OIL AND WATER AND LEAKY HYDRAULICS DON'T MIX?

I wanted to call your attention to this excellent story from the Houston Chronicle describing some of the potential causes of the Deepwater Horizon spill. The short version appears to be that they were switching the drill chamber over from mud to water, which exposed what may be a potentially faulty concrete job, which brought gas to the surface. When that happened, and the blowout preventer was activated, the BOP failed, potentially because of leaky hydraulics.

As the Chron story explains, BP should not have been replacing the mud with water unless they were very sure of the cement job done the day before.

> Experts say well-capping poses special hazards. One arose that day as crews were replacing the mud with seawater in pipes going from the ocean floor to the rig.
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> Deep gases exert astounding upward pressure on a well. "Drilling mud," a heavy fluid used to lubricate the drill and bring up bits and pieces of rock, is used as the main line of defense against the upward pressure, or a disastrous eruption of gas.
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> The mud was being displaced so the riser could be detached from the rig and the wellhead, and the well could be capped with a final cement plug. But seawater is much lighter than mud. The pressure the riser was applying to the well would have lessened by as much as 38 percent, experts said.
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> That could prove significant.

> Investigators likely will be considering whether the drill hole and the casing pipe were secured properly with cement a day earlier.
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> "The big question is how confident were they in the casing cementing job," said Elmer "Bud" Danenberger, who recently retired as chief of offshore regulatory programs for the Minerals Management Service. "They shouldn't have begun this (riser) operation until they were confident in that."

Now, as the MMS recently found, problems with the cementing process have been one (but not necessarily the only) cause in a plurality of blowouts in recent years. Though most of those cementing-related blowouts occurred in far shallower waters than this well.

> Cementing problems increased significantly during the current period as these problems were associated with 18 of the 39 blowouts, compared with 18 of the 70 blowouts with identified contributing factors during the previous study. During the current period, all but one of the blowouts associated with cementing problems occurred in wells with water depths less than 400 ft.

The Chron notes that HAL claimed it had tested its cement job in its "we worked to spec" statement from last week, but had not released the results of that test. A number of comments on oil boards suggest this is where a fight over liability between BP and HAL might break out—whether the tests showed the concrete was sufficient or not, and if there were doubts, whether the BP guy in charge should have called a halt to efforts to remove the rig.

In any case, for whatever reason, at the moment they were replacing the mud with seawater, gas and oil surged out of the hole, which is when

the BOP should have—but failed to—prevent the blowout.

> When the alarms go off "you shut it down," said Daniel Becnel, an attorney from Reserve, La., who has filed lawsuits on behalf of fishermen, oystermen and other Louisiana residents claiming damages from the spill. "They've got panic switches all over the place."
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> Those switches are supposed to activate a blowout preventer on the ocean floor, a huge and complex tower of valves and pipe crimpers designed to shut down a well in an emergency. It didn't work.
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> Although it had been tested beforehand, BP now says robot submarines have discovered at least one problem with the blowout preventer, though it is unclear whether it caused the malfunction.
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> "We have found that there are some leaks on the hydraulic controls," said Bob Fryar, senior vice president of BP's exploration and production operations in Angola, in southwestern Africa.

Is anyone besides me wondering why BP's Vice President in charge of exploration **in Angola** is the one discussing this malfunctioning blowout preventer off the coast of Louisiana? Because I am.

In any case, we're back into an issue of testing again. A survivor from the rig describes how these tests would play into the decision to replace the mud with water (starting at about 0:30):

> At that point, the BOP stack—the blowout preventer that [a previous caller] was talking about—was tested. Don't know the results of that test. However, it must have passed because at that point, they elected to displace the riser—the marine

> riser—from the vessel to the sea floor. They displaced all the mud out of the riser preparing to unlatch from the well two days later. So they displaced it with seawater.
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> [snip]
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> The test should have been [sufficient] or they would never have opened it back up.

And we're also back to the question of whether former Halliburton CEO Dick Cheney's Energy Task Force fostered a climate in which a backup system—an acoustic regulator—was deemed too expensive to require.

> The absence of an acoustical regulator – a remotely triggered dead man's switch that might have closed off BP's gushing pipe at its sea floor wellhead when the manual switch failed (the fire and explosion on the drilling platform may have prevented the dying workers from pushing the button) – was directly attributable to industry pandering by the Bush team. Acoustic switches are required by law for all offshore rigs off Brazil and in Norway's North Sea operations. BP uses the devise voluntarily in Britain's North Sea and elsewhere in the world as do other big players like Holland's Shell and France's Total. In 2000, the Minerals Management Service while weighing a comprehensive rulemaking for drilling safety, deemed the acoustic mechanism "essential" and proposed to mandate the mechanism on all gulf rigs.
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> Then, between January and March of 2001, incoming Vice President Dick Cheney conducted secret meetings with over 100 oil industry officials allowing them to draft a wish list of industry demands to be implemented by the oil friendly

> administration. Cheney also used that time to re-staff the Minerals Management Service with oil industry toadies including a cabal of his Wyoming carbon cronies. In 2003, newly reconstituted Minerals Management Service genuflected to the oil cartel by recommending the removal of the proposed requirement for acoustic switches. The Minerals Management Service's 2003 study concluded that "acoustic systems are not recommended because they tend to be very costly."

Finally, there's one more question about this—why they switched from mud to seawater in the first place. Apparently, that's done because it makes it easier to come back and reopen the well in the future—it's a cost saving measure. Though it appears that not switching over from mud to water might just have postponed the ultimate failure a few days.

All of which is an elaborate way of saying we don't know. It's possible outright negligence played into this spill. It's possible that the standard requirements for such drilling have been (ahem) watered down because of laughable concerns about cost, or that the parties involved cut corners on this well in particular because of time pressures (which are ultimately money pressures too). And it's possible that none of these safeguards would have made drilling at these depths safe.

But I sure am curious whether we'll ever see those test results.