

# Perspectives on Deepwater Drilling Safety and Blowout/Spill Containment

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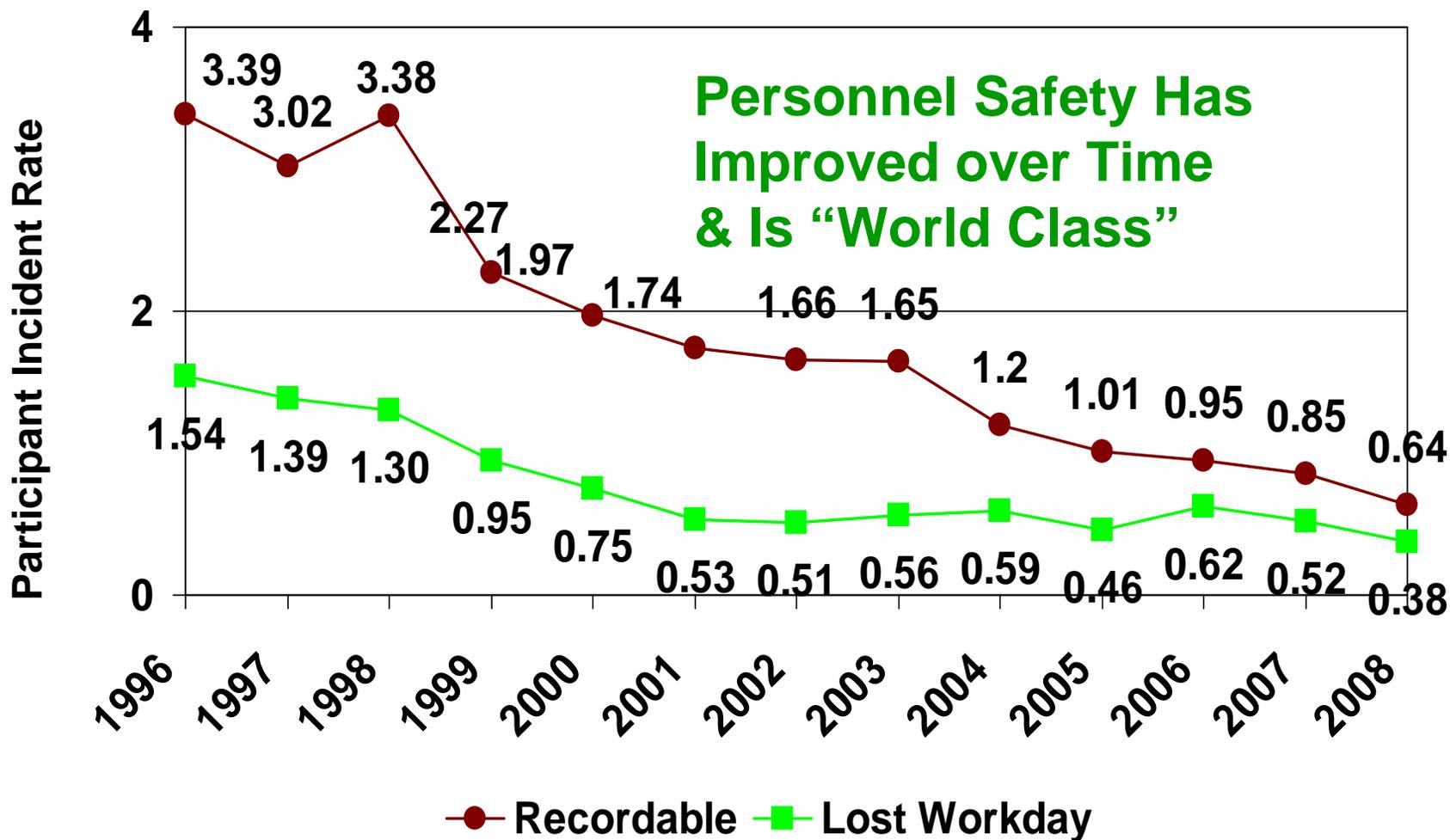
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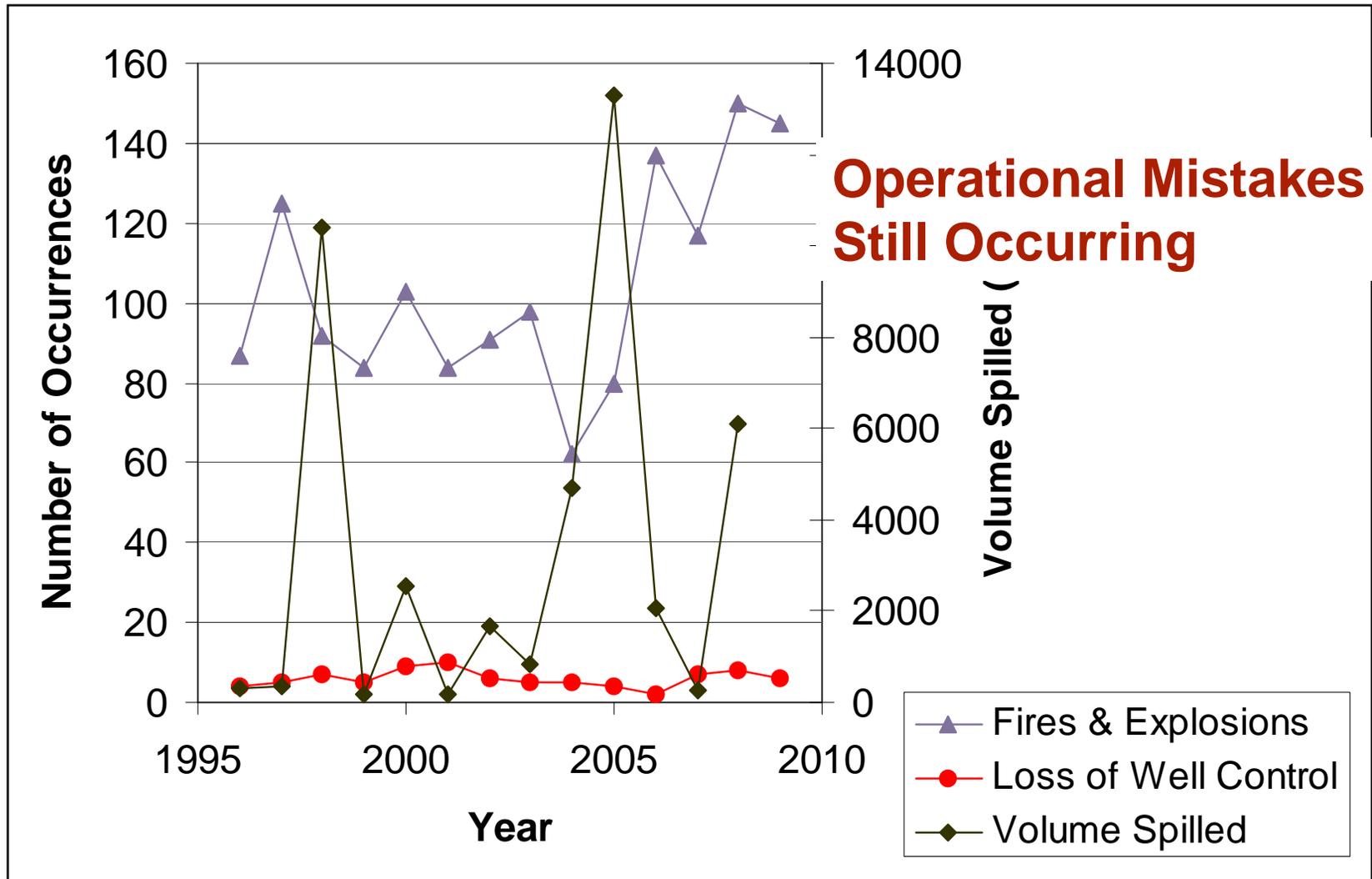
# Controlling Hazards of Offshore Oil and Gas Operations (My Perspective)

- What we know
  - History
  - Current challenges
- What we've gained from Macondo experience
  - New regulatory requirements
  - Greatly enhanced response capabilities
  - Knowledge
- What we need to do
  - Improve
  - Prepare
  - Be vigilant

## BOEMRE Performance Index - Combined Operations Recordable & Lost/Restricted Workday Accident Rates



# Hazardous Occurrences



# What We Know = Challenges

- Deepwater Operations
  - Much larger investments and revenues
  - More complex systems
  - New technologies – not routine, more unknowns
  - More people on site
  - Much higher production rate potential
- Shelf Operations
  - Simpler, well-understood
  - Maintenance issues due to age
  - Revenue vs. operating cost creates challenges
- Safety of Specific Tasks (Personal Safety)
  - Must remain a priority
  - Excessive emphasis interferes with insuring that designs, procedures, and systems are also safe

# What We've Gained from Macondo Experience

- More Explicit Regulations
    - NTL 2010-NO5 - Increased Safety Measures for Energy Development on the OCS (Well Control)
    - NTL 2010-NO6 - Requirements for Exploration and Development Plans (& Response Plans)
  - Greatly Increased Response Capabilities
    - Containment caps/manifolds/risers
    - Surface handling of produced fluids
    - Boom/skimmer/recovery/burn systems
    - ROV intervention with BOP/LMRP/pods/manifolds
    - Subsea dispersant application (impacts uncertain)
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# What We've Gained from Macondo Experience

- Understanding of Deepwater Risks
  - Operations are not all routine, unknown complications
  - Probability of failure is low, but not zero
  - Impacts (life, environment, economic) can be huge
- Basis for Better Future Protection and Response
  - Marine Well Containment System
  - OCS Safety Board Report to strengthen regulations
  - Other results & recommendations from on-going investigations (API, Oil Spill Commission, etc)

# What We Need To Do

- Improve Engineering Design & Operational Planning Practices (i.e. for new technologies) to
  - Identify risks
  - Mitigate risks
  - Develop contingency plans for risks
  - (Change the attitude that presumes that new technology to address a concern, or realize a new opportunity, is unquestionably “safe” or “safer” or “better” and needs no new investigation of “what if” and “what then” or extra caution)

# What We Need To Do

- Continue Industry Efforts to Identify and Improve Best Practices for Deepwater Operations, e.g.
  - IADC Deepwater Well Control Guidelines
  - API Recommended Practices for Cementing
  - Controlling Shallow Water Flows
  - Management of Annulus Pressures
  - Detection of Leaks from Deepwater Pipelines
  - Casing Design Loading Conditions

# What We Need: Marine Well Containment System (MWCS)

- Containment of Leak or Blowout at Source, Independent of the Source, for Redundancy to Reassure Public
  - Industry MWCS initiative recently announced
    - Chevron, ConocoPhillips, ExxonMobil, & Shell
    - Pre-engineered, pre-staged, with demonstrated capability to quickly implement containment of high pressure, collection of high rates, and intervention to correct a large variety of sources.
    - **But** would not protect personnel during initial blowout event (11 lives lost in Macondo Blowout).
  - So, every industry professional should prepare themselves and to do their work in a manner to ensure that it is never needed.
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# What We Need To Do: Better Prepare Ourselves

- Relevant, Purposeful Well Control Training, not just Refreshers of Routine Practices
  - Understand real system behaviors where possible (e.g. with real wells/equipment/fluids, not just simplified simulations)
  - Learn & practice planned operations that are new or not routine & understand contingency responses to related risks
  - Prepare and practice identifying and handling unexpected and non-routine problems (e.g. IADC WellCAP+ style problem-solving training)

# What We Need To Do - Summary

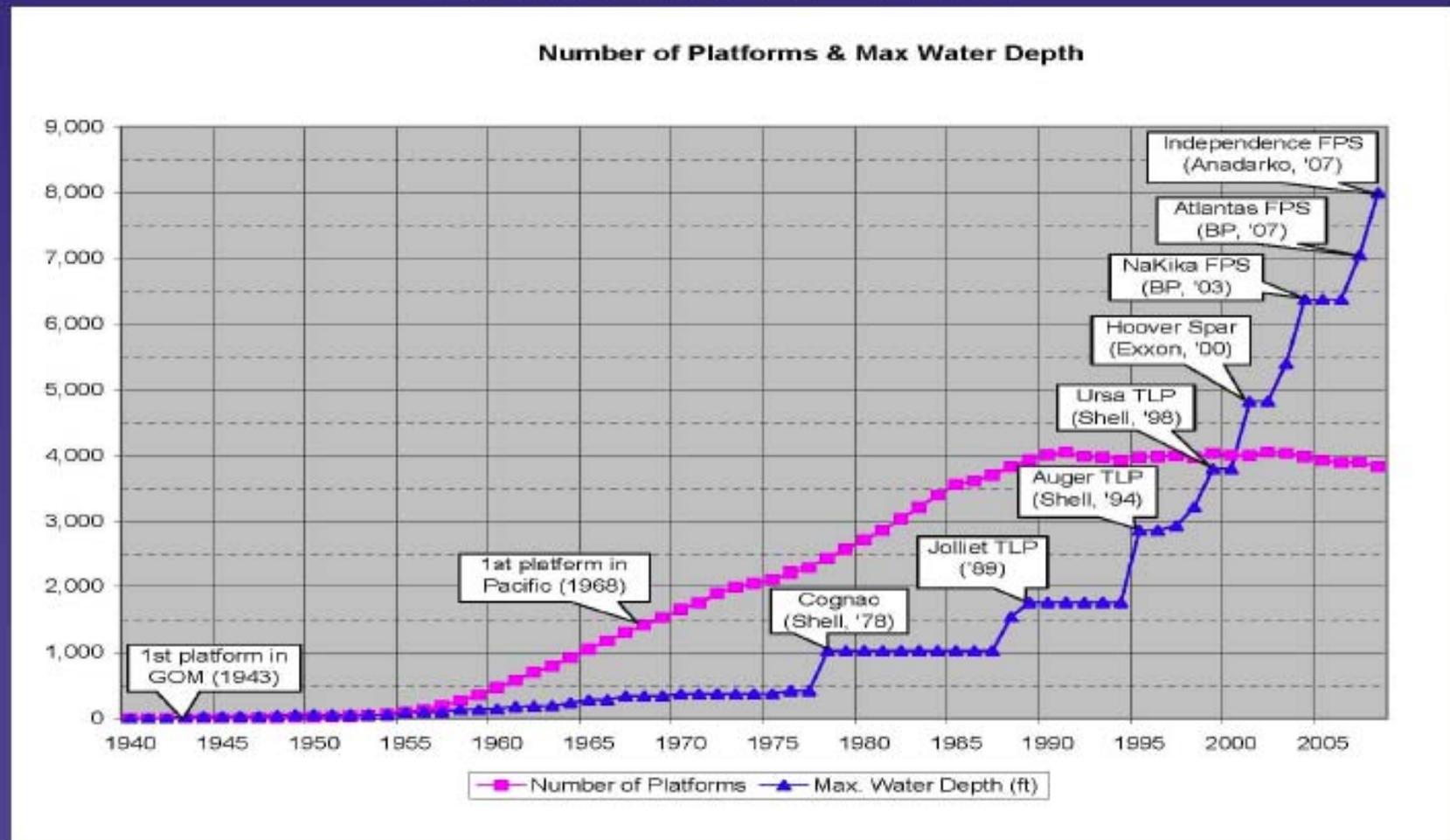
- **NOW** - Go back to work after
  - Complying with NTL's with revised plans & permits
  - Preparing to be more vigilant to detect problems
  - Assembling response equipment from Macondo for use until MWCS is ready
- **FUTURE** – Adapt or “regulate” “culture change”
  - Design and planning that recognizes risks & unknowns of new, evolving equipment and methods
  - More emphasis to develop and define best practices
  - Implement and evolve MWCS for protection
  - Train for reality, new operations & solving unanticipated problems

# Addenda

- Data slides

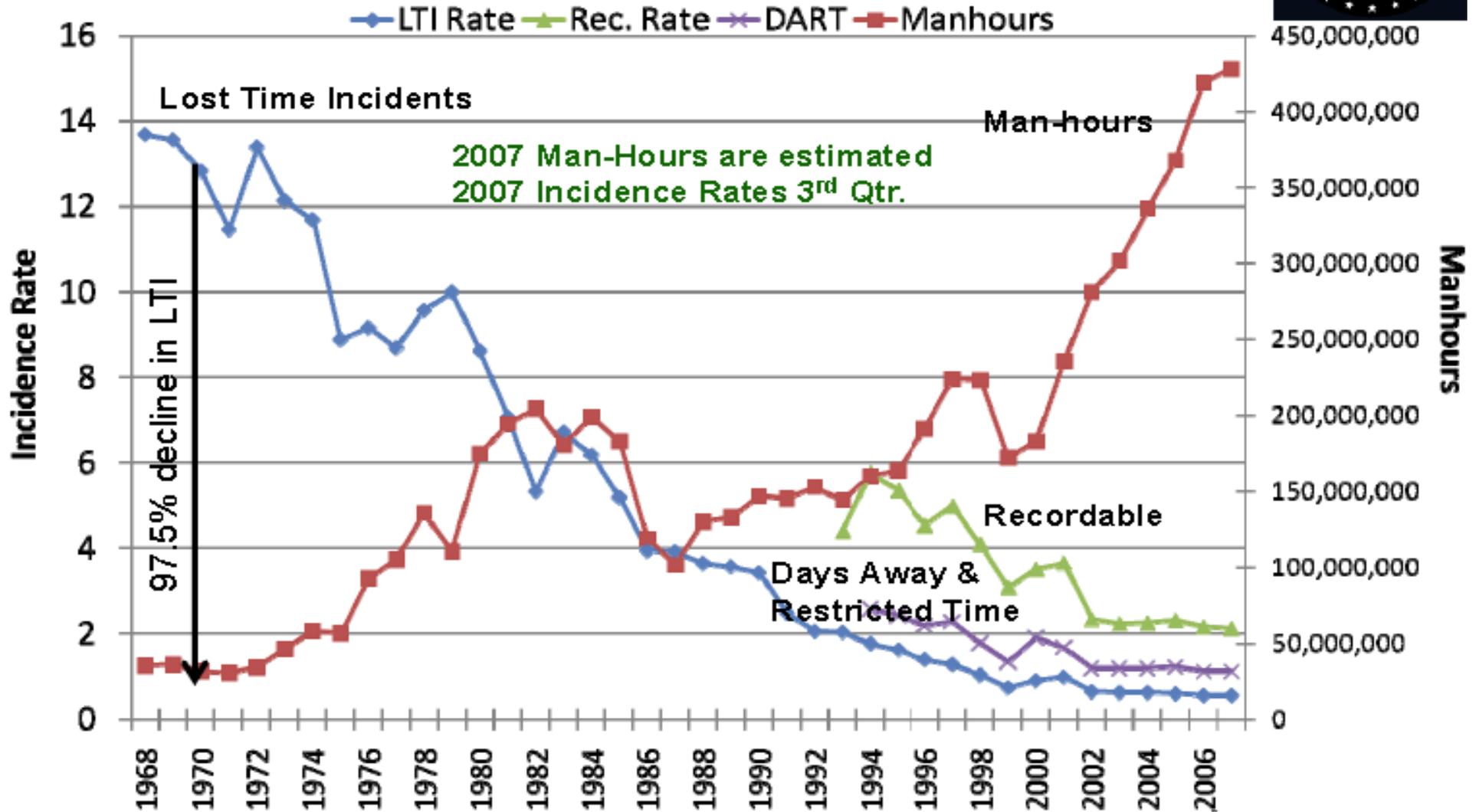


# Deepwater Activity Has Increased Dramatically in the Last 20 Years



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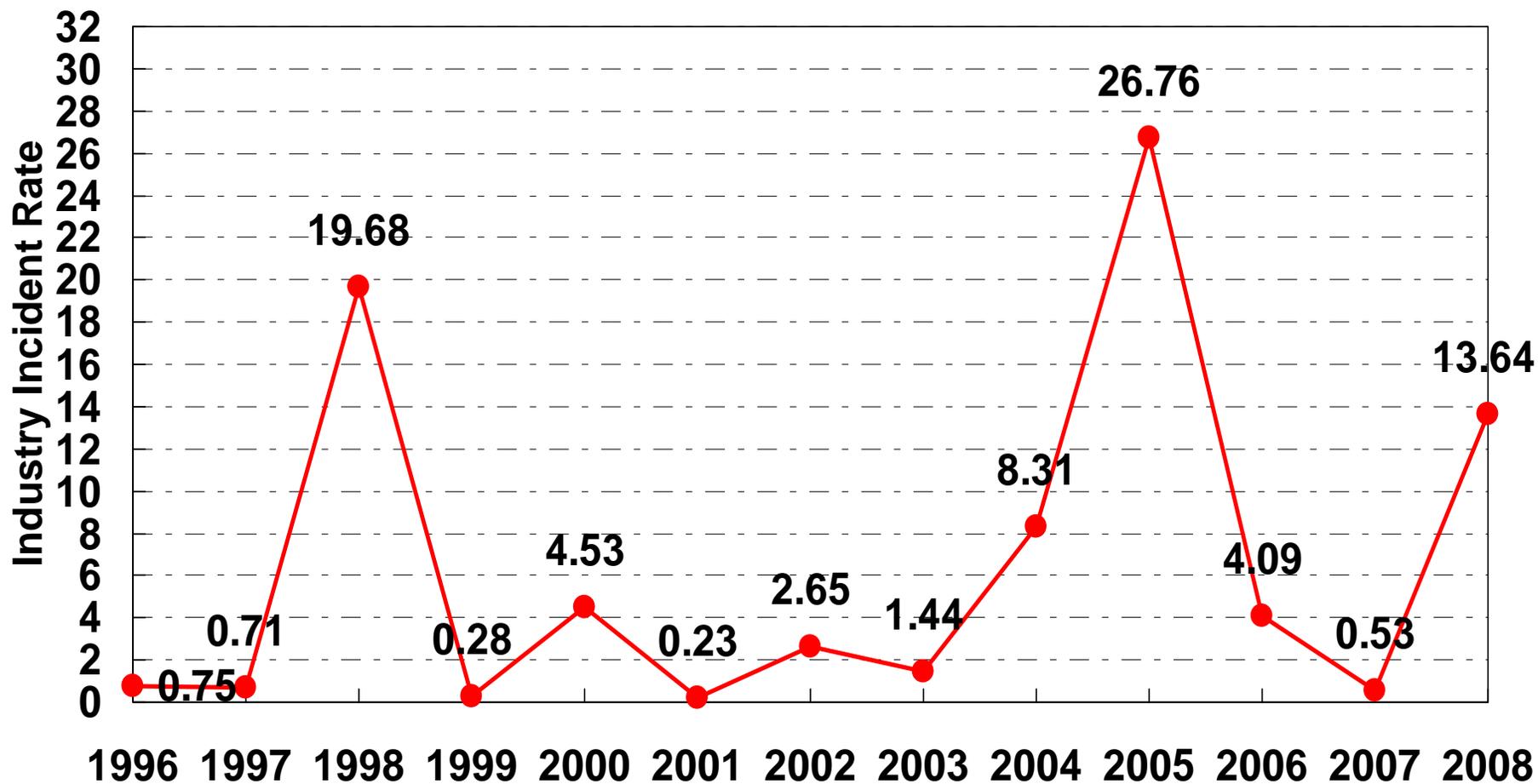
# Safety History – Since MMS Started



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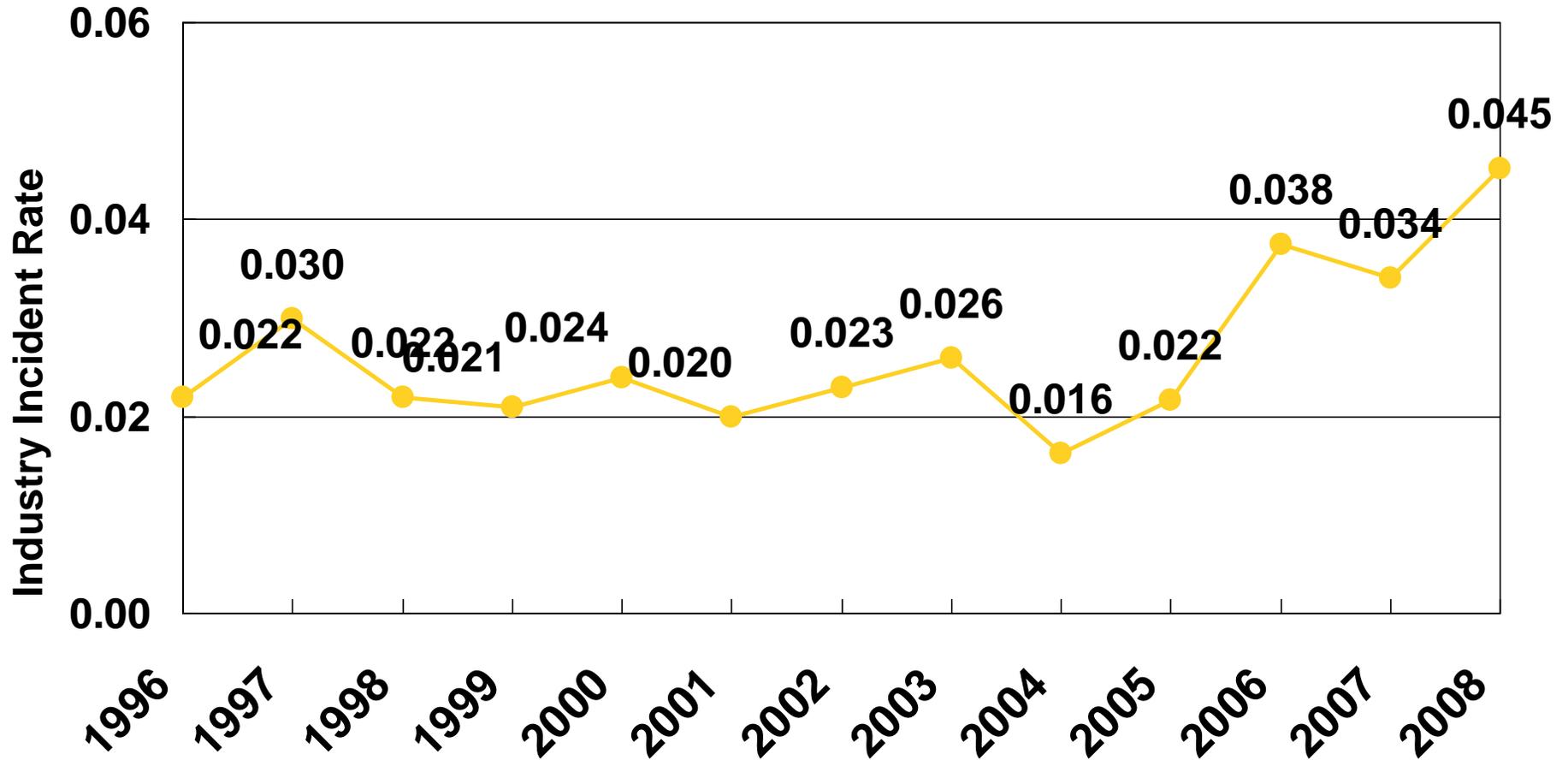
# Oil Spill Volume Incident Rate per BOEMRE

## Spills >10 BBL



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## Fire and Explosion Incident Rate per BOEMRE



[http://www.boemre.gov/perfmeas/Assets/PowerPoint/PM\\_Charts\\_08.ppt](http://www.boemre.gov/perfmeas/Assets/PowerPoint/PM_Charts_08.ppt)

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