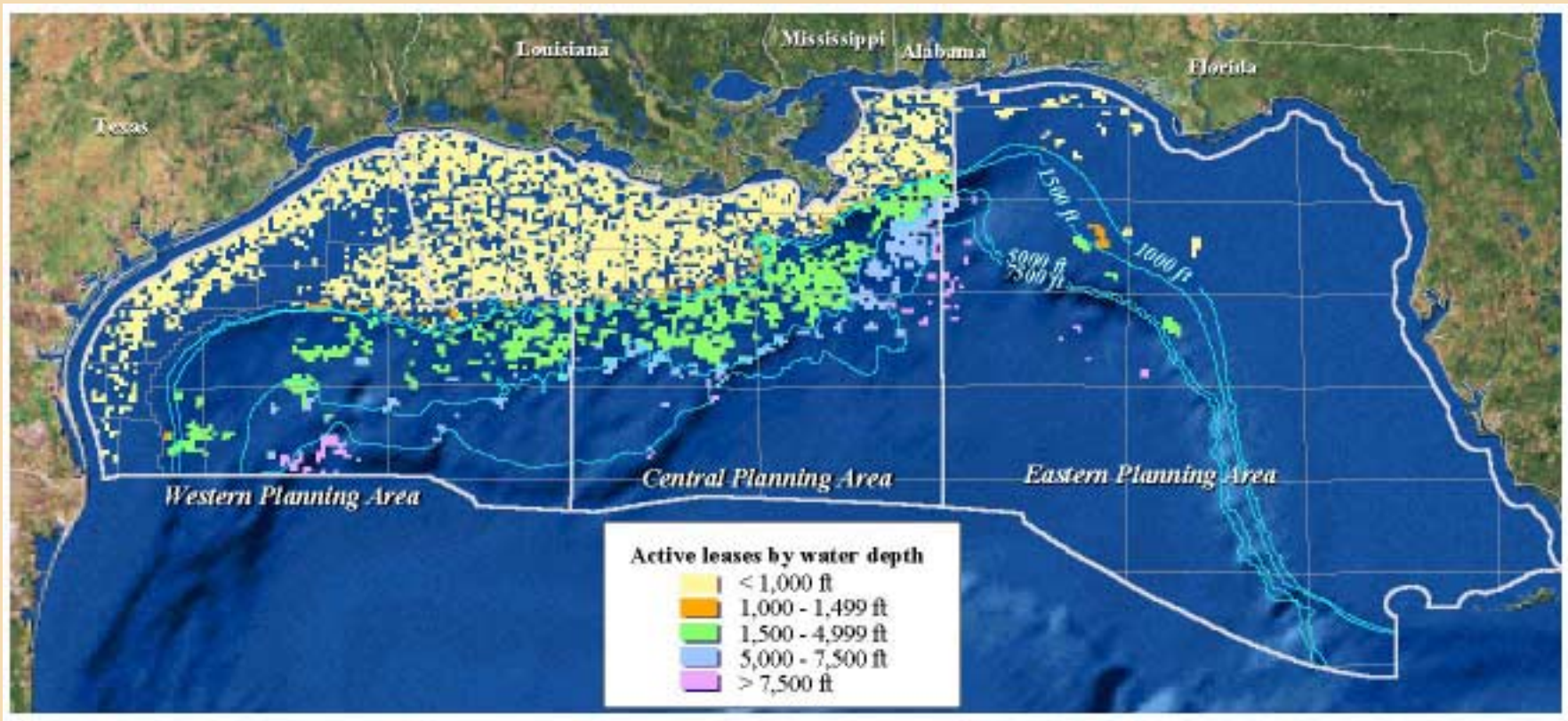
- Facilities
- U.S. Demand
  - Crude oil
  - Natural gas
- OCS Production Levels
  - Past performance
  - Forecasts

GOM Active Leases

(as of December 1, 1995)



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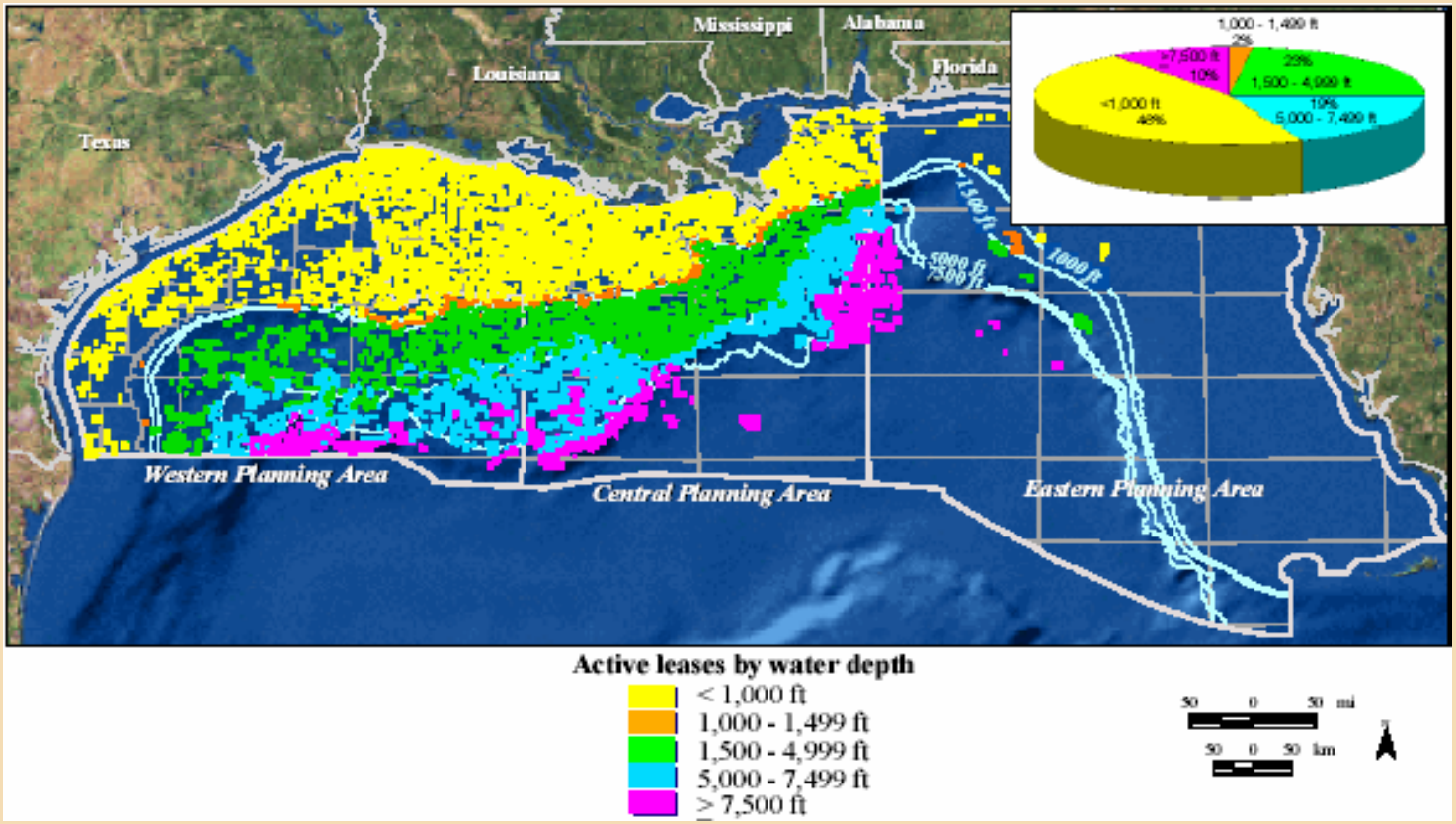
GOM Active Leases

(as of May 1, 2004)



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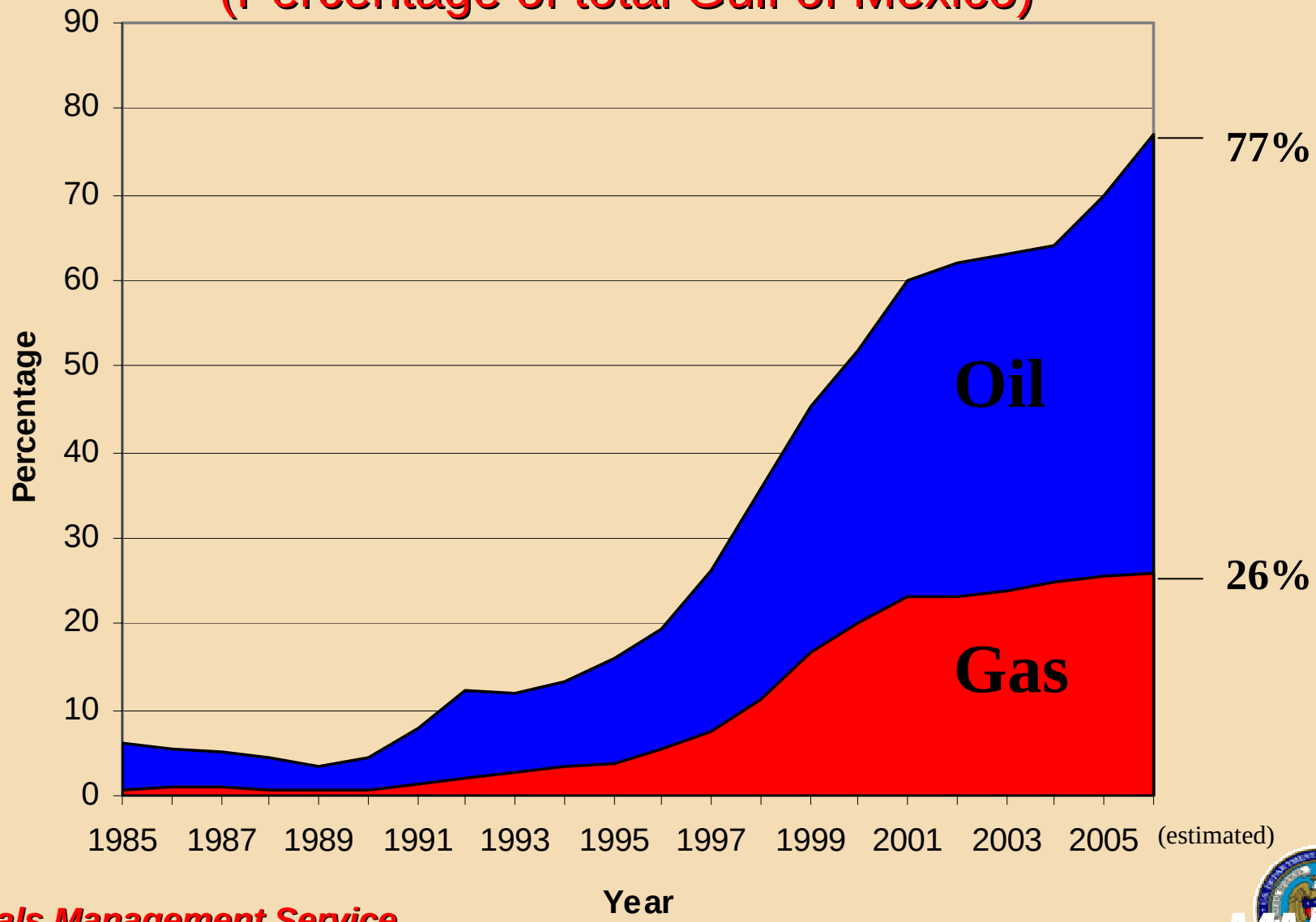
GOM OCS Deepwater Production

(Percentage of total Gulf of Mexico)



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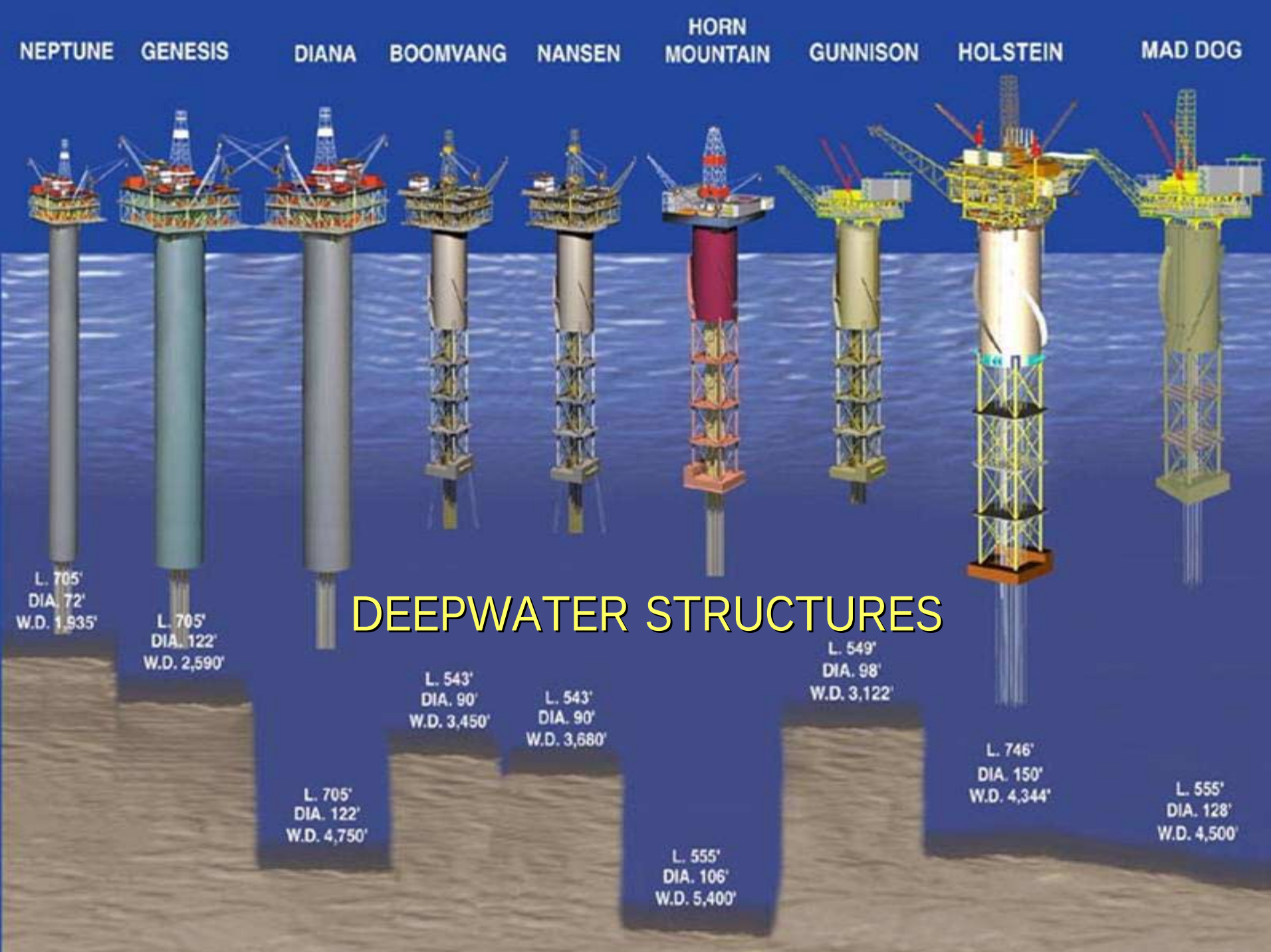
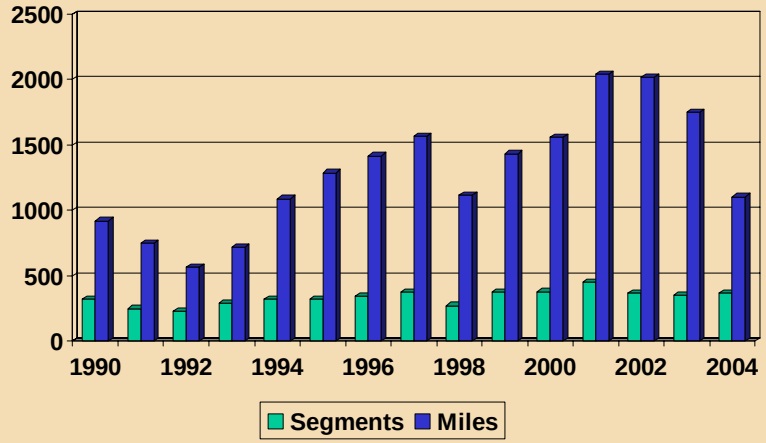
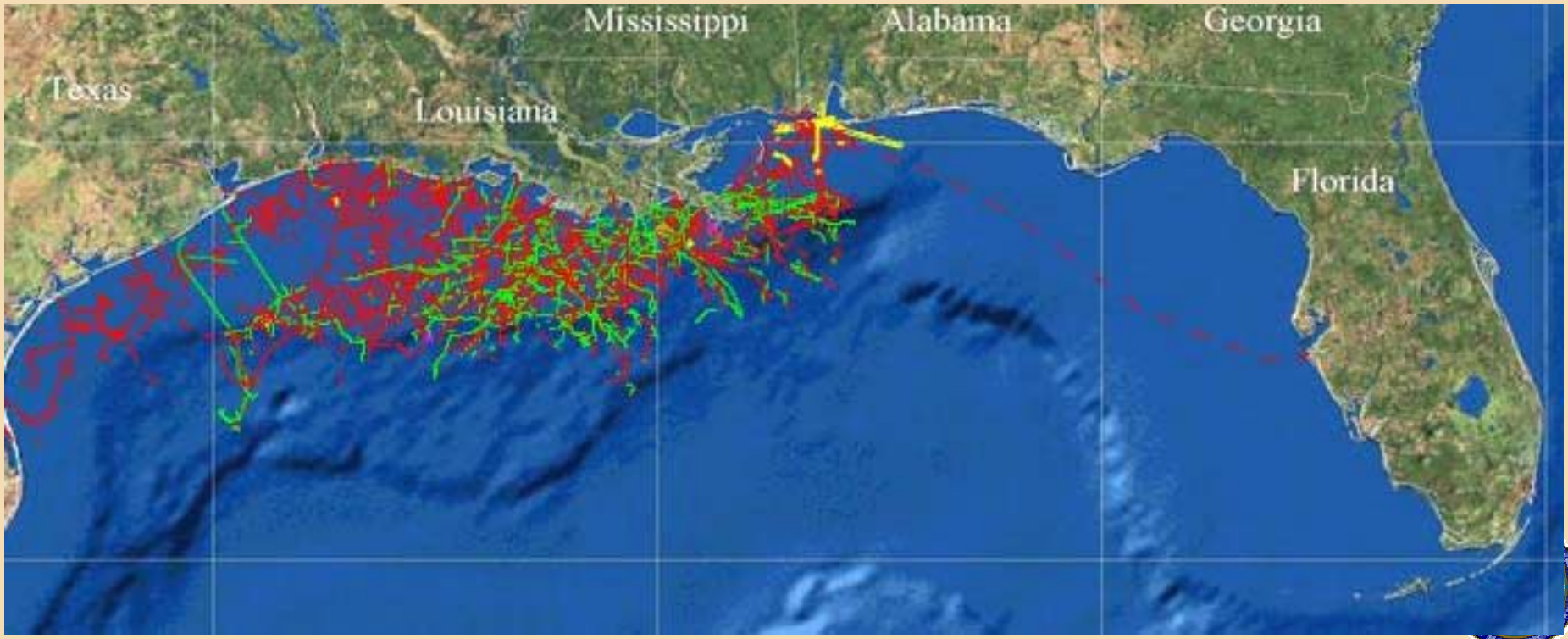

NEPTUNE
GENESIS
DIANA
BOOMVANG
NANSEN
HORN MOUNTAIN
GUNNISON
HOLSTEIN
MAD DOG
L. 705'
DIA. 72'
W.D. 1,935'
L. 705'
DIA. 122'
W.D. 2,590'
L. 705'
DIA. 122'
W.D. 4,750'
L. 543'
DIA. 90'
W.D. 3,450'
L. 543'
DIA. 90'
W.D. 3,680'
L. 555'
DIA. 106'
W.D. 5,400'
L. 549'
DIA. 98'
W.D. 3,122'
L. 746'
DIA. 150'
W.D. 4,344'
L. 555'
DIA. 128'
W.D. 4,500'
DEEPWATER STRUCTURES

Offshore Pipeline Infrastructure

- The Current System
- Application Activity
- Shallow Water Applications
- Deep Water Applications

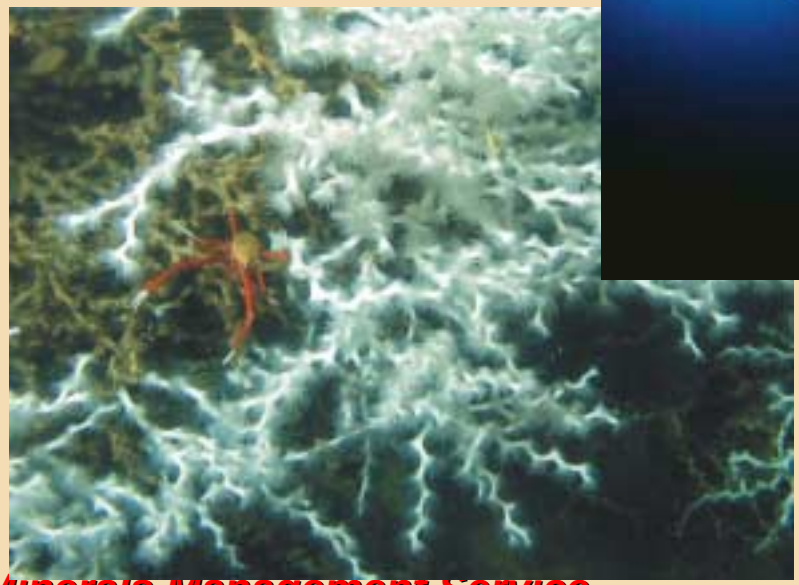




Safety

- Regulations
  - Design
  - Operations
  - Maintenance
- Standards
- Inspections
- Audits
- Training
- Drills/Exercises

Environmental Protection



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Security

- Maritime Transportation Security Act of 2002
- Part 106 OCS Facility Security
- Covered Facilities
- OMM Threat Advisory Guidelines

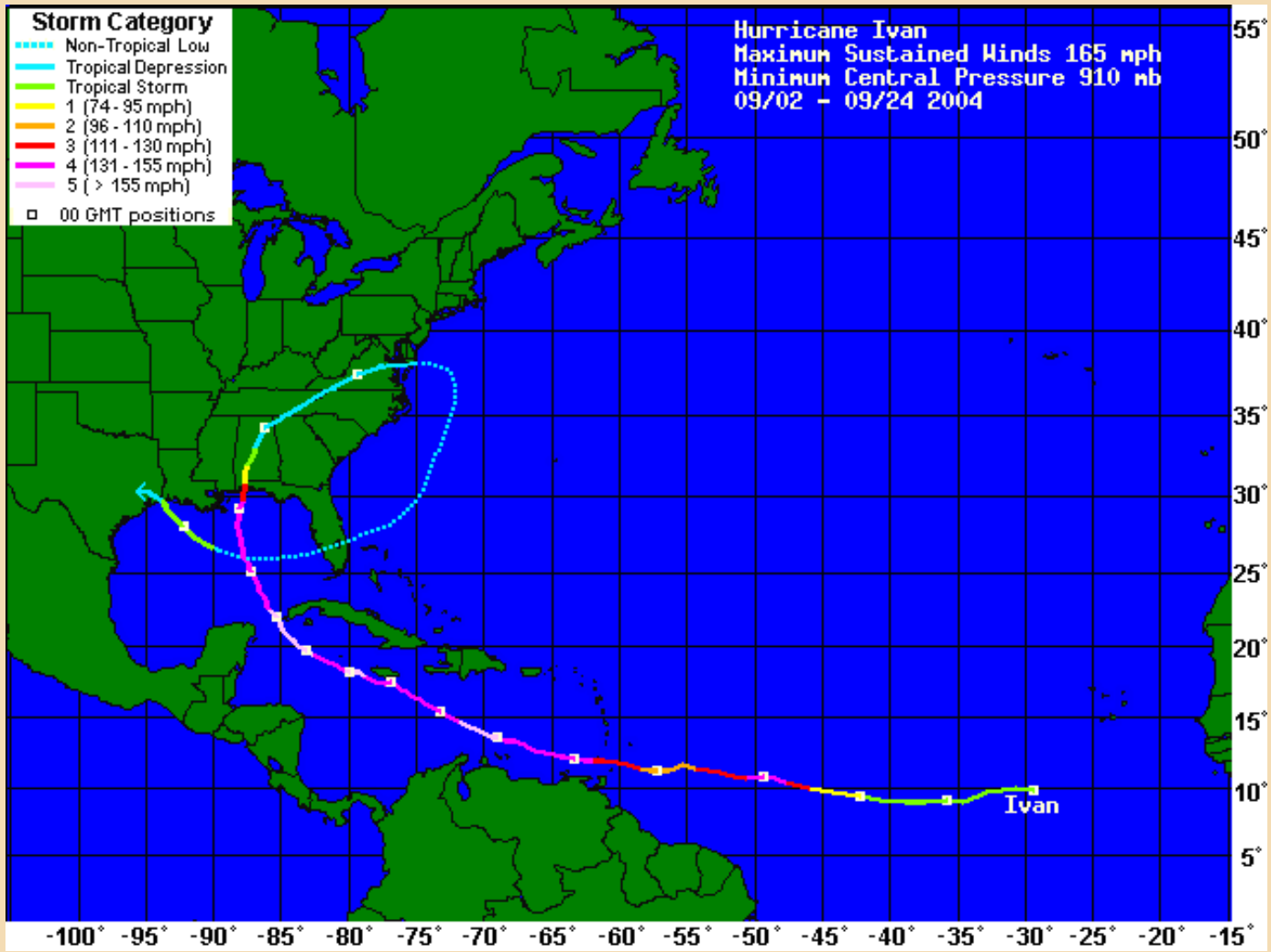
Pipeline Infrastructure Vulnerabilities

- Storm Events
- Geologic Events
- Aging
- Third-Party Impacts

Storm Events

- Hurricanes
  - Andrew
  - Juan
  - Lili
  - Ivan
- Tropical Storms
  - Bill
  - Isidore

Storm Track



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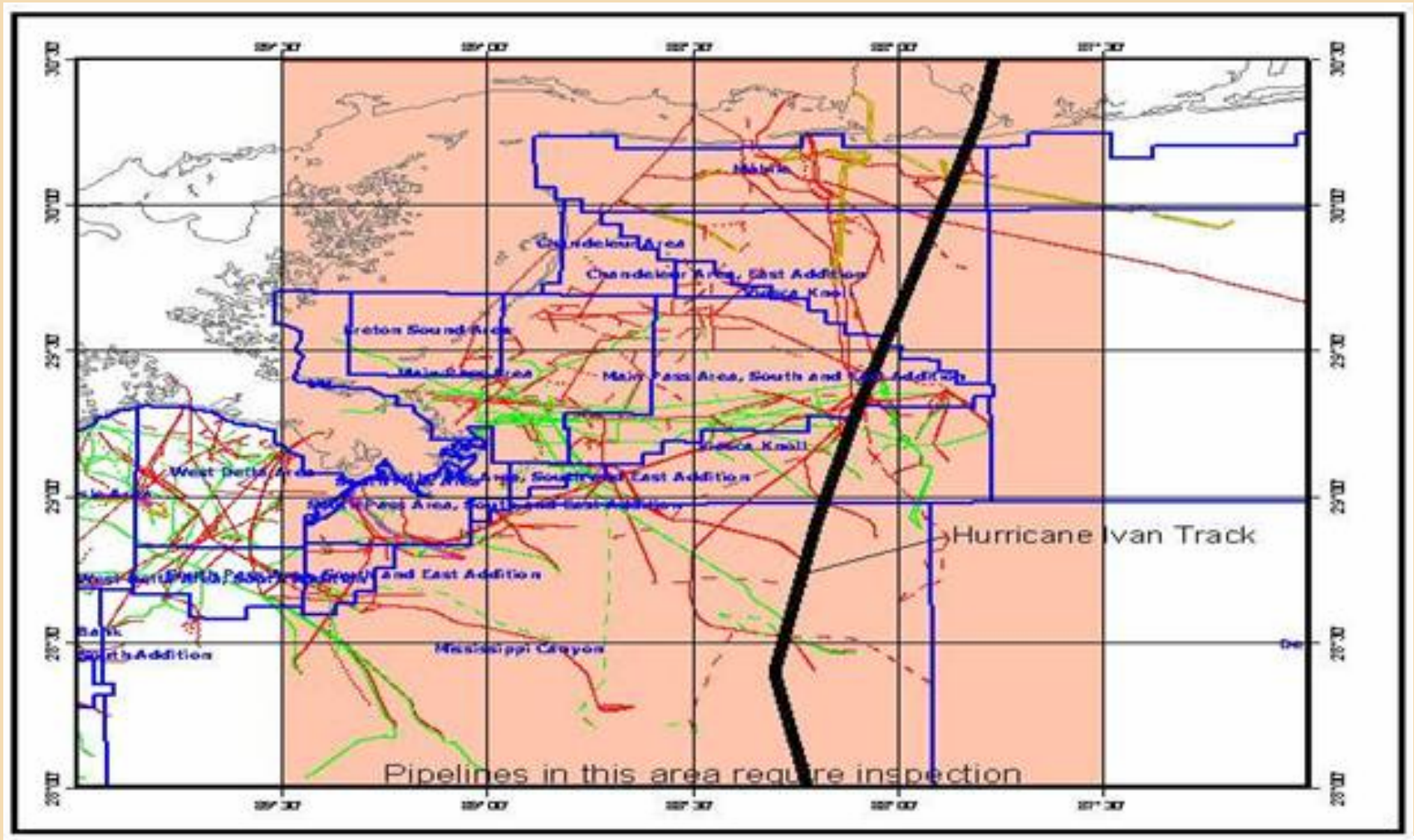
Pipeline Inspection Area



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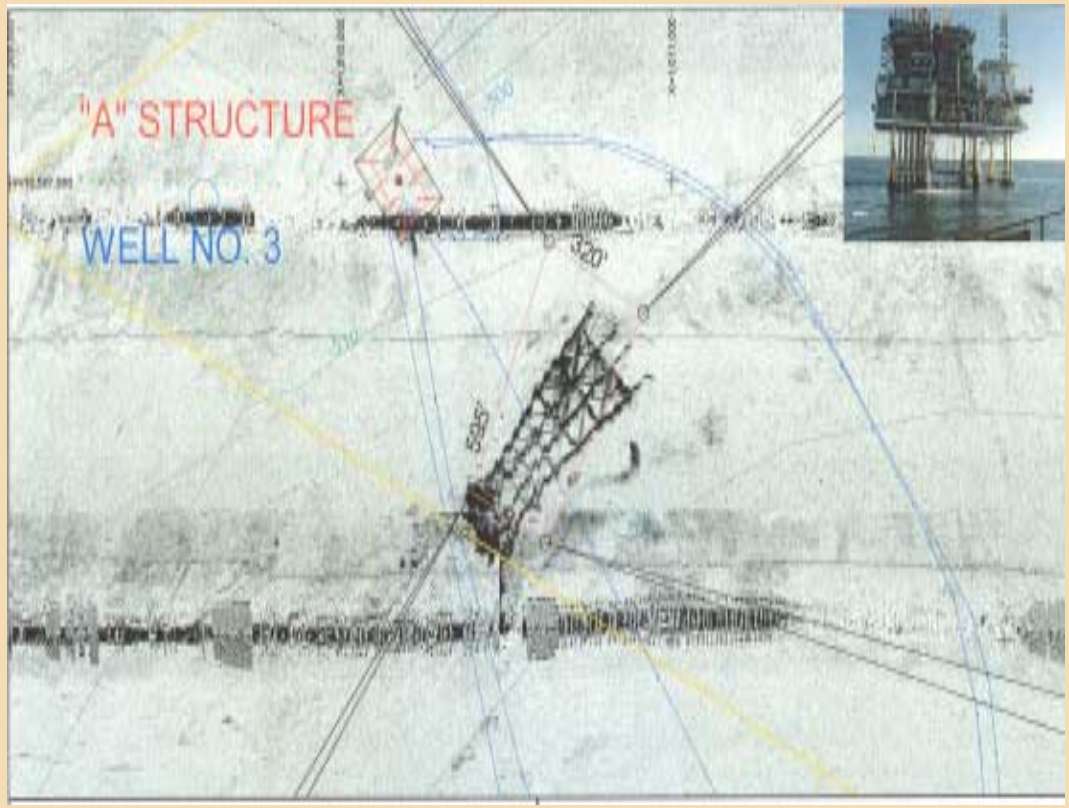
Hurricane Ivan GOM Structure Damage

- MODUs
  - 5 adrift with 1 leaning at 3 degrees
- Platforms
  - 7 fixed were destroyed
  - 1 leaning
  - 4 fixed with extensive damage
  - 2 Spars with extensive damage
- Platform rigs
  - 1 leaning platform rig from Spar
  - 1 missing platform rig from Spar



Hurricane Ivan Pipeline Impacts

- Reported Pipeline Failures
- Pipelines with Multiple Failures
- Repairs
  - Procedures
  - Resources

Geologic Events

- Mud Slides Areas
  - Design considerations
  - Location
  - Storm-induced flows

Aging Infrastructure

- Pipeline Integrity – Internal and External
  - Risers
  - Subsea pipelines
- National Priorities
  - MMS Offshore Strategies
  - Ocean Commission Report

Third-Party Impacts

- Snagging
- Dropped Equipment
- Vessel Mishaps

2005 – 2020 Research Tactical Plan

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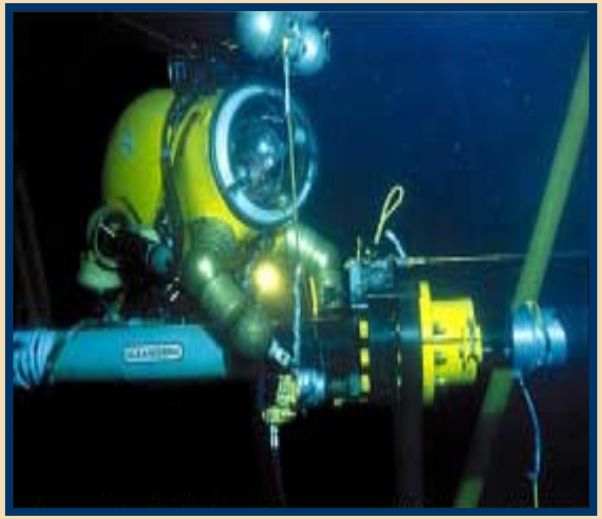
- Assess risk and reliability of pipelines
- Participate in development of pipeline standards
- Resolve operational issues
- Identify and mitigate deepwater hazards
- Encourage materials development
- Disseminate research results

Pipeline Research

- Funding Priorities
  - Safety
  - Environmental protection
  - Spill prevention



- Project Themes
  - Leak detection
  - Cathodic protection
  - Pigging operations
  - Deep water pipeline intervention/repairs
  - Decommissioning
  - Buckling
  - Reliability of pressure sensors

Current Pipeline Research Projects

- 9 Joint Industry Projects
  - Strain-Based Design of Pipelines
  - New Touch Down Zone Systems for Deepwater Compliant Petroleum Production Risers
  - Hydrostatic Alternatives

- 6 Fully Funded Projects
  - Seafloor Interaction with Steel Catenary Risers
  - Design of Cathodic Protection Systems for Deepwater Compliant Petroleum Production Risers

- www.mms.gov/tarprojectcategories/pipeline.htm

Policies of Interest

- Deepwater Port Pipelines
  - Rights-of-ways and pipelines to be issued by MMS
  - Procedures identical to all other DOT-regulated pipelines
  - Process adopted by RSPA/OPS, MARAD, USCG, and MMS
  - Applicant must comply with all OSCLA requirements, while satisfying all guidance in the Deepwater Ports Act
  - Guidance to be included in interagency MOU and deepwater port regulations – Subchapter NN

Our Collective Future in the OCS

- Embracing a new culture of safety management
- Improving methods of protecting fragile resources
- Optimizing energy reserves
- Recognizing innovation in engineering, technical, and process problem resolution
- Entering into partnerships

Thank You

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