Pipelines in the OCS: Past, Present, and Future

Offshore Minerals Management
Minerals Management Service

March 2005
Offshore Oil and Gas Facilities and Production

- Facilities

- U.S. Demand
  - Crude oil
  - Natural gas

- OCS Production Levels
  - Past performance
  - Forecasts
GOM Active Leases
(as of December 1, 1995)
GOM Active Leases
(as of May 1, 2004)
GOM OCS Deepwater Production
(Percentage of total Gulf of Mexico)

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DEEPWATER STRUCTURES
Offshore Pipeline Infrastructure

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

![Graph showing application activity from 1990 to 2004 with segments and miles data.](image-url)
Safety

- Regulations
  - Design
  - Operations
  - Maintenance

- Standards
- Inspections
- Audits
- Training
- Drills/Exercises
Environmental Protection

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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

Storm Category
- Non-Tropical Low
- Tropical Depression
- Tropical Storm
- 1 (74 - 95 mph)
- 2 (96 - 110 mph)
- 3 (111 - 130 mph)
- 4 (131 - 155 mph)
- 5 (> 155 mph)

Hurricane Ivan
Maximum Sustained Winds 165 mph
Minimum Central Pressure 910 mb
09/02 - 09/24 2004

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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

- 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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