

Research Partnership to Secure Energy for America

Technical Forum

July 22, 2010

9:00 – 4:00

Research and Technology Needs for Deepwater Development Addressing Oil Recovery and Effective Cleanup of Oil Spills

Panel Discussion

Panel Discussion – What's Going On? What Else Can Go Wrong? - Hearings, Briefings and Other Items

Tom Williams/Nautilus: *The U.S. Department of Interior's Response* (TW)

Paul Martin/MMS—Retired: *History of the TA&R Program* (PM)

Quenton Dokken/Gulf of Mexico Foundation: *Valuation of Ecosystem Services* (QD)

David Dietrich/AcuSea, Inc: *Oil Spill Modeling* (DD)

Greg Anderson/Moody International: *Creating A Culture of Well Control Safety* (GA)

followed by other items and discussion/brainstorming session

Questions and Answers

General Questions

1. NTL requirements to have casing design and cementing programs certified by registered professional engineers.
 - a. Does MMS have registered PE's to regulate the certifications?

(PM) The requirement for "certification by a Professional Engineer" is upon the Operator/Lessee - not MMS. MMS does have some "Professional Engineers", but the burden of proof is upon the Operator/Lessee. Sometimes, the MMS requirement will require certification by "an independent, third party" with a statement of the "professional qualifications".

- b. Does the regulation/requirement create more problems than it solves?

(PM) Think of the time requirements if MMS personnel had to start "from scratch" to address the specifics of the proposed operational plans of every operator - probably hundreds each year. Also, where would "liability" rest -- with the Government?

- c. How does industry respond to ensure that well construction is appropriate in lieu of having enough registered PE's that specialize in well design?

(PM) Independent, Third Party certifications is always an alternative.

2. The Department of Interior wants “assurance” of drilling practices. Can panel guess as to what will be needed to provide assurance?

(GA) When the MMS came out with a new Subpart O rule in August of 2000 regarding the training of employees working on the OCS, it signaled a shift to “performance-based” regulatory practices that provided a great deal of flexibility relative to how employees and contractors were to be trained.

Similarly I believe the DOI will leave it up to the lease holder as to how they demonstrate “assurance” of drilling practices. Clearly this will need to include “competence” of rig and third-party personnel, thus it will be necessary to utilize programs that provide standards, a means of assessment, training, and ultimately documentation of competency.

(PM) Generally, the specifics will be spilled out in a subsequent Notice to Lessees and eventually, put into operating Regulations.

3. What could/should be done to improve the technical drilling and completions engineering competencies of MMS so that it becomes a bona fide industry watchdog?

(PM) MMS will never be able to offer the salaries and other benefits offered by industry to attract and keep the same competency level of engineers, scientists, etc. Hence, the "burden of proof" falls (rightfully so!) upon the operator - with MMS doing "spot checks". That is the current "Regulatory Philosophy" that exists in the US across most industries with Government regulators. An alternative "Regulatory Philosophy" could have ALL aspects of industry operations reviewed/certified by one or more "third party" reviewers, but the costs and time requirements would soar!

- a. How important do you think such action would be as a “preventive technology”?
4. Coal Mining versus Drilling: We lost close to 30 men in two coal mining explosions at the time of the Deepwater Horizon Blowout. Why the lack of governmental emphasis/action in West Virginia and the zealousness in Louisiana?

(GA) While the loss of life, either at the mines or on the rig, is the biggest tragedy, they were singular events that did not have a financial impact across the country. It is the ongoing and far-reaching environmental impact of the flowing well that motivates the government’s action.

(PM) Certainly, "Politics" plays a major role and seeing oil in the water and dying birds and wildlife brings about the public anxieties that opponents of offshore drilling have used for years! However, if the coal mine disasters would have spewed coal particles all over the Northeast countryside for months, you may have experienced more public outcry. Unfortunately, the public generally cares more about potential future harm to themselves and their life-styles than they do about the loss of human lives (folks they never knew anyhow!). I have battled this "Anti-Offshore" attitude for years, and have come to accept that OFFSHORE OIL is just like many other "hot button" aspects of our lives and culture -- individuals are either "for" it or "against" it and cannot be swayed by facts, statistics, science, etc.

5. When was the Macondo sea floor surveyed for seeps?
 - a. At permitting, EIS?
 - b. After blowout?
 - c. After capping?

6. Where do you see most urgent requirement for research?

(GA) Much of the discussion has been focused on equipment, legislation, and spill response. At the end of the day there is sufficient technology and procedures to maintain or regain control of formation pressure. It ultimately comes down to people recognizing when all the dominoes are lining-up, having the courage and ability to speak-up and supervisors having the willingness to listen. Therefore, more research needs to be done around how we, as an industry, create that culture of safety.

7. Can you offer a simple and compelling answer to a “John Q Public” question:
 - a. How and why did the spill happen?

(PM) Accidents happen in every aspect and activity in life - sometimes because of equipment failures, sometimes because of human decision errors, and combinations of each. Generally, accidents occur because of a sequence of multiple errors rather than a single mistake. Although investigations are still underway, it appears that the DEEPWATER HORIZON incident and subsequent spill were the result of several inter-related failures, both equipment and human.

- b. What will industry and government do differently to make sure another spill CANNOT happen?

(PM) As long as equipment and machinery, human decision making, computers, software, and advancing technologies are involved, accidents WILL happen. No amount of laws, regulations, monetary penalties, or other "regulatory tactics" can eliminate accidents.

(GA) Ultimately the underground formation was able to broach the well control barriers that were in place.

No one, not the industry or government, can guarantee another spill will not happen. What we need to focus on is reducing or mitigating the hazards associated with drilling a well, through improved equipment, legislation and, most importantly, focusing on the people side of the business.

We also have to do a better job of educating the public about what it takes to drill a well, including letting them know “kicks” are a common problem, the vast majority of which do not end-up in a blowout.

8. Is there validity to Matt Simmons’ assertion that there is a lake of oil on the seabed?

Question for Tom, Paul and Greg

1. Should we consult with other industries regarding safety approaches, e.g.
 - a. NASA → Space → Scenario Planning
 - b. Nuclear → Reactor Safety → Levels of Safety Systems

(PM) A Marine Board study in the early 1970's (I mentioned during my brief remarks) recommended a "NASA Approach" to regulating the Offshore industry. Whereas a "systems approach" rather than a "component approach" for a MMS Regulatory and inspection program (something I advocated for years - to no avail!) might be productive, the NASA space program is a GOVERNMENT PROGRAM (TOTALLY US GOVERNMENT OWNED!) with private contractor support, whereas the Offshore Program is a PRIVATE INDUSTRY venture. I'm not familiar with the regulatory program addressing the nuclear industry, so I cannot offer comments.

Question for Paul and Greg

1. What lessons learned from the U.K.'s response to the Piper Alpha disaster should the U.S. industry and government focus on as we respond to the Horizon disaster?

(GA) The 1988 Piper Alpha disaster in the North Sea that killed 167 workers really focused attention on the impact of people's behavior as a contributing factor to the incident. Whether Piper Alpha or any other incident, large or small, over 97% of the time human behavior plays a significant role. There is a great deal of discussion today about improving equipment or writing additional legislation; however, if people don't choose to use the equipment properly or follow the rules then incidents will continue to occur. A key focus area needs to be how does a company or industry create a culture of safety where people "believe in" versus "comply with" safety.

(PM) MMS personnel participated in the accident investigation, hearings, and follow-up recommendations, but I cannot address the specifics (I spent the years 1985 - 1996 in the MMS RESOURCE EVALUATION PROGRAM and dealt with my own crises in that program!).

Questions for Tom

1. Is the knee jerk reaction by Congress with regard to offshore safety legislation (and the missed opportunity of a 21st Century system in the U.S.A.) actually harming safety through not making our industry as safe as reasonably practicable?

(TW) The moratorium as currently defined by the Secretary's memos INCREASES risk when drilling is eventually resumed in these ways:

1. Stopping operations in the middle
 2. Exporting best rigs
 3. Loss of experienced drilling staff
 4. Increased tanker traffic
- The best rigs and the responsible drillers will get work and go elsewhere. They won't come back. We'll end up with 'junkier' rigs (they'll still meet 'regs' – but they'll be less capable). This will have the unintended consequence of increasing our future risks.

- Workforce significantly impacted, including the thousands of support workers and service providers who support the drilling operations and must adhere to the safety standards – best of them will get work internationally or other industries/jobs.
- Recruitment of new people will stop – the best and brightest do not apply for uncertain jobs
- While some additional training and certification can and will take place during this time – as with the baseball offseason, players need a spring training to get back in shape – “From a safety standpoint we can’t afford to have spring training.”

It takes months to properly train a safe workforce, and the reason some drilling contractors and operating companies are paying workers not to work during this ban; but once laid off, and if the ban last long enough there will be no choice (J. Rynd, CEO of Hercules Offshore to MSNBC on 7 22), and thus the training of new workers could compromise safety.

2. What influence will “black box” on B.O.P. have?

(TW) I assume you are referring to requiring a blackbox on each rig? We effectively have this now, by the data recording systems that transmit this data by satellite. This is currently not required but I am not aware of any MODU that does not have such a system. It is not shared with regulators or most vendors, the number of sensors on a rig and downhole provides a tremendous amount of information that is not fully utilized today. My former company (Noble Drilling) initiated an effort to collect and analyze all this information including incidences, kicks and causes of flat time which helped us become a safer and more efficient company (our system was called DrillSmart). There are some companies today that are providing commercial software to help operators and service providers do this.

3. Can automation of well control help to reduce risk and perception of risk?

(TW) We have automation for well control now, and improvements are being made, but as we saw in this workshop there are technologies that could provide additional data that would allow an automated system make early detections of potential well control events and other potential failures. These safeguards should be a part of all drilling systems, and I am confident some will be defined in the joint industry task force report. We have learned that other industries and agencies (DoD, DoT) are doing this to a higher level of proficiency than the oil and gas industry and there is a lot of technology that can be transferred.

4. How do we address the legal aspects associated with the failure analysis and lack of information sharing or potential delay in information availability?

(TW) This can only be done through regulation. The best system would be where the industry decides on standards like the daily IADC report and start doing this before they are regulated and the information format would be dictated by people who do not do this for a living.

5. In the ongoing government hearings and investigation, has there been any focus or attention paid to potential deepwater production problems such as pipeline, flowline, or subsea facilities failures that could result in major spills?
 - a. E.g., has anyone expressed concern over the industry's "asset integrity" management? (decommissioning old assets inspection of producing assets, etc.)

(TW) The hearings and most investigations have been very short sighted and reactive. The new Congressional Bills are not even waiting for the investigations they have requested. We all know if there is another incident, it will most probably not be due to a drilling blow-out, it will be on a production platform, a pipeline, subsea production system, etc. and due to failures you noted in your questions, caused by things like hurricanes or aging infrastructure. Some of the integrity issues were already being looked at by API and now by the joint industry task force, but not to the scale or urgency many believe should be done.

6. Risk – what is meant by Secretary Salazar's desire to manage risk?

(TW) Very good question; his definition of a tolerable level of risk has not been defined, and it has been a moving target. We all know risk can't be eliminated; it can only be managed and minimized. We (as an industry) can't even get a consensus on how to define a high risk well, so I suppose the inability of a political person who has never dealt with the management of risk other than political risk may be need some help.

(GA) Risk is an inherent part of drilling a well. What needs to be managed or mitigated are the hazards associated with drilling the well, and a hazard is anything that has the potential to contribute to an incident taking place. Therefore, we have to continually assess risk to prioritize and focus on those hazards that have a greater likelihood of contributing to an incident, as well as its severity.

Questions for Paul

1. What are the statistics for well control incidents in the Gulf of Mexico during the 60's, 70's, 80's, 90's and today?

(PM) Such statistics should be available on the MMS website, IADC, or private firms who compile this sort of data.

2. How necessary and effective do you believe the MMS restructuring is? What are the biggest challenges it will bring?

(PM) All of MMS has been tainted by the actions of a few AND years of policy direction and budget decisions by SENIOR MANAGEMENT - who refused throughout the life of the agency to focus necessary resources upon the OPERATIONS and SAFETY aspects of Offshore activities. SENIOR MANAGEMENT focused resources upon LEASING (Particularly funding \$100's of millions upon Environmental Studies to appease States' opposition to lease sales!) , ECONOMICS (Bonus + Royalty Collection, etc.), etc. while advocating that SAFETY was Industry responsibility. The basic concept that new technologies and

procedures required knowledge and innovations in GOVERNMENT regulations simply were not grasped by these "officials" for years! There are years of suppressed "improvements" that can make a difference (e.g., "inspectors should be engineers rather than technicians!"), but the "new" SENIOR MANAGEMENT needs to be attuned to these suggestions. My fear is that the new Director, et. al., will select the new Management Team from DOE and other Government entities that have absolutely no background or history of the past Regulatory practices, philosophy, successes, failures, etc.

3. What are the current MMS requirements, and are they sufficient, to make sure that new technologies comply with an acceptable level of reliability?

(PM) There is a requirement that "new technologies" comply with BAST (Best Available and Safest Technologies) and some stipulations that operators certify such in their proposals. However, it is pretty difficult to regulate. We tried to spend a limited amount of funds from the MMS Research funds (a meager \$1 million or so per year!) to keep up with "new technologies" across the topics of drilling, production, pipelines, structures, fire & blast, decommissioning, etc.,) but could not keep up with the rapid number of changes happening!

4. My impression – having a very recent involvement in subsea monitoring and automation – is that oil/gas industry is very conservative in accepting and adopting new technologies. Can you comment on that and potential remedies?

(PM) "Industry" is a collection of different companies - each with their own cultures, experiences, successes, failures, economics, etc. Some companies are very willing to accept new technologies in certain areas - but not others! Also, a "regulatory philosophy" which mandates acceptance and use of certain equipment and procedures then may limit the innovation for "newer and better" ideas!

5. Should OHMSETT be a private entity? Can it handle high pressure simulation?

(PM) First, the second question -- OHMSETT is a test tank for testing the effectiveness of booms, skimmers, dispersants, and an array of related equipment acting on oil at or near the water surface. It is only 11 feet deep and cannot address "high pressure" issues associated with the release of oil on the seafloor. The question of "private entity" versus "Government facility" has been debated numerous times over the 36 year life of OHMSETT. Originally built in 1974, the perception existed (I believe rightfully so!) that no segment of American industry could reap enough economic benefits from "the rare events requiring cleaning up oil spills" to offset the costs of construction and operation of such a facility. Hence, since the benefits accrued to "society" as a whole, the construction and maintenance of this facility was deemed more appropriate for Government. Let's face it, the demand for "new" and "more efficient" booms, skimmers, etc. is NOT a big business with purchasers returning every few years for the newest technologies! Additionally, similar tanks (albeit without the capability to use real oil!) operated by academia (such as OTRC at Texas A&M) rely upon research and activities from outside parties for 90 - 95% of their funding needs - since these tanks are VERY expensive to operate and cannot be supported solely by university research budgets and projects! With the new MMS reorganization, there is a possibility that OHMSETT may get transferred to another FEDERAL agency. Knowledge of the past history should give decision makers some pause! EPA had jurisdiction over OHMSETT, but was never able to vastly improve oil spill removal technologies over their management years. EPA lost

interest in the facility, and OHMSETT was transferred to the US Navy in 1989. However, NAVY had no interest in the OHMSETT mission (but it was built on a US Navy weapons base!) and was prepared to dismantle the facility and build a parking lot when the Exxon Valdez incident occurred! NOAA was never interested in advancing oil spill clean-up technologies as part of their core responsibilities. I explored possible transfer of OHMSETT to USCG in the 1997 - 1998 timeframe, but USCG "mid-level" oil spill experts quietly argued against such action - suggesting that the funds necessary for maintenance and operation of OHMSETT would be quickly diverted to other USCG priorities! So, responsibility continued with MMS. In addressing "The Future", I believe that the OHMSETT facility CAN play a major role in the development of new equipment, technologies, and practices for addressing future oil spill containment and clean-up operations. However, the specific interactions with the ultimate Government agency controlling OHMSETT and incorporating OHMSETT into research projects throughout the entire life of each project and testing new technologies is essential!

Question for Quenton

1. Are the underwater plumes real and how can they remain underwater with a density of 0.9?

Questions for David

1. Define "DEEP" or the depth at which oil will not move out of the Gulf.

(DD) Nearly all of the outflow from the Gulf goes through the Florida Straits, having sill depth about 760m. Deeper material in the northern and western Gulf tends to be trapped for decades or centuries, except occasionally some material may exit in a small deep southward flow through the eastern part of the Yucatan Strait. However, most of the southward flow no doubt recirculates and gets entrained into northward flow, thus re-entering the Gulf. Thus, the ultimate "final" exit is the Florida Strait. Any material deeper than about 750m tends not to get through the Florida Strait due to earth rotation related constraints (modeled by Coriolis terms). Vortex stretching and associated vertical velocity is extremely small due to those constraints. Thus, the residence time of deep material is probably near laminar diffusion time scales (centuries). Breaking internal waves generated by big storms and bottom dissipation effects may decrease the residence time, but that is an interesting topic for research that may relate to the long term ecosystem dynamics.

2. Can you discuss the importance of "near field of the leak model" as compared to the current predictions using ocean model?

(DD) That is a good question relating to the coupling between fundamental geophysical fluid dynamics and flows from the leak site. Near the leak site, the oil will quickly reach a level where its density matches the ambient Gulf of Mexico water or the surface (if it is lighter than the surface water) or the bottom (if it is denser than the bottom water). Gulf water density is mostly a function of depth although horizontal density variations dominate the general circulation of currents having significant energy. There is also a significant wind blown surface mixed layer superposed on the general circulation

currents, so one needs accurate winds to forecast the fate of lighter-than-water material that reaches the surface mixed layer. Wind stress is seen deeper mainly by what is known as a Sverdrup flow (rather subtle dynamics), which is small within the Gulf of Mexico wind effects, but is a significant part of the big Atlantic Basin scale flow that ultimately feeds the Loop Current (and downstream Gulf Stream). Tides and internal waves are also quite energetic, but mainly transport suspended material only a small distance before reversing on a tidal/wave time scale except when they break.

Once suspended material having density between the surface and bottom water reaches its equilibrium level, it slowly spreads due to buoyancy effects, but that spreading is very small compared to dispersion and transport by the mesoscale eddies and bigger scale Loop Current and major clockwise rotating eddies that break away and propagate westward (a rather subtle earth rotation effect). The eddies see a "bottom drag" when they approach the shelveslopes. There, dissipation effects can break the rotational constraint, resulting in secondary flows that can change the level of the suspended material (either toward the bottom, sometimes staying on the bottom, or toward the surface, sometimes leaving the Gulf through the Florida Straits if it reaches a level shallower than the Florida Straits sill level). Of course the currents can bring it in contact with sloping bottoms anywhere, including the Florida Straits. Also, of course, the effects of biogeochemistry are important in the long run and affect the density of the suspended/dissolved material and thus affect its equilibrium depth.

3. Is there a current Bayesian updating model – data calibration implemented for the Gulf of Mexico oil/gas spill?

(DD) I do not know Bayesian modeling. There are statistical methods for bigger scales, but they are not widely used by ocean modelers. Bob Leben of U. of Colorado may be a good reference for them. However, I would be interested in what a Bayesian updating model can do.

Questions for Greg

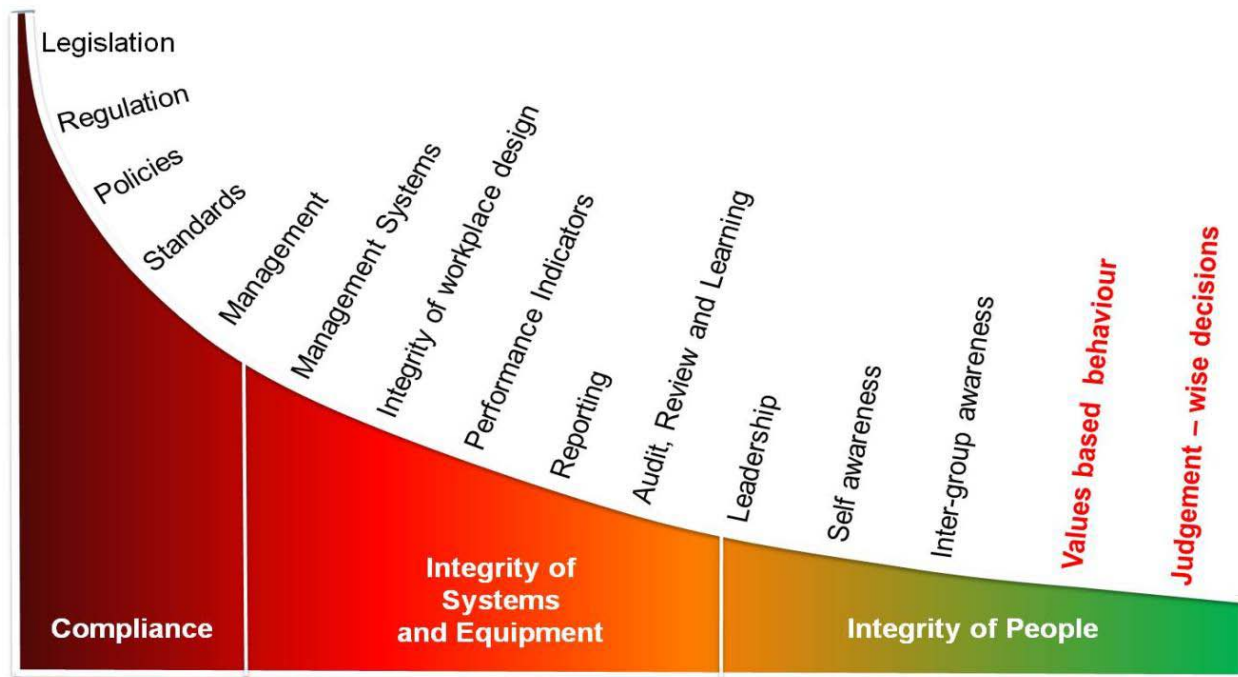
1. What do you see as the role of automation in Safety? What about managed pressure drilling?

(GA) Over the years there has been a "step-change" in safety. Early on, injuries and incidents were an accepted part of the industry. Then in order to improve safety we "engineered" it by doing things like putting chain guards on equipment, handrails on stairs, etc, and incidents went down. That only took the industry so far and then we "legislated" safety by writing laws or creating policies and procedures and incident rates continued down. However, that too has only taken the industry so far. The primary limitation on engineering, which I believe includes automation, and legislating safety is the constantly changing variables associated with drilling a well, which requires people having to make decisions.

2. Have you considered use of probabilistic risk assessment methods to quantify risks, failure modes and human factors in well control practices?

3. Where do we define the boundaries between
 - a. What we legislate for?
 - b. What we issue industry guidance for?
 - c. What we train people to do?

(GA) As demonstrated below, legislation and systems play a big part in reducing injuries within the oil and gas industry; however, a culture which does not engage individuals to believe in safety relies upon compliance to accomplish its goals. A culture of compliance only works under (1) constant supervision; and (2) absolute adherence to policies and procedures



In order to address the human element, we need to teach people to

- Take personal responsibility for their safety as well as the safety of those around them
- How to assess risk and reduce the hazards associated with a task
- Communicate better

4. How can a company (operator) properly assess a contractor’s safety culture during bid process? Or what can a company (operator) do to influence a contractor’s safety culture? (Is bonus structures, contract definition/penalties or something seen to be really effective?)

(GA) The first question I would ask is has the operator actually defined what a good safety culture is and how will they measure it? Hopefully it’s more than just a comparison of lagging indicators... Once the expectation is laid-out the contractor ought to be able to provide both quantitative and qualitative evidence of how their safety culture meets or exceeds that expectation. After the contractor is selected an actual “bridging document” should be created to ensure everyone is on the same page.

An operator and their Wellsite Supervisor in particular, can have a great deal of influence over the contractor...both good or bad. Unfortunately, there is no definitive answer relative to the impact of incorporating safety into the contractual agreement; it can be an incentive but it can just as easily become a disincentive.

5. Regarding “the culture of safety”, isn’t it all about behaviors? And how do we influence or get the behaviors we want?

(GA) In a culture of safety, “Beliefs” drive “Behaviors,” which drives “Results.” We help create the culture by what we demonstrate personally and by what we reward and tolerate in others. For example if a companyman on a rig continuously praises a rig crew for being ahead of the drilling curve even though he knows they are taking shortcuts and not following safe work practices, he is not only demonstrating his own belief about the importance of safety, he is also rewarding their at-risk behavior, which in turn will lead to a poor safety culture. Safety needs to be one of the core values of a company not a priority because priorities change and our values don’t. The only time safety becomes a priority is when it comes into conflict with one of the other values.

6. Do you think that increasing regulations and legislation can have a negative impact on the safety culture because of the reduction or removal of the individual’s personal responsibility?

(GA) While regulations / legislation have a role to play, as does engineering, people ultimately have to choose to work safely. More importantly we need to make sure any regulation will result in the desired behavior. For example, there is a change room on rigs where personnel put on their work clothes just before going outside. On one rig, there were several instances when guys stepped outside the change room and, because they didn’t look around, walked underneath loads being moved by the crane. To correct their behavior, a light was placed above the door that led outside the change room. The light would start blinking when the crane was in operation, reminding workers to look up for the moving load when they walked outside. One day, though, a guy saw the light wasn’t blinking so he stepped outside, didn’t look around and almost got hit in the head by a load being moved. As it turned out, on that particular day the bulb had burned out.

7. What is your view of the safety cultures of BP, Transocean and Halliburton, collectively?

(GA) It would be inappropriate to comment on any single company’s safety culture. The industry as a whole has made significant strides in improving worker safety.

8. Did BP have a “stop work” policy on Deepwater Horizon where anyone noticing an abnormality could halt work?

(GA) We cannot speak to this specifically; however, while many companies may have a “stop work” policy the more important question is whether the culture on a rig truly supports or rewards a person when they have the courage to call a time-out. What’s more, have the workers been provided training on how to properly communicate with each other after the time-out has been called.

9. Testimony from the Horizon investigations have indicated that senior people (managers, captain, OIM) that were supposed to be in charge were “bailing” when the explosion occurred, while it was the deck hands, etc. that were trying to help the injured, stay to fire fight, etc. Is this typical of other incidents and industries, and if so, why do you think this occurs? Can the culture of safety address this behavior issue?

(GA) We cannot speak to this specifically; however, when it comes to safety anyone can be a leader regardless of position.

10. How does a company or industry assess its safety culture?

(GA) A productive and safe workplace requires a number of inter-dependent “systems” working well together. The model below describes these systems as defined by the Organization for Economic Development.



When conducting a safety culture analysis, assessors may use a variety of research tools within the client’s work environment to investigate areas of focus. A comprehensive assessment should include both qualitative and quantitative methodology options such as:

- Documents / Reports Review
- Company-wide Questionnaire
- Face-to-Face Interviews
- Behavioral Observations

11. Cerebral Problem: Is it a lack of leadership (left side) or management (right side) issue?

(GA) Impacting any organizational challenge is dependent upon aligning two broad categories -- First, the **management** processes that describe the tangible and measureable outcomes necessary to achieve an agreed vision; and, second, the **leadership** required to align these things with a supportive culture, relationships and capacity. These categories are represented in the model below.



The **management** side can be addressed by responding to questions such as:

Vision

- Is there a vision of success?
- Is the vision translated into behavioral actions which people can identify and practice?
- Does the vision align with the needs and concerns of all stakeholders?
- Do all stakeholders know how the vision relates to them?
- Do all stakeholders support the vision?

Strategy

- Are the strategies clearly related to the vision?
- Do the strategies build on clearly identified organizational strengths and opportunities?
- Do the strategies address clearly identified organizational weaknesses and threats?

Goals

- Are the goals clearly linked to the strategies?
- Do they have clear and measurable targets?
- Are they resourced?
- Who is accountable and responsible for accomplishing the Goals?

Tasks

- Have job tasks/descriptions been clearly defined and communicated?

- Is there a “line of sight” from these tasks to the vision that provides purpose and direction?
- Have the benefits of performing the tasks been discussed and personalized by those who will be performing them?

The **leadership** side requires leaders to do the following:

Senior Leaders

- Affirm the vision, direction, key performance indicators and leadership expectations

Operational and Functional Leaders

- Ensure the vision is integrated with all systems and engage the workforce to assure performance

Supervisors/Team Leaders

- Ensure ‘on-the-ground’ alignment between vision, systems and tools with the ability to manage the performance of individuals and teams

Frontline Workers

- Be able and willing to support and work within the new culture.