

Statement of Kenneth W. Abbott
House Subcommittee on
Energy and Mineral Resources Hearing
June 17, 2010

Mr. Chairman and Members of the Committee:

Thank you for inviting me to testify today.

Background and Career

My background and training is in the field of engineering project management. For over 30 years, I have worked in the management of a wide variety of large engineering projects. My employers have been among the largest engineering construction managers in the world including M.W. Kellogg, GTE Mobilnet, Stone & Webster, Brown & Root, Shell Oil, Jacobs Engineering and others. While I have worked on a wide variety of projects, the large majority have involved petrochemical and energy projects, including refineries and offshore facilities. (Resume attached as Ex. A)

Engineering project management is a field dedicated to management of large engineering projects. I am not an engineer and I do not do engineering. I provide management support for engineers by establishing project schedules and budgets and auditing performance against them. In addition, I manage engineering document control systems, database records, financial records and other types of management records necessary for the engineers to do their work.

Importance of Engineering Documents

Before a skyscraper, or a petrochemical plant, or an offshore production facility, or a wireless data network or any other major project can be physically constructed, it is first constructed on paper, or now in computers.

The first phase of building a project is to design the project, from overall concept down through systems and subsystems to individual parts. A complex project usually involves thousands of engineering drawings and documents; each one of which goes through many drafts and revisions before the final design is approved. Part of my job is to organize and

manage those drawings and documents so that engineers can find the correct document when they need it. The design phase ultimately arrives at an approved design which is certified by the engineering staff for the owner of the project.

After a design is certified, it is typically necessary for new drawings to be prepared to be used in the fabrication and construction of the project. These fabrication or construction drawings add details needed for the manufacture or construction of the physical equipment. These drawings are also approved and certified, again by the engineering staff for the owner. They are then turned over to vendors who use them for the actual fabrication or construction.

During the fabrication and construction phase, it often becomes necessary to make changes to account for unforeseen issues, such as how equipment physically fits together or takes up space. All such changes must be approved by the engineering staff for the owner and the drawings are modified and certified by engineering as matching the physical construction.

At the end of the project, the owner then has, not only the physical facility, but a large body of engineering drawings and documents which correctly record the actual physical construction, along with the history of changes made during the project which led to the final result. These final documents are referred to as “As-Built” drawings and documents; the term “as-built” means that these documents are up to date and correspond to the physical equipment in the facility. Therefore, someone can learn the physical facility by looking at the “as-builts.”

Many of the as-builts will be used by the Operations Department (the department which actually operates the facility) to create safe operating procedures, testing and maintenance procedures, training procedures, etc.

One of the important categories of drawings is P&IDs -- the abbreviation for Piping and Instrument Diagrams. Their importance lies in the fact that a petrochemical operation is similar to a giant spider web of pipes that connect vessels which contain the product with valves, pumps, heaters, and instruments which measure temperatures, flow rates and pressures. The Operations Department of the facility must constantly start, stop, redirect or maintain product flow or flow rates, or raise, lower or maintain

temperatures and pressure. Electronic signals are used to control the valves, heaters, pumps and other equipment based on information gathered by instruments and computerized operation procedures. The P&IDs document all of this equipment and how it is interconnected from the wellhead to where the product leaves the facility, and are the basis for developing the operating procedures.

In my experience, it is universally true that, for petrochemical facilities, as-built P&IDs must be turned over to the operations department that will operate the facility *before* startup of the facility. It is my training that a facility cannot be safely operated without up to date P&IDs. Textbooks say that P&IDs serve as a guide for those who will be responsible for the final design and construction. Based on this diagram:

1. Mechanical engineers and civil engineers will design and install pieces of equipment.
2. Instrument engineers will specify, install, and check control systems.
3. Piping engineers will develop plant layout and elevation drawings.
4. Project engineers will develop plant and construction schedules.

Before final acceptance, the P&IDs serve as a checklist against which each item in the plant is checked.

(Richard Turton, Richard C. Bailie, Wallace B. Whiting, Joseph A. Shaewitz, Analysis, Synthesis, and Design of Chemical Processes, 2nd Edition, 2003)

Experience at BP Atlantis

BP Atlantis is the world's deepest moored oil and gas production facility; it is located in over 7,000 feet of water in the Gulf of Mexico about 150 miles south of New Orleans. It is rated to produce 200,000 bbls. of oil per day and large quantities of natural gas, far more than the Deepwater Horizon well now fouling the Gulf and its beaches.

In August, 2008, I started work under contract for the BP project management office for the BP Atlantis Project, on the Subsea Team. I was hired as a “project controls lead” and had responsibility which included management of the engineering documents.

The BP Product Execution Plan (PEP) for Subsea Atlantis fit into this system. BP Lead engineers were assigned to each sector of the project. Outside vendor Technip Offshore, Inc. was primary engineering contractor. At each phase, the BP Lead Engineers were to review and approve designs and technical documents for their respective sectors. It was specifically provided that:

As-Built Documentation

The Lead Engineer for each discipline area will ensure that all technical documentation is updated to reflect the as-built condition of the equipment prior to deployment to the field.

A project such as Atlantis is incredibly complex in two ways: First, there are many components produced by many vendors which must all work together. Second, there are many challenges created by the extreme water depth which must be overcome by cutting edge engineering techniques. One of the functions of the owner/operator, BP in this case, is to assure that engineering knowledge and expertise look at the system overall to be sure that all of the parts function together; this is called “integration.” The signature of the BP engineer signing off on a given drawing signifies approval taking into account this integration function.

Almost immediately upon reporting to work, I was confronted with the problem that BP Atlantis Operations was demanding as-built P&IDs and we did not have them to provide to Operations. At this time, Atlantis had already been in operation for about a year and the equipment had long-since been deployed to the field.

I received a copy of an email (attached as Ex. B) written by my immediate predecessor in my job, Barry Duff, who had been promoted to another position. In it, he wrote why he was refusing to provide P&IDs to Operations. He wrote that:

- “The P&IDs for Subsea are not complete have have [sic] not been approved or handed over to Operations.”

- “This could lead to catastrophic Operator errors due to their assuming the drawing is correct. Turning over incomplete drawings to the Operator for their use is a fundamental violation of basic Document Control, the IM Standard and Process Safety Regulations.”
- “Currently there are **hundreds if not thousands** of Subsea documents that have never been finalized, yet the facilities have been turned over.”

From this time until I was fired on February 5, 2009, I worked to obtain BP engineer approved, as-built P&IDs and all other as-built project drawings with little, if any, progress. Technip, the vendor company which was the lead engineering contractor did not have and could not provide up to date P&IDs. The lead engineers responsible for various sectors within the project did not have and could not provide up to date P&IDs. The more I insisted that we had to develop or obtain them, the more unpopular I became. At one point, BP management vetoed one plan because of its estimated cost of \$2 million.

BP Atlantis Deficiencies

While I was at BP Atlantis, we developed a database in which we had all of the engineering documents and coded the database with the completion status (or latest approval status) of each document. We also obtained and put in the database the completion status as shown by Technip’s document control system. This allowed us to analyze overall what documents we had and their completion status.

The results were astounding to me. The Table (attached as Ex. C) shows the completion status for all documents in the various sectors of the project. The overwhelming majority of documents and drawings had never received any engineering approval at any phase of development. The last column shows the percentage never having any approval at all. Out of the total of over 7,000 drawings and documents, almost 90% never received any approval of any kind, not even for design.

With reference to specific systems:

- The oil and gas products under high pressure are managed, contained and transported to the floating surface vessel by the

wellhead, the tree, the manifolds, pipelines and flowlines, controls and risers. For all of these system, less than 10% were certified as approved by engineering.

- The wellhead is the equipment which controls pressures inside the well at the upper end of the casing, below the tree -- none of those documents ever had any engineering approval.
- The tree is a series of valves immediately above the well which have the same function as the BOP stack during drilling; they control pressures and can be used to shut down the well if needed; they are a critical part of the Safety Shutoff System. On Atlantis, they also include valves to control flows related to the manifolds. Of these critical components, 98% never received any engineering approval.
- The software logic for the safety shutoff system does not have engineering approval.
- Welding procedures for such critical items as manifolds do not have engineering approval.

I have now learned that MMS regulations as well as BP internal procedures and project execution plan require that designs for these facilities be approved by BP engineers specializing in the design of offshore structures. BP records reflect that the design was not, in fact, approved by engineers.

The Subsea portion of Project Atlantis was being constructed in “Drill Centers (DC’s),” each one of which collects the product from several wells and passes it to the surface facility. When I went to work for Atlantis, DC-1 was in production and DC-3 was under construction. It came to my attention that we did not have “approved for construction” documents for DC-3. In my experience, entering into construction without “approved for construction” documents can be a major problem. I immediately attempted to obtain approved for construction documents, but was never able to obtain them.

During development of such a project, it is normal that much of the equipment must be tested before being placed into service. I learned that the nature of the records kept by BP for such testing did not allow the results of a given test to be correlated to the item which was tested. As a result, there was no way for anyone to learn from the database whether a particular item had been tested with a particular test, or the results of the testing actually done on a particular component. In November 2008, I was

advised that BP personnel and Malcolm Voss, engineer for Technip, had reached an agreement on how to resolve this problem. However, a number of such agreements were reached which were never carried out; I have no knowledge of whether this agreement was actually completed.

While I was at BP, I spent many hours in meetings with my management and others on the Subsea Team attempting to solve the problems of the non-existent as-builts. It was never solved.

The lack of As-Builts is a common thread running through BP disasters from Texas City (15 dead) to Alaska (200,000 gallons spilled into Arctic tundra) to Deepwater Horizon (blowout preventer modified and would not close) to BP Atlantis.

Dept. of Interior and MMS Refuse to Act

Within a few days after being fired, I made a complaint about the situation to the BP Office of the Ombudsman which I understand was created after BP failed to respond to employee concerns regarding unsafe conditions at its Texas City Plant. It is my understanding that the Office of the Ombudsman is supposed to be sure that complaints of unsafe conditions are dealt with properly. I provided full information to the Ombudsman and had a number of meetings, telephone calls and written communications with them over the next several months. I did not receive any substantive reply from them for over a year. I will discuss that response later in my statement.

On March 9, 2009, I emailed Earl Devaney, Inspector General of the Dept. of the Interior at doioig.gov. I sent him full information on the unsafe conditions. I never received any response. Several months later, someone from that office contacted my attorney and confirmed that my email had been received. An employee from the OIG did contact me by phone once in mid 2009, but said he could not help since I was not a government employee. No one else from the DOI OIG ever contacted me about the unsafe conditions of the Atlantis project or took any other action to my knowledge.

After receiving no further response from the Department of the Interior, I contacted an attorney from the firm of Perry & Haas in Corpus Christi,

Texas. They asked me to furnish them with all of my documentary information and they wrote a letter providing all of that information to the Attorney General and the local United States Attorney (attached as Ex. D). They felt that the evidence showed that BP was committing fraud on the Federal Government by operating in violation of the statutes and regulations which govern oil and gas operations in the Gulf. On April 21, 2009, my attorneys filed a *qui tam* suit to force BP to repay to the Government the amount it had taken fraudulently. They also provided the Government with a report from an engineer detailing the importance of the BP Atlantis deficiencies and explaining that those deficiencies could lead to a catastrophic failure with resulting catastrophic harm to the environment of the Gulf of Mexico.

My attorneys have informed me that on May 19, 2009, they had a personal meeting in Houston, Texas with an Assistant United States Attorney. Also present by telephone were an attorney from the Department of Justice; another attorney from the Department of the Interior; and four representatives of MMS, Mr. Saucier, Mr. Domangue, Ms. Moser, and Mr. Herbst. My attorneys have reported to me that the MMS personnel strongly took the position that BP Atlantis was safe and they did not need to take any action.

On May 27, 2009, my attorneys wrote a lengthy letter to the attorney from the Department of the Interior warning that the kind of problems I have told them of created an imminent risk of catastrophe to the Gulf of Mexico (attached as Ex. E.). In this letter, my attorneys pointed out in writing the great threat to the environment created by deep water drilling if proper procedures are not following.

At a later date, I participated in a personal meeting with the Asst. United States Attorney, the attorneys from DOJ and DOI and the MMS representatives. Again, the MMS representatives strongly expressed their opinion that BP Atlantis was safe.

Since that time, I have relied on my attorneys and Food and Water Watch to seek action from the Government. In general, I am aware that they have been in contact with MMS continually for about a year, and have urged upon the MMS the importance of taking action to prevent a catastrophe in the Gulf. FWW has also contacted Members of Congress who have demanded action from MMS.

In April, I finally received a written response from the ombudsman. We have now learned that a BP internal investigation through Judge Sporkin, the ombudsman, verified my complaints about the absence of documentation for Atlantis (letter attached as Ex. F). Judge Sporkin was interviewed by AP and confirmed that BP did not have the necessary documents for Atlantis (attached as Ex. G). Regardless, MMS still refuses to take action.

Atlantis Deficiencies Similar to Deepwater Horizon

I am personally sick at heart over the Horizon tragedy. Like millions of others, my family and I have vacationed and fished in the Gulf, and used it for recreational purposes. My work and career are tied to the oil and gas industry, much of which is in the Gulf. I feel that the pollution of the Gulf, the destruction of the beaches, the destruction of its recreational and economic value is a national tragedy. I feel strongly that it would not have happened with proper procedures.

Several different causes for the blowout have been reported on the news. Many of them would be caused by the same problems I have seen on Atlantis.

- 1) blowout preventers did not close -- on Atlantis, safety shutdown system logic has not been engineer-approved; this could cause failure of shutdown systems;
- 2) rig crew did not understand makeup of blowout preventers -- this would be due to failure to have up to date as-built documents; same problem as Atlantis;
- 3) a mechanic apparently did not have access to manual shutdown procedures for diesel engines -- again, failure to have proper documentation;
- 4) there was apparently no gas sniffer and automatic shutdown for the diesel engines -- failure to have safety equipment which should have been present happens when proper engineering procedures are not followed.

From my experience working in the industry for over 30 years, I have never seen these kinds of problems with other companies. Of course, everyone and every company will make mistakes occasionally. I have never seen another company with the kind of widespread disregard for proper

engineering and safety procedures that I saw at BP and that we hear from the news reports about BP Horizon, or BP Texas City, or the BP's Alaska pipeline spills. BP's own investigation of itself, by former Secretary of State James Baker, reported that BP has a culture which simply does not follow safety regulations. From what I saw, that culture has not changed.

Dept. of Interior / MMS Refusal to Enforce Regulations

At first, I could not believe it when MMS refused to take any action and loudly insisted nothing was wrong before they had done any investigation. As far as I know, MMS did nothing to investigate my complaints for over a year. They have never contacted me except for the one conference I had with them and the U.S. Attorney. MMS never contacted me as part of an MMS investigation. They have now filed papers in my lawsuit saying that they started an investigation in April 2010, over a year after my first complaints, and only after a demand from many Members of Congress.

Of course, this makes sense only after we learn of MMS history of failure to enforce regulations, granting waivers and taking favors from the industry.

I read that Congress is considering new regulations. Perhaps the regulations should be improved; perhaps we do need some new regulations.

It seems to me that we need to start by enforcing the regulations we already have. My attorneys believe BP is now in violation of many regulations, but that MMS is refusing to enforce the regulations now on the books. No matter what the regulations, BP has a history of ignoring and violating the regulations, so it doesn't matter what the regulations say unless they are enforced.

Among various responses to FWW, MMS has stated directly that it is not enforcing large segments of the regulations. MMS has written that they do not enforce Part I [eye] of the regulations as to subsurface equipment (attached as Ex. H). Lawyers tell me that Part I of the OCS regulations contains requirements that:

- companies create and maintain and provide MMS with access to:
 - as-built drawings
 - design assumptions
 - fabrication records
 - inspection and test results;
- keeping testing records
- construct and use only certified engineer-approved designs
- comply with multiple industry regulations which have been codified into the Federal regulations
- comply with a Certified Verification Program

MMS has repeatedly written to FWW that they DO NOT ENFORCE THESE REGULATIONS for subsea equipment -- even though the written regulations specifically include subsea equipment. The greatest danger of environmental damage is from loss of control of oil and gas in the underwater sector. It makes no sense to simply refuse to enforce regulations for that sector. Because MMS refuses to follow and enforce its regulations, FWW and I have together filed another suit against the Secretary of the Interior seeking a court order to enforce the law and the regulations.

Unbelievably, even when MMS claims to enforce certain requirements, it renders them meaningless. For example, the requirement that companies maintain as-built drawings: MMS has written that its regulations *do not* require the drawings kept to be accurate or complete (attached as Ex. I).

Now, after a year of refusing to act, MMS now says they want to do an investigation that will take months. This is totally unreasonable. BP has a database of the engineering documents and the completion status of each document. I have provided copies of that database to MMS. It would take a qualified person no more than a few minutes to analyze the database for the information needed, and only a few hours to compare the results to the actual electronic images of the documents.

Deepwater Horizon demonstrates the urgency of assuring proper safe procedures. Catastrophe can strike unsafe conditions at any moment. The worst case scenario for BP Atlantis is a torrent of 200,000 bbls. per day into the Gulf, many times worse than Deepwater Horizon. The danger is known to be present, the situation is urgent and delay makes no sense.

Finally, in his court filings, Secretary Salazar says that the court cannot enforce the law, that he has the right to decide to do nothing. The statute passed by Congress says different; the statute says:

“The Secretary ... **shall** enforce safety and environmental regulations promulgated pursuant to this subchapter.” 43 USC Sec. 1348

The Secretary is not above the law passed by Congress; he is required to enforce the law. If the Secretary had followed the law, Deepwater Horizon may not have occurred. Let's not have another tragedy because the Secretary will not follow the law.

New Statutory and Congressional Action

With the assistance of my attorneys and advice from Food and Water Watch, we would respectfully recommend that the Congress consider the following action:

1. Establish a Safety and Environmental Regulatory Agency independent of the Dept. of the Interior.
2. No one presently at MMS should be allowed a regulatory position in the new agency. The culture of corruption and coziness appears too deep to be fixable.
3. Regulatory personnel should not come from the rank of the industries being regulated; statutes should close the “revolving door.” The present Deputy Secretary of the Interior for Land and Minerals Management having direct supervision over MMS comes to the Department directly from BP. At BP, she was VP for BP America’s Health, Safety and Environment department which was responsible for the Alaska oil spills disaster, the Texas City disaster, and, now, of course the Deepwater Horizon disaster, to name only a few. It does not make sense for a person with that record to be placed in charge of enforcement, yet Secretary Salazar’s new “reorganization” of MMS leaves this same person in charge of the new enforcement office.
4. Process Safety Management (PSM) regulations which are enacted under the OSHA and Clean Air Acts in identical language should be applied to OCS. (See 40 CFR Part 68 Chemical Accident Prevention Programs and 29 CFR 1910.119 Safety Process Management of Highly Hazardous Chemicals).
5. The penalties for a disaster such as Deepwater Horizon, or the Alaska oil spills should include forfeiture of the leases which the company holds. A company which cannot properly operate the leases should forfeit them and they should be turned over to a company which can and will operate them properly.