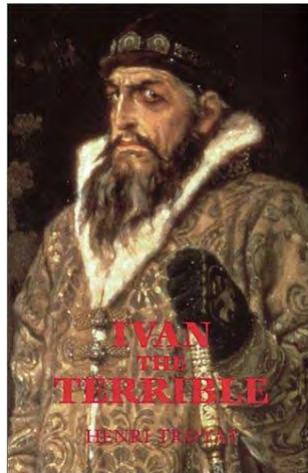


# 2005 Offshore Hurricane Readiness and Recovery Conference Regulatory Perspective

Don Howard  
MMS Field Operations  
Regional Supervisor

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Economic Value for America*



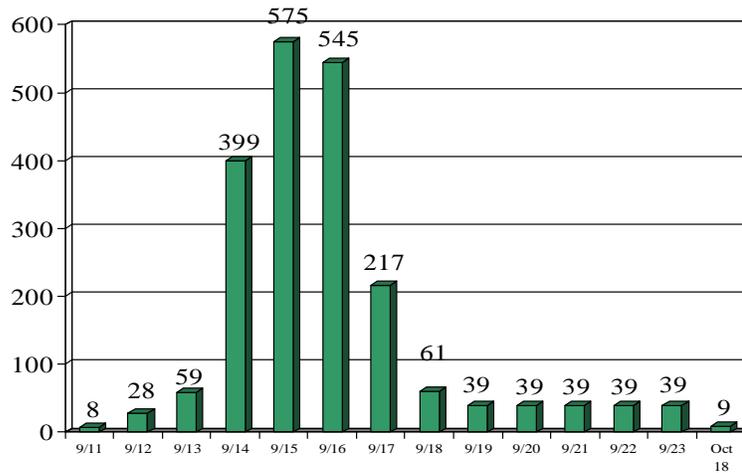
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## Ivan Entering the GOM



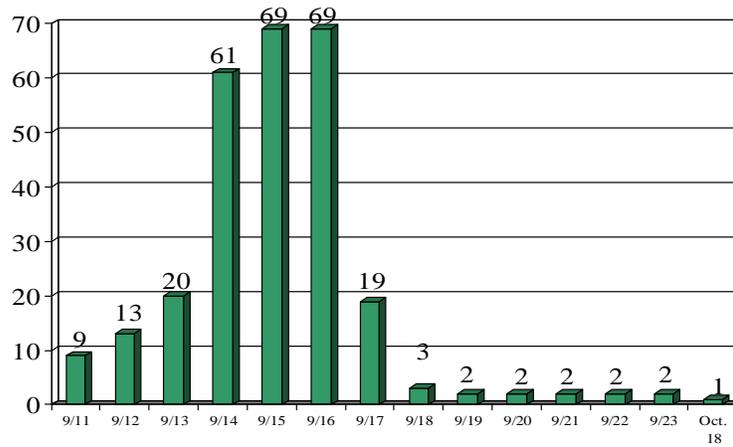
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## Platform Evacuations Due to Hurricane Ivan



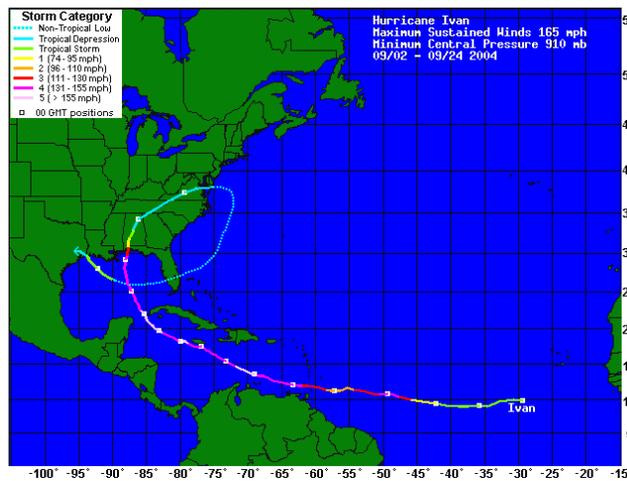
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# Rig Evacuations Due to Hurricane Ivan



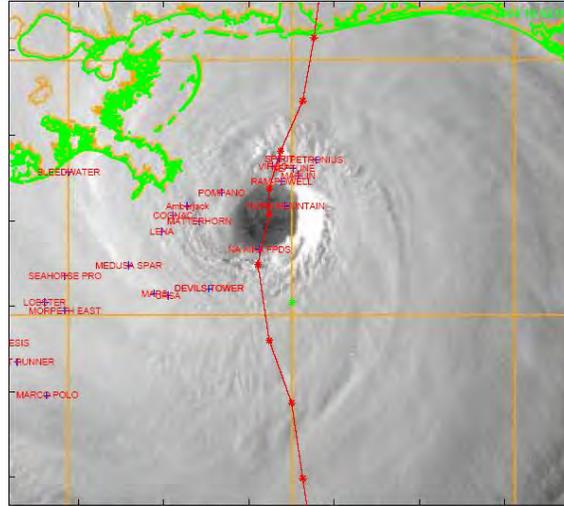
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# Ivan Storm Track



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# Ivan and Deepwater Facilities



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# Destroyed by Hurricane Ivan



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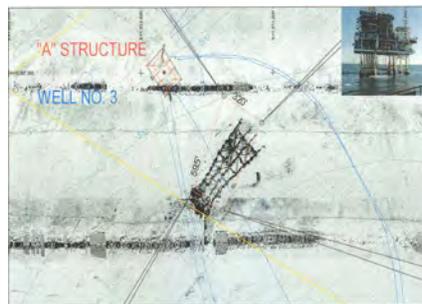
## Floater Damage



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## Hurricane Ivan GOM Structure Damage

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



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# Hurricane Ivan GOM Pipeline Damage

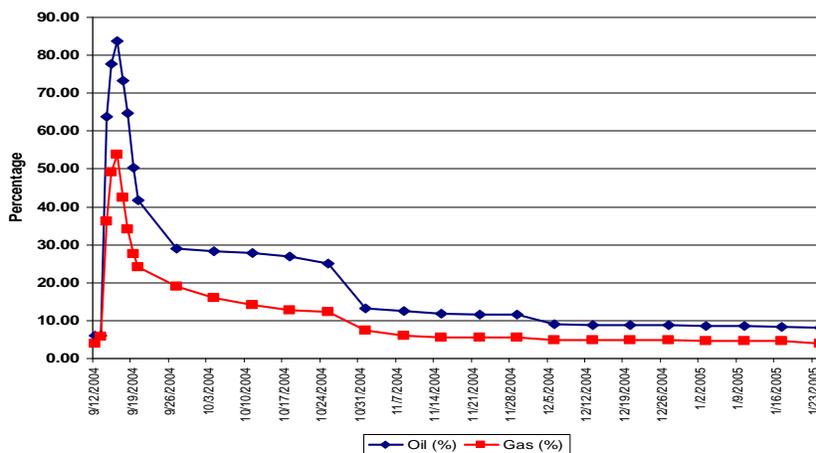
(Updated 7/18/05)



- Reported Pipeline Failures: 169
- Pipelines with Multiple Failures: 5
- Pipelines with Failures due to Mudslides: 21

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# Percentage of GOM Daily Production Shut-in due to Hurricane Ivan



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## GOM Production Lost due to Hurricane Ivan

- **Total Daily Lost Production (As of January 3, 2005)**
  - 148,228 BOPD (Approx. **8.72%** of Normal GOM Daily Production)
  - 593.69 MMCFD (Approx. **4.83%** of Normal GOM Daily Production)
- **Total Cumulative Lost Production from 9/11/04 to 1/3/05**
  - 38,357,900 BBLS of Oil (Approx. **6.34%** of Normal GOM Annual Production)
  - 151,736 MMCF of Gas (Approx. **3.41%** of Normal GOM Annual Production)
- **For perspective, current Daily Lost Production is equal to approximately:**
  - **.99%** of Average Daily US Consumption of Oil
  - **.75%** of Average Daily US Consumption of Gas

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## Mudslide Area



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# Hurricane Ivan Research

1. Review Mobile Offshore Drilling Unit (MODU) loss of station keeping ability
2. Assess Drilling and Workover Rig Storm Sea Fasteners on Offshore Floating Platforms During Hurricane Ivan
3. Assess Fixed Offshore Platforms in Hurricanes Ivan, Andrew and Lili
4. Assess Pipeline damages
5. Examine and review the mudflow/mudslide areas in the Gulf of Mexico caused by Hurricane Ivan
6. Develop a database of ocean currents

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## Review Mobile Drilling Unit (MODU) Loss of Stationkeeping Ability

### OBJECTIVES

Study MODU failures  
Review the mooring criteria  
Determine if new criteria would have helped

Dr. Malcolm Sharples



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## Assess Drilling and Workover Rig Storm Sea Fasteners on Offshore Floating Platforms During Hurricane Ivan

### Objectives:

- Assess the drilling rig fastener system
- Review rig tie-down criteria on floating production platforms



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## Assess Fixed Offshore Platforms in Hurricane Ivan, Andrew and Lili

### Objectives:

- Assess the effectiveness of structural design standards
- Recommend new standards

**Energ**  
*go*



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## Pipeline Damage Assessment from Hurricane Ivan



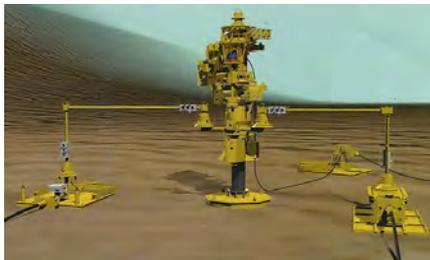
### Objectives:

- ID root causes of damage.
- Compare design and installation methods.
- ID techniques to mitigate future PL damage.
- Recommend best practices and code changes.



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## A Pilot Study for Regionally-Consistent Hazard Susceptibility Mapping of GOM Submarine Mudslides



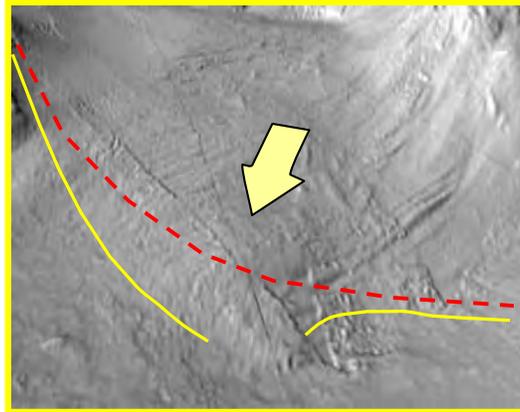
### Objectives:

- Develop criteria for mapping slope susceptibility to mudslides.
- Evaluate effectiveness of mudslide susceptibility mapping by comparing against pre-Hurricane Ivan mudslide data



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## Mudslides During Hurricane Ivan and an Assessment of the Potential for Future Mudslides in the GOM



### Objectives:

- Review mudslide areas resulting from Hurricane Ivan.
- Perform numerical analyses and numerical modeling of mudslide data.
- Map areas of high risk and/or where further evaluation is needed.



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## Path Forward

- New Standards?
- New Regulations?

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