

Oil's Well



That Ends Well

By Greg Varhaug

The theme of CERA Week 2011, “Energy Strategies for a World of Change,” may not have been a radical departure from last year’s theme, “Energy: Building a New Future,” but it was a prescient choice. ➔



“A World of Change” indeed – CERA did well to address, on very short notice, the revolution in Egypt which had broken out just a couple of weeks prior. A “Day of Rage” in Saudi Arabia had failed to materialize on March 4, three days before the conference was due to open. Instead, on March 4, protests started against Qaddafi in Libya.

Then, early on Friday morning, March 11, the last day of the conference, the Japan earthquake and tsunami struck. The timing couldn’t have been worse. This would clearly be the biggest story of the year, and CERA wouldn’t be able to address it, at least at CERA Week, for another year.

The “change” referred to in this year’s theme was probably intended



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as a euphemism for the aftermath of Macondo. The biggest energy story of the previous year was, after all, the Deepwater Horizon incident, which

occurred about two months after CERA’s 2010 conference. BP was not as visible this year as they were last year, although BP’s Chief Executive, Robert Dudley, delivered a keynote address that was generally well received.

A Need for Oversight

It’s been a year since the Deepwater Horizon incident. Deepwater Horizon was the jewel in the BP crown. Right up to the week of the explosion, you couldn’t watch a half-hour of Sunday morning talk without seeing at least one of BP’s PR clips proudly displaying this floating wonder of 21st-century technology. To have suggested then that it would soon be a burned-out hulk lying on the ocean floor would have seemed ridiculous.

But Deepwater Horizon was just the latest on a list of unthinkable scenarios that have played out over the past three decades. The space shuttle Challenger exploded because its O-rings were too cold at the time of takeoff. The shuttle Columbia broke up on re-entry because it had lost critical insulating tiles after a debris strike on takeoff. It was probably a debris strike, too, that caused the Air France Concorde to crash in Paris in 2000. A massive blackout in 2003 affecting 50 million people in eight U.S. states and Canada was caused by damage to power lines from tree limbs, and an alarm that then failed to switch on.

And at this moment, the Japanese are struggling to prevent a series of reactor meltdowns at a nuclear power plant crippled by an

earthquake and tsunami, raising renewed doubts about the future of nuclear power here in the U.S and around the world.

Each of these events has spurred a flurry of public debate, and (except for the Concorde) has spurred a variety of actions on the part of the U.S. government. For instance, in the wake of Japan's recent problems, President Obama has ordered a review of U.S. nuclear facilities.

Such events serve to highlight how hard it is to balance necessary oversight with our national economic and security goals. Whether that oversight is external or internal, businesses and governments face the same set of problems – they both struggle with the problems of regulating operations that have grown increasingly risky and complicated, especially in our pursuit of energy.

Sometimes government oversight of free markets is a necessity. The financial meltdown of 2007 was largely a result of too little regulation by government. Government bears ultimate responsibility for the public's health and safety. Governments have the power to regulate businesses, not vice versa.

But governments are usually further removed than businesses from the problems they are supposed to regulate. In the case of Deepwater Horizon, President Obama learned that the U.S. military has no contingency for dealing with a blowout like Deepwater Horizon. The government could "take charge," but was limited to trying to manage BP's efforts. BP had the equipment and the technical expertise, and in the end, BP successfully capped the well.

The Gulf Drilling Moratorium

There were two separate drilling moratoriums. The May 28, 2010 moratorium did not affect any operations in waters less than 500 feet, and did not affect any of the over 500 producing deepwater wells. In June, a group of affected companies filed suit in federal court and won an injunction against the ban.

By then, we understood more about the cause of the disaster. So the second moratorium, issued on July 12, focused on wells using certain types of blowout preventers,

which happened to apply to pretty much the same group of wells.

If by June 2010, the Obama administration had done a good job of articulating its reasons for halting drilling in deep waters, the reasons for the dramatic reduction in drilling in shallow waters were less obvious.

For the first month after the spill, no new shallow water drilling permits

were issued. Between June and August, there were two new permits per month. The leak was not stopped for the first time until July 15.

On June 8, 2010, the U.S. Dept. of the Interior issued new safety regulations for offshore drillers. By the end of June 2010, no one seeking a new permit had managed to comply fully with these new



(left to right) Thomas Farrell (Dominion Resources), Marvin Romanow (Nexen Inc.), Scott Sheffield (Pioneer Natural Resources), David Hobbs (IHS CERA) (Chair).

regulations. At the time, many people saw this as a de facto drilling ban.

BOEMRE, formerly the Minerals Management Service (MMS), has issued only two new deepwater permits since the moratorium was officially lifted. The previous year's average for

new deepwater permits was between five and six per month. From June to October of 2010, the only deepwater permit approved was for the Deepwater Horizon relief well.

New permits for shallow water drilling were six per month for the

last quarter of 2010, down from the previous year's monthly average of seven new permits. The approval of shallow water permits has largely recovered since October 2010.

But, a year after the incident, the problems for shallow water drillers are still not over. John Nesser, EVP & CEO of J Ray McDermott, SA, says that besides permitting, there are other choke points in the system which can, and do delay major new projects.

Speaking at CERA Week, Nesser said, "There is a permitting regime that is out there that allows the government, the administration, to stop or suspend an activity at numerous different points." Nesser underscores the difficulty of implementing major projects, given how much uncertainty confronts manufacturers, investors, and operators.

James Noe, Sr. Vice President of Hercules Offshore, added to Nesser's observation that these permitting and approval issues extend beyond drilling and production to include pipeline installation and removal, as well as plug-and-abandon operations, which are managed by the Federal Energy Regulatory Commission (FERC.)

Paying the Bill for the Spill

The result has been that a few deepwater rigs have left the Gulf to drill elsewhere. According to ESA, of the 46 deepwater rigs operating in the Gulf before the moratorium, 41 remain in the Gulf as of September, 2010. (A Reuters story from that same time said that four rigs had left the Gulf.)

As for the overall cost of the moratorium, in September 2010, the federal government's Economics and Statistics Administration (ESA) released an inter-agency report estimating the total economic effect of the Gulf drilling moratorium that was put into effect after the Deepwater Horizon blowout in April, 2010. They estimate a total gross spending reduction of \$1.95 billion for the six months between April and September 2010.

Dr. Joseph Mason, from Louisiana State University, has written a critique of the ESA's 2010 study in which he takes issue with the ESA study's methodology. Dr. Mason has also released a separate study on the

overall costs of the six-month moratorium. In his study, Dr. Mason places the amount at \$2.7 billion nationally.

Each deepwater rig is estimated to bring 700 jobs to Louisiana alone. Each shallow well rig is estimated to support 350 Louisiana jobs. ESA's study estimated that the moratorium could result in between 8,000 and 12,000 jobs lost in the Gulf Coast region, although they believe these jobs could resume once deepwater drilling returns.

Overall cost of the cleanup for the spill? Estimates range from \$3 billion to \$8 billion. In June, 2010, BP set up a \$20 billion escrow fund. It appears that the moratorium will not be as expensive as the cleanup.

Dangers of Deepwater Drilling

What is the likelihood of another Deepwater Horizon?

What was the likelihood of the Deepwater Horizon incident before it happened? Even now, after the event

and after a full investigation, experts still disagree. Was it a one-in-a-million shot, or was it an accident waiting to happen? Such questions are not always easy to answer, even after a catastrophic event, with the benefit of abundant hindsight

No doubt, the industry learned a lot from Deepwater Horizon. But certain dangers are inherent in all deepwater drilling. For one thing, "deepwater" means "high pressure." Reservoir pressures in deepwater wells can be on the order of 20,000 pounds per square inch, and those pressures can vary significantly at different places in the geological formation.

IHS, which owns CERA, recently released a study examining pressures in 149 deepwater wells. Mark Diaz, one of the study's authors, is senior geo-pressure analyst at IHS. Diaz states, "There are a number of operational challenges that exist alongside varying pressure

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regimes, including high bottom-hole temperatures, complex structural variances, and a canopy of salt that sits over much of the play, which makes the use of seismic data to visualize sub-salt structures largely ineffective."

With the moratorium lifted, most people in the industry expect to see deepwater production return to pre-Macondo levels. But lost production can never be recouped. And for many of the companies involved, it's going to take a long time to recover.

The Nuclear Option

After the Three Mile Island episode in 1979, the American public became fearful of nuclear power. Most experts today agree that its health effects to local residents have been little to none (although evidence to the contrary does exist). At the time of the TMI incident, there were over 100 approved nuclear projects, but most were eventually canceled.

Since TMI in 1979, many new nuclear power plants have been built. Here in Texas, we have the South Texas Project in Matagorda County, which went online in 1988; and the Comanche Peak station in Glen Rose,



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In Japan, the 1970's vintage GE Mark 1 boiling water reactors might well have survived both the massive earthquake and the tsunami with minimal damage. The problem was that the backup diesel generators, which were supposed to keep circulating water to the reactor fuel rods, were located at

sea level. Had they been housed above the level of the floodwaters, or otherwise sufficiently protected, they again might have prevented the crisis they are facing now.

This incident will lead Americans to question the wisdom of building more nuclear power plants, even though newer plants are better-designed. The basic problem of disposal of nuclear waste hasn't changed. But recent arguments against nuclear power have centered as much on economics as on safety. At present, nuclear plants can't be financed without huge government loan guarantees.

The Clinch River plant was scrapped in the early 1980s when the cost of the project increased from \$400 million to about \$8 billion (according to the GAO). A Heritage Foundation report from 1982 put it this way: "For many conservatives, Clinch River presents a dilemma. They are, on the one hand, strongly supportive of nuclear energy, but they are also concerned about the burgeoning federal deficit. Their opposition to the Clinch River Breeder, therefore, is born more out of a concern to limit federal spending than opposition to nuclear power." Thirty years later, and we're not much closer to settling this political dilemma.

Most industry experts agree that construction costs are down, and permitting is easier, for new natural gas power plants than for new nuclear plants. Most independent cost studies comparing nuclear to gas or coal, including maintenance and eventual decommissioning, find that gas-fired power

does cost less than nuclear, despite nuclear fuel being relatively cheaper than gas or coal. This has led many in the energy industry to argue for increasing our use of natural gas as a “bridge” fuel to a greener energy mix in the future.

Newer, safer, less expensive reactors are available today. The Westinghouse AP1000 is the first Generation III+ nuclear reactor approved by the NRC. The first AP1000 is scheduled to go online in 2013.

Still, the “nuclear renaissance” is unlikely to materialize here in the U.S., where the media tend to focus on nuclear facilities built near fault lines – Indian Point, 25 miles from New York City; and Diablo Canyon in California, where recently a fault was discovered a half-mile from the facility. Complicating matters, Diablo’s secondary cooling source is the Pacific Ocean: they’ve had problems with kelp and jellyfish clogging the intakes. And the Diablo Canyon project has been plagued by the usual cost overruns, mostly due to escalating construction totals.

Drawing the Right Lessons

Are we drawing the right lessons from disasters like Macondo and Fukushima? Too often, when tasked with overseeing extremely complicated operations, regulators seem to overlook the simple and the obvious.

The Northeast Blackout of 2003, blamed for contributing to 11 deaths, was estimated to have cost \$6 billion. To safeguard against this happening again, the FERC issued new reliability standards, with explicit guidelines for managing what they call “the three T’s” – trees, training, and tools.

At the time of the outage, there were no mandatory guidelines requiring utility companies to cut the tree limbs around their affected lines. (Since there were no regulations, no one could be held negligent.)

Appropriately, there was a lot of discussion at this year’s CERA Week about how to manage the risks surrounding “low-probability, high-consequence” events like Macondo.

Sometimes the real lesson of a disaster is lost on the public. The Concorde that crashed in 2000 had its tires shredded by a strip of metal that fell off a DC-10. After the crash,

the general public was afraid of the Concorde, but hardly anyone was afraid to fly DC-10s.

Deliberately politicizing issues like whether and where to build more nuclear power plants, or whether to allow deepwater drilling in the Gulf, is irresponsible. Politics, profits, and complex technologies are a dangerous mix. A disaster economy waiting to happen. **N**

Greg Varhaug has written software instruction manuals and procedural manuals for many Houston energy and manufacturing companies, and has designed websites for smaller companies. A professional musician for over 25 years, he has produced music for numerous commercials and independent films. Greg is an instructor at Houston’s ABC School of Music, and he operates HoustonGuitar.com, a commercial music-instruction website.
