Forum on Offshore Drilling

J. Ford Brett, P.E.

BOEMRE Director Bromwich Hosted Panel Session

Pensacola, FL

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Outline

1. My Perspective and Biases
2. What Does History Say?
3. What’s Going on in Response?
4. What Should be Done Next?
5. Appendices

My Perspective

- **Professional Engineer with 30 yrs Drilling Experience**
  - Expertise in Drilling Project and Process Management
- **PetroSkills - Managing Director**
  - Privately owned, industry consortium (26 member companies) that develops and delivers competency based training to the petroleum industry
  - One purpose of the alliance is to create common competency standards for the petroleum technical professionals
  - In 2010 will train >15k people in Petroleum Technology in 50 countries
- **Society of Petroleum Engineers - Board of Directors**
  - Responsible for the Society's Drilling and Completion Activities
- **Speaking as an individual**
  - Relatively well informed about Drilling with less direct bias than many in drilling industry…

    … Not operator, contractor, or drilling service provider.

Personal Biases, …

- **BP & Halliburton are PetroSkills members and customers**
  - <5% of Total Business
  - BP does not participate in PetroSkills Drilling Programs or use PetroSkills competency standards
- **I have been involved in many drilling performance and incident audits in the past.**
  - Very rarely, if ever (never?) is there one root cause.
  - Normally a combination of people, process, and equipment factors…
    - … and equipment failures are almost all people and process related at a deeper level
  - Should withhold judgment until investigation is complete, but I find it difficult to believe there won't be a number of contributing causes.
- **I developed and implemented Safety Management Systems in response to the N.S. Piper Alpha Disaster**
  - My experience leads me to believe there are rarely unavoidable 'acts of God'
  - Safe operations can be achieved if people do the right things in the right way

Typical Influence Diagram

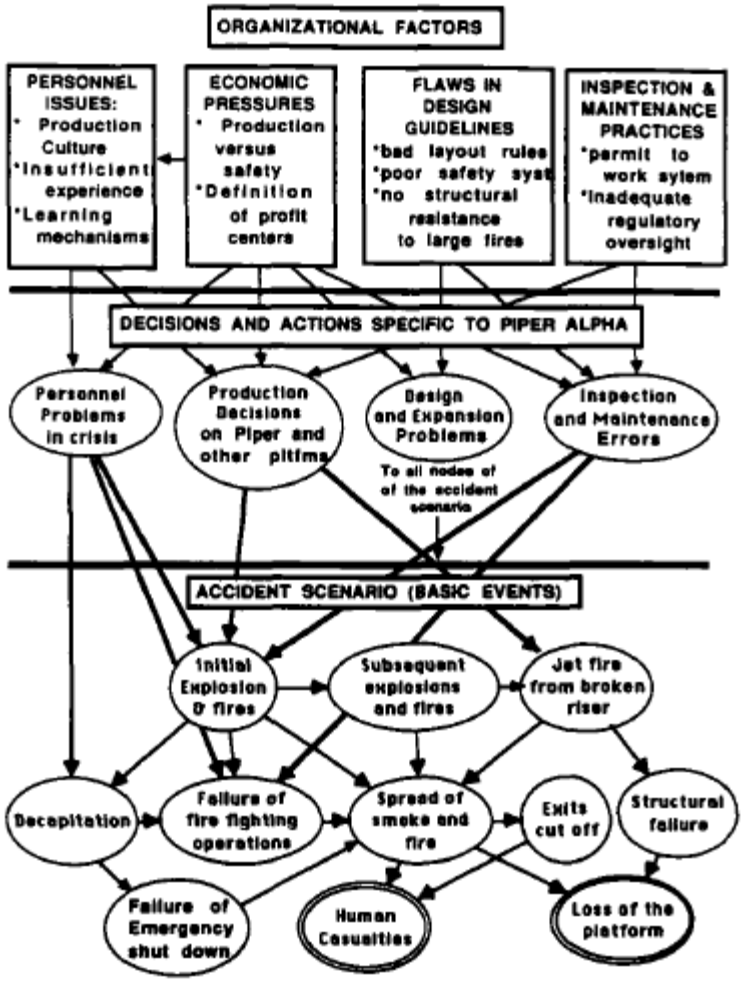


Fig. 4. Dependencies among basic events of the accident scenarios, decisions, and actions specific to Piper Alpha, and organizational factors (influence diagram representation; the lower part is a simplified version of Fig. 3).[4]

Rarely (ever?) is there one root cause.

Statistic are so thin, that in process improvement language most deviations have ‘special causes’ rather than ‘common causes’

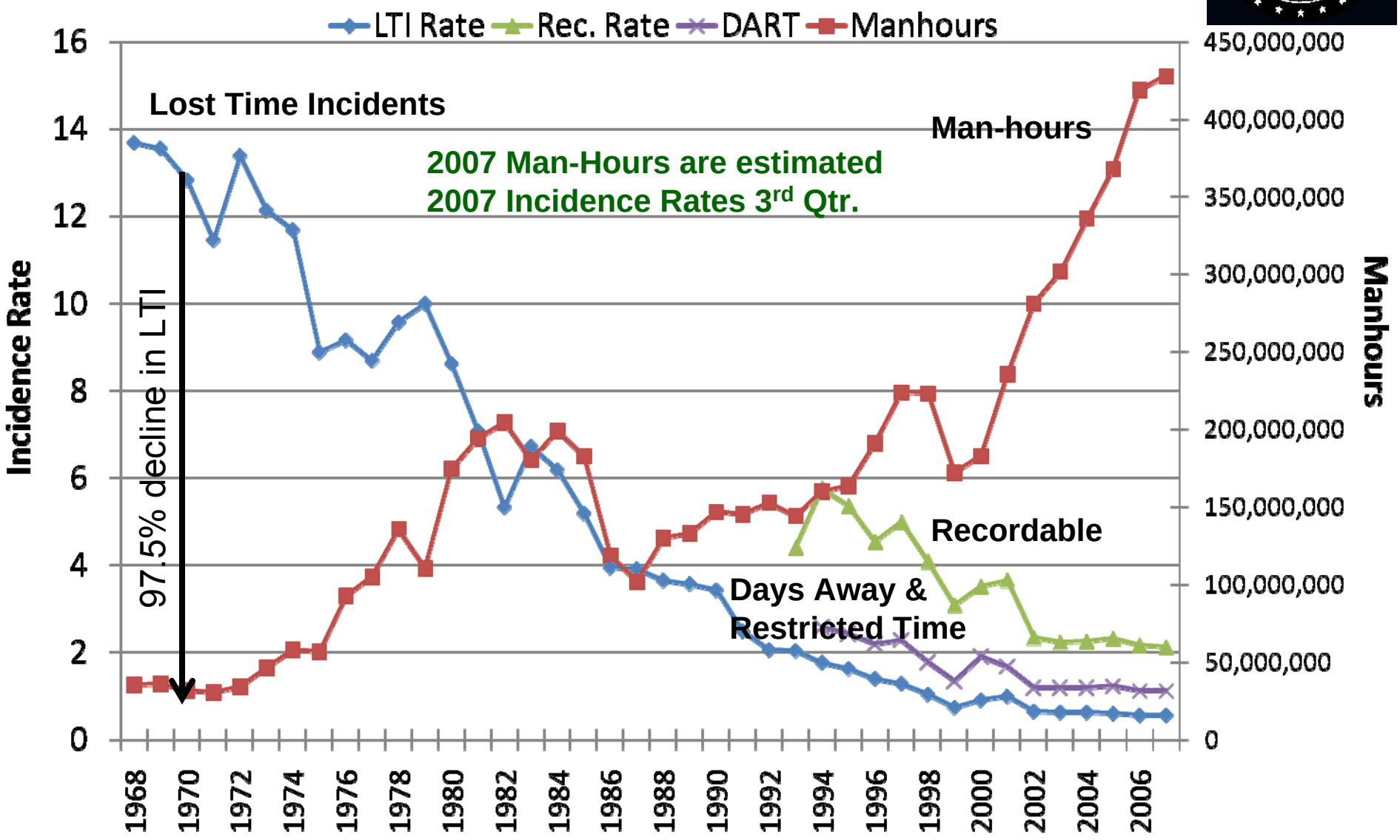
Often a cavalier “this-can’t-happen-to-me” attitude is also in play

Pate-Cornell, Risk Analysis Vol 13, No 1993

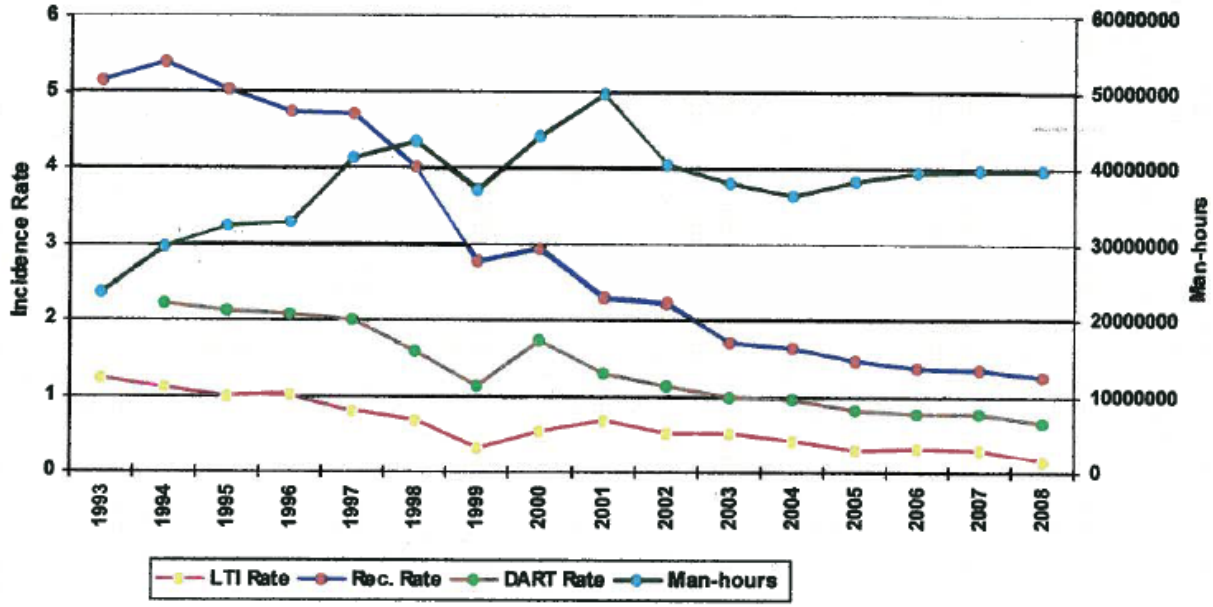
Personal Biases, con't

- **Served on an National Academy of Engineering MMS review committee**
  - Committee on Offshore Oil and Gas Platform Inspection Program
  - Committee was mid study when Macondo tragedy occurred
  - Committee Very likely to propose adoption of formal Safety Management System
  - Volunteered my time
- **"Peer Reviewer" of the 30 day report**
  - I broadly agree with the detailed recommendations in the report
  - Participated in follow up presentation to Secretary Salazar
  - I still believe a blanket moratorium is ill-advised
    - Economic impact aside…
    - Starting and Stopping creates unnecessary hazards
    - Will lose rigs and experienced crews
  - Volunteered my time

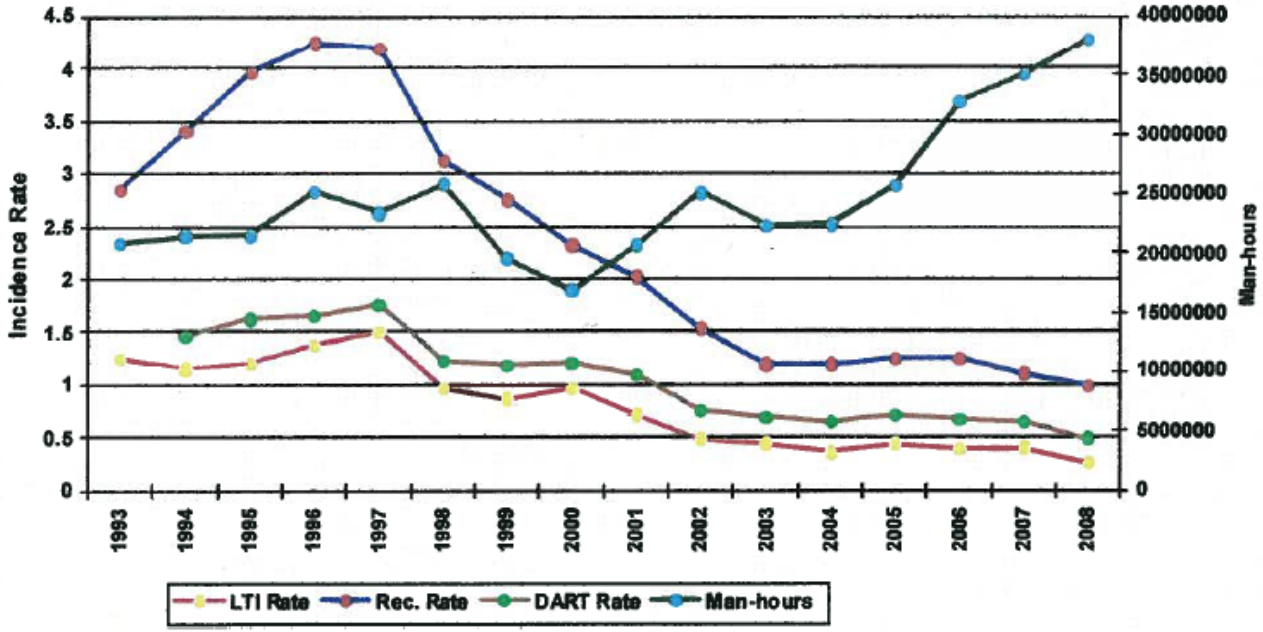
Safety History – Since MMS Started



US Water Total LTI & Recordable Incidence Rates vs Man-hours (Figure 1)



European Water Total Incidence Rates vs Man-hours (Figure 1)

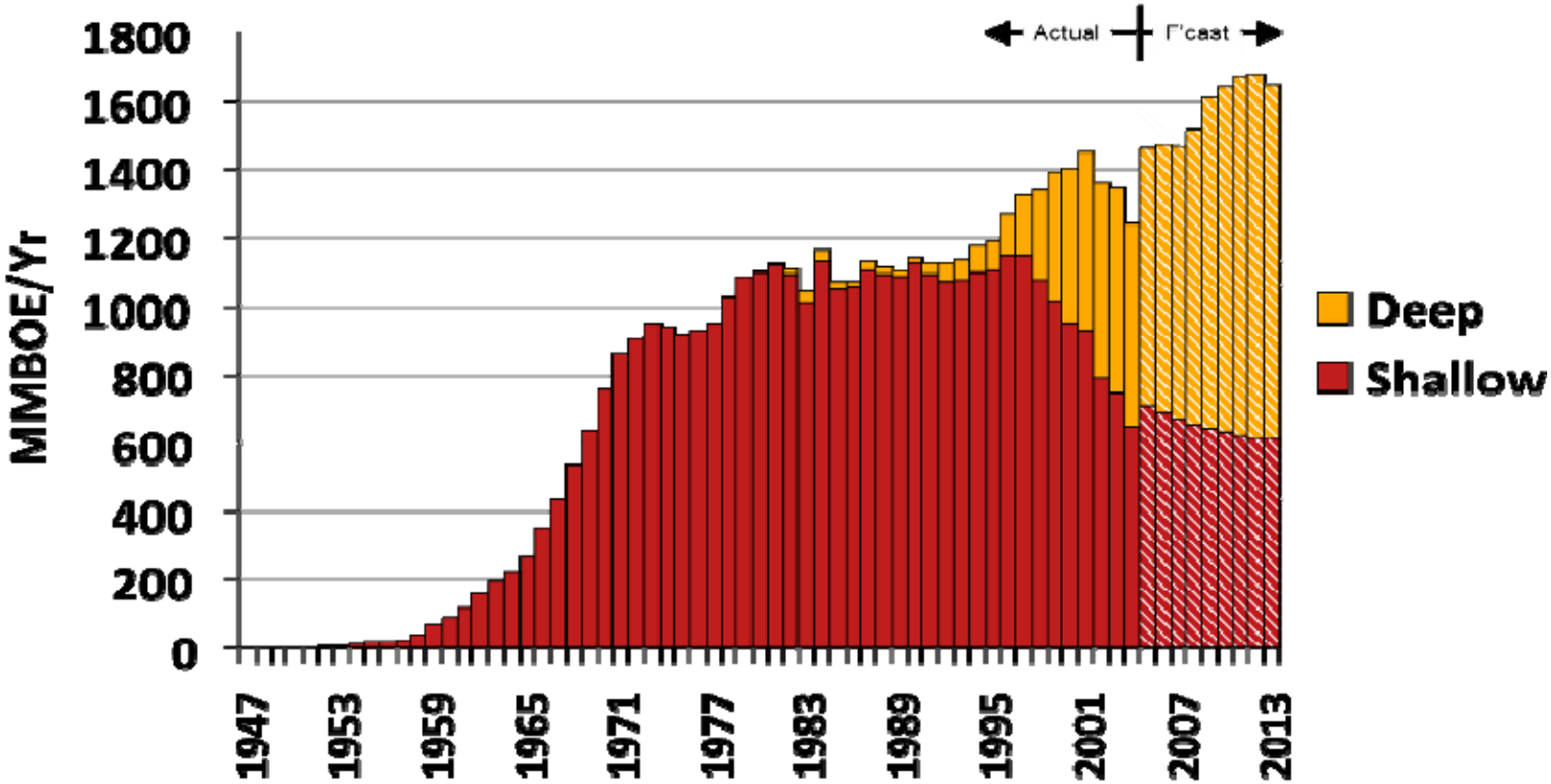


Historical Perspective - Safety Record of Drilling on the OCS

- Last major incident resulting in oil coming ashore in 1969. 41 years ago.
- All measurements of safety indices have shown a steady level of improvement since modern MMS regulations came into effect in 1970.
- Over 50,000 wells drilled. 4000 in over 1000 feet of water.
- From 1970 until April 2010 a total of 1800 barrels of oil spilled due to blowouts.
- Record is better than or equal to that or any other region of the world.

Improvement in spite of increasing technology improvement

US GOM Offshore



Source: OCS Report MMS 2006-022

But something certainly went wrong…

BP Macondo Disaster

- **Final judgment should be suspended until the final detailed findings for specific recommendations.**
- **But as information has been discovered it is increasingly clear that best practices were not followed.**
  - The well design was not robust (fault tolerant)
  - Human errors in judgment were made at very key operational decision points
  - Warning signs were overlooked on the rig
  - There may have been some failure of equipment

- **This was all preventable by following currently in place standard practices.**

What's going on in Response?

- **Government Reports/ Investigations**
  - USGS/MMS Marine Board of Inquiry
  - President's National Commission on the BP Deepwater Horizon
  - 30-Day Report - *Completed May 27*
  - OCS Safety Oversight Board (within DOI)
  - NAE Investigation Requested by DOI
  - NRC Marine Board Committee to Review the MMS Inspection Program (Nov '09)
  - Department of Justice Criminal Investigation
- **Industry Associations** – API, IADC, NOIA, IPAA
  - Offshore Equipment: BOPs, Well heads, ROVs
  - Offshore Operating Procedures
  - Subsea Well Control and Response
  - Oil Spill Response
- **Major GOM Operators Containment Response** – CVX, COP, XOM, Shell
  - $1 Bil. Oil Spill Containment System to Protect Gulf of Mexico
- **Technical Society Activities –** AIChE, AIME, ASCE, ASME and SPE
  - -- Prevention, Response and Clean-Up of Offshore Oil Spills: Lessons Learned
- **University Activities** – UC Berkley
  - -- Document technical and organizational elements of Deepwater Horizon Failures

Prediction: Rediscovery of the ‘Physics of Safety’

- **1979 Three Mile Island incident**
  - Ex-nuclear engineer, President Jimmy Carter established the Kemeny Commission to investigate the incident
  - After detailed study the Commission recommended that the U.S. nuclear energy industry “set up and police its own standards of excellence”
  - After setting and following industry standards average unplanned shut downs declined 94% (7.3 in 1980 to .41 in 2008)
- **North Sea 1988 Piper Alpha Disaster (~$8Bil in 2010$, 167 lives lost)**
  - Cullen Commission investigated the disaster
  - “Copied” Nuclear Power approach: hazards assessment from the earliest stages of design, and produce a 'safety case‘
    - Included continuous hazard assessment over the plant's lifetime, fault tree analysis, which looks at all the ways an error could develop, and takes account of ways that 'human factors' contribute to disasters.
  - Onus in on the company to demonstrate that an effective safety management system (SMS) is in place on a particular offshore installation (‘Safety Case’)

Way Forward – BOEMRE

DO

- Until detailed findings indicate otherwise: Implement findings of 30 day report, particularly instituting Safety and Environmental Management System and 3rd party examiner (see appendix and 30 day report)

And…

- Routinely collect and report statistics the industry can use to improve how it works
  - BOP failure rates during tests
  - Kick details, results, etc
- Work with existing industry study groups to establish well publicized BAST (Best and Safety Technology) for <u>prevention</u> including:

  - Performance-based standards to ensure that well project teams are appropriately resourced and organized, and have robust decision-making process (including 'stopping') properly implemented.

  - Assess existing competence assurance methods, to establish a robust means to verify that people are competent to undertake the roles in which they are employed.
- Work with existing Industry groups to ensure adequate <u>containment</u> systems and response.
- Quantify the real environmental/economic impact of large spills in the Gulf
  - How much is environmental/economic impact is related to actual oil in water?
  - How much is related to loss of tourism due to 'hype'?
  - How much is due to Moratorium?
  - In the future work against 'hype'
  - Assess are current fines of $1000/bbl to $4000/bbl commensurate with harm?

Way Forward – BOEMRE

DON'T

- Create unnecessary variability that leads to risk
  - No blanket moratorium
  - Focused on highest risk wells and operations
    - HTHP Exploration to previously un-drilled strata (where environment is less well known)
- Believe you can create a perfect set of 'rules' that will result in safety
  - "Rules" lead to safety appearances vs safety facts AND belief that since it's checked it must be safe
  - Safety is about competent people following robust processes, not blindly following rules or checking boxes
- Try to do this without very close industry input
  - BOEMRE should be a resource for better performance not the industry's 'enemy'
  - Assure industry created standards meet policy goals

Appendices

- 30-Day Recommendations Already in NTL
- Recommendations Which Could be Implemented But Are Not Currently in NTL
- Recommendations to be Implemented After 30 Days

30-Day Recommendations Already in NTL

Section III Recommendation 1 – Compliance Verification for Existing Regulations and April 30, 2010, National Safety Alert

Implement through NTL within 30 days

Within 30 days of the date of this report, the Department, in conjunction with the Department of Homeland Security, will ensure that operators are required to verify compliance with existing regulations and National Safety Alert (issued April 30, 2010), which issued the following safety recommendations to operators and drilling contractors:

- Examine all well-control equipment (both surface and subsea) currently being used to ensure that it has been properly maintained and is capable of shutting in the well during emergency operations. Ensure that the ROV hot-stabs are function-tested and are capable of actuating the BOP.
- Review all rig drilling/casing/completion practices to ensure that well-control contingencies are not compromised at <u>any</u> point while the BOP is installed on the wellhead.
- Review all emergency shutdown and dynamic positioning procedures that interface with emergency well control operations.
- Inspect lifesaving and firefighting equipment for compliance with federal requirements.
- Ensure that all crew members are familiar with emergency/firefighting equipment, as well as participate in an abandon ship drill. Operators are reminded that the review of emergency equipment and drills should be conducted after each crew change out.
- Exercise emergency power equipment to ensure proper operation.
- Ensure that all personnel involved in well operations are properly trained and capable of performing their tasks under both normal drilling and emergency well-control operations.

Section I Recommendation 1 – Order One-Time Only Re-certification of All BOP Equipment Used in New Floating Drilling Operations

Implement through NTL within 30 days

Before spudding any new well from a floating vessel, the operator will be required to obtain and deliver to the Department of the Interior a written and signed certification from an independent third-party attesting that, on or after the date of this report, a detailed physical inspection and design review of the BOP has been conducted by the equipment manufacturer and owner in accordance with the Original Equipment Manufacturer (OEM) specifications and that (i) the BOP will operate as originally designed; and (ii) any modifications or upgrades to the BOP stack conducted after delivery have not compromised the design or operation of the BOP.

Prior to deploying the BOP, the operator must also verify that any modifications or upgrades to the BOP are approved by the Department of the Interior and that documentation showing that the BOP has been maintained and inspected according to the requirements in API RP 53 and 30 CFR 250.446(a) is on file with the Department of the Interior or available for inspection.

Section I Recommendation 2 – Order BOP Equipment Compatibility Verification for Each Floating Vessel and for Each New Well

Implement through NTL within 30 days

As part of a structured risk management process, the operator will be required to obtain an independent third-party verification that the BOP will operate with the drilling rig equipment and that the BOP is compatible with the specific well location and well basis of design and well execution plan, i.e., in the event of a well control event the BOP will provide a seal and contain wellbore pressure under all conditions expected in the wellbore.

Section I Recommendation 5– Develop Secondary Control System Requirements and Guidelines

Implement through rulemaking within 120 days

- Minimum ROV intervention capabilities for secondary control of all subsea BOP stacks, including the ability to close all shear and pipe rams, close the choke and kill valves and unlatch the lower marine riser package (LMRP).
- Minimum requirements for an emergency back-up BOP control system that is powered by a separate and independent accumulator bank with sufficient capacity to open and close one annular-type preventer and all ram-type preventers, including the blind shear ram. Such safety systems must include ***at least two*** of the following: autoshear, deadman, emergency disconnect system, and/or an acoustic activation system.
- Guidelines for arming and disarming the secondary BOP control system.
- Guidelines for documentation of BOP maintenance and repair (including any modifications to the BOP stack and control systems).

Section I Recommendation 7 – Develop New Testing Guidelines

Implement through NTL within 30 days

Third-party verification or documentation necessary to show that blind-shear rams will function and are capable of shearing the drill pipe that is in use on the rig.

Implement partially through NTL within 30 days, then rulemaking within 120 days

Minimum ROV performance testing standards, including surface and subsea function testing of ROV intervention ports and ROV pumps, to ensure compatibility with the BOP stack and that the ROV can close all shear and pipe rams, close the choke and kill valves, and unlatch the lower marine riser package.

Section I Recommendation 7 – Develop New Testing Guidelines

Implement through NTL within 30 days

Mandatory inspection and testing of BOP stack if any components are used in an emergency, *e.g.,* use of pipe or casing shear rams or circulating out a well kick. This testing should involve a full pressure test of the BOP after the situation is fully controlled, with the BOP on the wellhead.

Section I Recommendation 8 – Develop New Inspection Procedures and Reporting Requirements

Implement through NTL within 30 days

Beginning no later than 60 days after the date of this report, all operators of floating drilling equipment will report to the Department of the Interior the following: (i) BOP and well control system configuration, (ii) BOP and well control system test results, including any anomalies in testing or operation of critical BOP components, (iii) BOP and well control incidents, and (iv) BOP and well control system downtime for the last three years of drilling operations.

Section II Recommendation 3 – New Casing And Cement Design Requirements: Two Independent Tested Barriers

Implement through NTL within 30 days

Before spudding any new floating drilling operation, all well casing and cement designs must be signed by a Professional Engineer, verifying that there will be at least two independent tested barriers, including one mechanical barrier, across each flow path during well completion and abandonment activities and that casing design is appropriate for the purpose for which it is intended under reasonably expected wellbore conditions.

Section II Recommendation 5 – New Casing Installation Procedures

Implement through NTL within 30 days

The Department will ensure the requirement of the following BAST practices:

- Casing hanger latching mechanisms or lock down mechanisms must be engaged at the time the casing is installed in the subsea wellhead.
- For the final casing string, the operator must verify the installation of dual mechanical barriers (*e.g.,* dual floats or one float and a mechanical plug) in addition to cement, to prevent flow in the event of a failure in the cement.

Recommendations Which Could be Implemented But Are Not Currently in NTL

Section I Recommendation 7 – Develop New Testing Guidelines

Implement through NTL within 30 days

Minimum surface and subsea function and pressure testing requirements to simulate (i) unintended disconnect of the lower marine riser package (LMRP), and (ii) loss of surface control (e.g., electric and hydraulic power) of the subsea BOP stack.

Section I Recommendation 8 – Develop New Inspection Procedures and Reporting Requirements

Implement in accordance with internal Departmental Guidance issued within 30 days

- The Department will evaluate and revise the manner in which it conducts its drilling inspections.
- Revised drilling inspections should include the witnessing of actual tests of BOP equipment, including the new requirements and guidance that address the surface and subsea testing of ROV and BOP stack capabilities.
- The Department will also develop methods to increase transparency and public availability of the results of inspections as well as routine reporting.
- The Department will work with Congress to obtain the necessary resources to implement these recommendations.

Section II Recommendation 2 – New Fluid Displacement Procedures

Implement through NTL within 30 days

Prior to displacement of kill-weight drilling fluid from the wellbore, the operator must independently verify that:

- The BOPs are closed during displacement to underbalanced fluid columns to prevent gas entry into the riser should a seal failure occur during displacement.
- Two independent barriers, including one mechanical barrier, are in place for each flow path (i.e., casing and annulus).
- If the shoe track (the cement plug and check valves that remain inside the bottom of casing after cementing) is to be used as one of these barriers, it is negatively tested prior to the setting of the subsequent casing barrier. A negative test should also be performed prior to setting the surface plug.
- Negative tests are made to a differential pressure equal to or greater than the anticipated pressure after displacement. Each casing barrier is positively tested to a pressure that exceeds the highest estimated integrity of the casing shoes below the barrier.
- Displacement of the riser and casing to fluid columns that are underbalanced to the formation pressure in the wellbore is conducted in separate operations. In both cases, BOPs should be closed on the drill string and circulation established through the choke line to isolate the riser, which is not a rated barrier. During displacement, volumes in and out must be accurately monitored.
- Drill string components positioned in the shear rams during displacement must be capable of being sheared by the blind-shear rams in the BOP stack.

Section II Recommendation 7 – Enforce Tighter Primary Cementing Practices

Implement through a rulemaking within 120 days

The Department will institute a rulemaking to consider the adoption of API RP 65 Part 2:

- Isolating potential flow zones during well construction (addressing previously identified gaps in primary cementing practices).

Section III Recommendation 3 –Adopt Final Safety and Environmental Management Systems Rule

Implement through publication of final rule within 30 days

The OCS Safety Oversight Board will ensure the promulgation of a final SEMS Rule with full implementation of all elements, along with provisions for public availability of information developed and collected under the rule to increase transparency and accountability.

SEMS is a structured and comprehensive method for applying operational, safety and environmental protection principles to offshore activities by focusing on personnel and ensuring accountability for operations throughout the organization in the following specific areas:

1. Safety & Environmental Information
2. Hazards Analysis
3. Management of Change
4. Operating Procedures
5. Safe Work Practices
6. Training
7. Mechanical Integrity
8. Pre-Startup Review
9. Emergency Response & Control
10. Investigation of Accidents
11. Auditing the Program
12. Records & Documentation

Recommendations to be Implemented After 30 Days

Section I Recommendation 3 – Study Formal Equipment Certification Requirements

Implement recommendations through the Department workgroup within one year

The Department will immediately establish an independent technical workgroup to review current, and investigate new, certification requirements for BOP equipment and other components of the BOP stack such as control panels, communication pods, accumulator systems, and choke and kill lines. In addition, this workgroup will recommend ways to make BOP certifications publicly available in order to increase transparency and accountability.

The establishment of a technical workgroup to examine the need for certification of BOP systems and components is important; even when a BOP stack has all the above mentioned systems and components, it is of little use if it does not function properly to prevent a well blowout.

Section I Recommendation 4 – New Blind Shear Ram Redundancy Requirement

Implement through rulemaking within 120 days

Within one year from the date of this report, all floating drilling operations will be required to have two sets of blind shear rams spaced at least 4 feet apart (to prevent system failure if drill pipe joint or drill tool is across one set of rams during an emergency).

Section I Recommendation 6 – Develop New ROV Operating Capabilities

Implement recommendations through the Department workgroup within one year

The Department will immediately establish an independent technical workgroup to develop further improvements to ROV operating capabilities including the following:

- Standardized hydraulic and electrical interfaces for all subsea BOP stacks so that they are accessible by any available ROV.
- Visual mechanical indicator or redundant telemetry channel to confirm ram closure (*e.g.,* a position indicator).
- Methods of subsea testing that would avoid detrimental effects of seawater in BOP system (*e.g.,* ROV with external hydraulic supply).
- An ROV interface with a valve below the lowest ram on the BOP stack to allow well-killing operations.

Section I Recommendation 7 – Develop New Testing Guidelines

No later than 180 days after the date of this report

The Department will develop clear requirements and guidelines that address the surface and subsea testing of ROV and BOP stack capabilities.

- ***Implement through rulemaking within 120 days***
- Protocols for function testing, autoshear, deadman, emergency disconnect systems and acoustic activation systems.

Section I Recommendation 8 – Develop New Inspection Procedures and Reporting Requirements

Implement through rulemaking within 120 days

Where feasible, the electronic log from the BOP control system should be transmitted online to a secure location onshore and made available for inspection by the Department of the Interior.

Section II Recommendation 1 – Establish Deepwater Well-Control Procedure Guidelines

Implement through rulemaking within 120 days

Within 120 days of the date of this report, the Department will ensure that requirements and guidelines for deepwater well-control procedures are established.

Section II Recommendation 4 – Study Formal Personnel Training Requirements for Casing and Cementing Operations

Implement recommendations through the Department workgroup within one year

The Department will immediately establish an independent technical workgroup, with appropriate academic, agency, industry and other stakeholder participation, to study whether to establish new training and certification requirements for rig personnel specifically related to casing and cementing operations.

Section II Recommendation 6 – Develop Additional Requirements or Guidelines for Casing Installation

Implement recommendations through a the Department workgroup within one year

The Department will provide for the immediate establishment of a workgroup, to establish specific requirements or guidelines for the following procedures and practices:

- Positive and negative test procedures and use of test results for evaluation of casing integrity.
- Use of float valves and other mechanical plugs in the final casing string or liner.

Section II Recommendation 7 – Enforce Tighter Primary Cementing Practices

Implement recommendations through a Department workgroup within one year

•The Department will study whether to determine specific cementing requirements.

Section II Recommendation 8 – Develop Additional Requirements or Guidelines for Evaluation of Cement Integrity

Implement recommendations through Department workgroup within one year

•The Department will immediately establish an independent technical workgroup to evaluate whether and under what circumstances the use of cement bond logs is feasible and practical and will increase safety.

Section II Recommendation 9 –Increase Federal Government Wild-Well Intervention Capabilities

Blown out, or “wild” wells, involve the uncontrolled release of crude oil or natural gas from an oil well where pressure control systems have failed.

The Federal government should assess its current capability to deal with such emergency situations, particularly in deep water, and develop a plan to increase its capabilities for direct wild-well intervention, should such be required, in future emergency situations.

Elements to be considered include an inventory of existing methods to stop a blowout and handle escaping wellbore fluids, including but not limited to coffer dams, highly-capable ROVs, portable hydraulic line hook-ups, and pressure-reading tools.

Section II Recommendation 10 – Study Innovative Wild-Well Intervention, Response Techniques and Response Planning

In addition, the Department will immediately establish a DOI workgroup to study methods to stop a blowout and handle escaping wellbore fluids. The technical workgroup will take a fresh look at how to deal with a deepwater blowout. The conventional last resort method to control a blowout is to drill a relief well. In deep water this can take several months. But the reality of taking several months to stop a high flowing well at deep water depths was difficult to imagine until the BP oil spill. The offshore oil and gas industry, learning from the BP Oil Spill response experience, should work toward being able to stop a spill resulting from a deepwater blowout. Operators should work to be in a position to submit, with their Exploration or Development Plans, an emergency response plan that addresses resources (including common resources) that would be deployed in the event of a serious emergency, even if assessed as low probability.

The technical workgroup should also address operators' ability, on a regional or industry-wide basis, to develop and procure a response package for deep water incidents, to include diagnostic and measurement equipment, pre-fabricated systems for deep water oil capture, logistical and communications support, and plans and concepts of operations that can quickly be deployed in the event of an unanticipated blowout. Assess and certify potential options, e.g., deep water dispersant injection.

Section III Recommendation 2 – The Department Will Adopt Safety Case Requirements for Floating Drilling Operations on the OCS

Implement through rulemaking within 120 days

•Within 120 days of the date of this report, the Department will assure the adoption of appropriate safety case requirements based on IADC Health, Safety and Environmental Case Guidelines for Mobile Offshore Drilling Units (2009), which will include well construction safety assessment prior to approval of APD.

•This "safety case" should establish risk assessment and mitigation processes to manage a drilling contractor's controls related to the health, safety and environmental aspects of their operations.

•In addition to the safety case, a separate bridging document should be required to connect the safety case to existing well design and construction documents.

•Such a proposed Well Construction Interfacing Document will include all of the elements in a conventional bridging document plus alignment of the drilling contractor's management of change (MOC) and risk assessment to the lease operator's MOC and well execution risk assessments.

Section III Recommendation 4 – Study Additional Safety Training and Certification Requirements

Implement recommendations through a Department workgroup within one year

- The Department will immediately establish a workgroup to investigate safety training requirements for floating drilling rig personnel and possible requirements for independent or more frequent certification and testing of personnel and safety systems.
- Establish an oil production safety program or institute (similar to NRC reactor safety program).
- Consider establishing a formalized analytical methodology to assess performance of safety systems in the event of multiple component failure or excursions outside normal environmental ranges.
- Strengthen technical support to the Department of the Interior and other regulatory authorities, including the resources necessary to obtain independent technical review of regulations and standards.
- Consider chartering a longer-term technical review of BOP reliability.
- Consider importing best practices from other agencies with similar responsibility for safety regulation of technically complex systems, e.g. FAA and NRC.

Appendices

- Activities in response to BP Macondo Tragedy
  - Government
  - Industry
  - Technical Societies
  - Academia

What's going on in Response?

- **Government Reports/ Investigations**
  - USGS/MMS Marine Board of Inquiry
  - President's National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling
  - 30-Day Report - Completed May 27
  - OCS Safety Oversight Board (within DOI)
  - NAE Investigation Requested by DOI
  - NRC Marine Board Committee to Review the MMS Inspection Program for Offshore Oil and Gas Facilities (formed November, 2009)
  - Department of Justice Criminal Investigation
- **Industry Association Activities – API, IADC, NOIA, IPAA**
  - Offshore Equipment: BOPs, Well heads, ROVs
  - Offshore Operating Procedures
  - Subsea Well Control and Response
  - Oil Spill Response
- **Major GOM Operators**
  - $1 Bil. Oil Spill Response New Oil Spill Containment System to Protect Gulf of Mexico Planned
- Technical Society Activities –

Government Reports/Investigations

- **USGS/MMS Marine Board of Inquiry**
  - The purpose of this joint investigation is to develop conclusions and recommendations as they relate to the Deepwater Horizon MODU explosion and loss of life on April 20, 2010

- **President's National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling**
  - The Commission shall

  (a) examine the relevant facts and circumstances concerning the root causes of the Deepwater Horizon oil disaster; and

  (b) develop options for guarding against, and mitigating the impact of, oil spills associated with offshore drilling, taking into consideration the environmental, public health, and economic effects of such options and

  (c) submit a final public report to the President with its findings and options for consideration within 6 months of the date of the Commission's first meeting

Government Reports/Investigations

- **30-Day Report**
  - The President directed the Secretary of the Interior to conduct a thorough review of this event and to report, within 30 days, on —what, if any, additional precautions and technologies should be required to improve the safety of oil and gas exploration and production operations on the outer continental shelf. Completed May 27
- **OCS Safety Oversight Board (within DOI)**
  - Provide oversight and periodic progress reports on Marine Board of Inquiry
  - Provide recommendations for interim measures of safety resulting from other inquiries
  - Make recommendations to improve overall management, regulation and oversight of OCS operations

Government Reports/Investigations

- **NAE Investigation Requested by DOI**
  - The committee is expected to conduct an independent, technical investigation of the Deepwater Horizon disaster, identifying mechanical failures underlying the accident and scrutinizing practices at BP's doomed Macondo well that also may have contributed to the blowout. The panel also is tasked with recommending technologies, practices and standards that could govern future offshore drilling for oil and gas. Preliminary report due Oct.30.
- **NRC Marine Board Committee to Review the MMS Inspection Program for Offshore Oil and Gas Facilities (formed November, 2009)**
  - Review of MMS Inspection of Operational Activities for Production, Drilling, Structures and DOI Pipelines

Government Reports/Investigations

- Department of Justice Criminal Investigation
  - We must ensure that anyone found responsible for this spill is held accountable. That means enforcing the appropriate civil – and if warranted, criminal – authorities to the full extent of the law.
  - Among the many statutes Department attorneys are reviewing are:
    - The Clean Water Act, which carries civil penalties and fines as well as criminal penalties;
    - The Oil Pollution Act of 1990, which can be used to hold parties liable for cleanup costs and reimbursement for government efforts;
    - The Migratory Bird Treaty Act and Endangered Species Acts, which provide penalties for injury and death to wildlife and bird species; and,
    - Other traditional criminal statutes.

Industry Task Forces- API, IADC, NOIA and IPAA

- **Offshore Equipment-**
  - brings equipment manufacturers, industry subsea equipment specialists and deepwater contractors to focus on maintenance, response and testing of blowout preventer-equipment and remotely operated vehicles, or ROVs
- **Offshore Operating Procedures-**
  - leverages the expertise of offshore operators and members of the service sector to strengthen practices related to drilling and completion of deepwater wells
- **Subsea Well Control and Response-**
  - address technologies and practices for controlling the release of oil from its source. It looks at various well-control procedures, including the “junk shot,” coffer dams, “top kill” and other subsea containment and collection methods
- **Oil Spill Response-**
  - reviews existing spill-response processes and technologies, identify gaps and seeks options to address those gaps through recommended practices and procedures, as well as research and development

International Association of Oil and Gas Producers (OGP) - Global Industry Response Group

- Global Industry Response Group
  - To focus on the outcome of the official investigations now underway.
  - Identify other questions raised by the incident. Particular emphasis will be on subsea well control, oil containment at the well and cleanup techniques for major oil spills.
  - Review offshore operating procedures and equipment, audit inspections, oil spill liabilities and financial provisions and possible changes to regulations and legislation

New Oil Spill Containment System to Protect Gulf of Mexico Planned By Major Oil Companies

- **Build and deploy a rapid response system**
  - Capture and contain oil in the event of a potential future underwater well blowout in the deepwater Gulf of Mexico
  - Chevron, ConocoPhillips, ExxonMobil and Shell.

- **Flexible, adaptable and quickly mobilized**
  - Mobilization within 24 hours and can be used on a wide range of well designs and equipment, oil and natural gas flow rates and weather conditions.
  - Used in deepwater depths up to 10,000 feet and have initial capacity to contain 100,000 barrels per day with potential for expansion.

Societies- AIChE

- Oil Spill Workshop paid for by United Engineering Foundation and run by AIChE
- Supported by AIChE, AIME, ASCE, ASME and SPE
- Deliverables:
  - Paper developed by the project team with the final product being reviewed and commented on by workshop participants and other experts in the field. The final deliverable would be a downloadable, document entitled *Process Industry Response to Prevention, Response and Clean-Up of Offshore Oil Spills: Lessons Learned,* which would be available at no cost to the technical community or to the public.
  - Workshop presentations recordings (audio synchronized with slides), which would also be available at no cost to the technical community or to the public

University of California, Berkeley Deepwater Horizon Study Group

- Produce a final report documenting results from our studies of the Deepwater Horizon failures (addressing technical and organizational – institutional - policy elements), and recommendations to reduce the likelihoods and consequences of such failures in future ultra-deepwater and arctic hydrocarbon resource developments.
  - It is anticipated this report will be issued in approximately 6 months. One or more preliminary reports and white papers will be developed to communicate important current developments and solicit feedback.
- Serve as advisors to people and organizations (public, government, industry, environmental advocates) who want timely, unbiased well informed insights and information regarding the failures and what should be done to reduce the future likelihoods and consequences associated with such failures in ultra deepwater and arctic hydrocarbon resource developments.
- Develop a central archive and communications system for data and information developed during the investigations that can be used by researchers and other people and groups with a 'need to know' so that more work can be done to properly analyze the information and document the results from their investigations and studies.