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BP's "Cloak of Silence": Geology is "Fractured", Relief Wells May Fail

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Theme: Environment
In-depth Report: THE BP OIL SLICK

Few people in the world know more about oil drilling disasters than Dr. Robert Bea.

Bea teaches engineering at the University of California Berkeley, and has 55 years of experience in engineering and management of design, construction, maintenance, operation, and decommissioning of engineered systems including offshore platforms, pipelines and floating facilities. Bea has worked for many years in governmental and quasi-governmental roles, and has been a high-level governmental adviser concerning disasters. He worked for 16 years as a top mechanical engineer and manager for Shell Oil, and has worked with Bechtel and the Army Corps of Engineers. One of the world's top experts in offshore drilling problems, Bea is a member of the Deepwater Horizon Study Group, and has been interviewed by news media around the world concerning the BP oil disaster.

Washington's Blog spoke with Dr. Bea yesterday.

WB: Is BP sharing information with the government?

Bea: No. BP is using a "cloak of silence". BP is not voluntarily sharing information or documents with the government.

In May, for example, Senator Boxer subpoenaed information from BP regarding footage of the seafloor taken before the blowout by BP's remotely operated vehicles (ROVs). We still have not received a response 12 weeks later.

[Bea subsequently clarified that he's not sure whether BP has failed to release the information, or Senator Boxer's committee has sat on the information. My bet is on BP. Indeed, BP has refused to answer some very basic written questions from Congressman Markey, chair of the Select Committee on Energy Independence and Global Warming. See this and this. Indeed, it is unclear whether BP is sharing vital details even with Thad Allen, Secretary of energy Chu, or the Unified Command].

WB: Might there be problems with the relief wells? I know that it took a couple of relief wells to finally stop the Ixtoc leak, and it has taken as many as 5 relief wells to stop some blowouts.

Bea: Yes, it could take repeated attempts.

WB: Are there any conditions at BP's well which might make killing the leak with relief wells more difficult than with the average deepwater oil spill?

Bea: That's an interesting question. You have to ask why did this location blow out when nearby wells drilled in even deeper water didn't blow out.

You have to look at the geology of the Macondo well. It is in a subsalt location, in a Sigsbee salt formation. [For background, see this and this]

The geology is fractured.

Usually, the deeper you drill, the more pressure it takes to fracture rock. This is called the "fracture gradient".

But when BP was drilling this well, the fracture gradient reversed. Indeed, BP lost all pressure as it drilled into the formation.

WB: Is it possible that this fractured, subsea salt geology will make it difficult to permanently kill the oil leak using relief wells?

Bea: Yes, it could. The Santa Barbara channel seeps are still leaking, decades after the oil well was supposedly capped. This well could keep leaking for years.

Scripps mapped out seafloor seeps in the area of the well prior to the blowout. Some of the natural seeps penetrate 10,000 to 15,000 feet beneath the seafloor. The oil will follow lines of weakness in the geology. The leak can travel several horizontal miles from the location of the leak.

[In other words, the geology beneath the seafloor is so fractured, with soft and unstable salt formations, that we may *never* be able to fully kill the well even with relief wells. Instead, the loss of containment of the oil reservoir caused by the drilling accident could cause oil to leak out through seeps for years to come. See this and this for further background].

WB: I know that you've previously said that you're concerned that there might be damage to the well bore, which could make it more difficult for the relief wells to succeed.

Bea: Yes, that's still a concern.

WB: I have heard that BP is underestimating the size of the oil reservoir (and see this). Is it possible that the reservoir is bigger than BP is estimating, and so – if not completely killed – the leak could therefore go on for longer than most assume?

Bea: That's plausible.

WB: The chief electronics technician on the Deepwater Horizon said that the Macondo well was originally drilled in *another location*, but that "going faster caused the bottom of the well to split open, swallowing tools", and that BP abandoned that well. You've spoken to that technician and looked into the incident, and concluded that "they damn near blew up the rig." [See this and this].

Do you know where that abandoned well location is, and do you know if that well is still leaking?

Bea: The abandoned well is very close to the current well location. BP had to file reports showing the location of the abandoned well and the new well [with the Minerals

Management Service], so the location of the abandoned well is known.

We don't know if the abandoned well is leaking.

WB: Matthew Simmons talked about a second leaking well. There are rumors on the Internet that the original well is still leaking. Do you have any information that can either disprove or confirm that allegation?

Bea: There are two uncorroborated reports. One is that there is a leak 400 feet West of the present well's surface location. There is another report that there is a leak several miles to the West.

[Bea does not know whether either report is true at this time, because BP is not sharing information with the government, let alone the public.]

WB: There are rumors on the Internet of huge pockets of methane gas under the well which could explode. I've looked into this rumor, and have come to the conclusion that – while the leak is releasing tremendous amounts of methane – there are no "pockets" of methane gas which could cause explosions. Do you have any information on this?

Bea: I have looked into this and discussed methane with people who know a tremendous amount about it. There is alot of liquid and solid methane at the Macondo site, but no pockets of methane gas.

WB: That's good news, indeed.

Bea: But there was one deepwater leak I worked with where tremendous amounts of hydrogen sulfite were released. We had to evacuate two towns because of the risk. [I didn't ask Dr. Bea if there were any dangerous compounds which could be formed from the interaction of the crude oil and methane with chemicals in the ocean water or dispersants].

And with the Bay Charman oil leak, more than 50% of the oil stayed below the surface of the ocean. [As I've previously pointed out, the US Minerals Management Service and a consortium of oil companies, including BP, found that as little as 2% of the oil which spill from deepwater wells ever makes it to the surface of the ocean. And the use of dispersant might decrease that number still further].

WB: I have previously argued that nuking the well would be a bad idea. What do you think?

Bea: [Bea agreed that nuking the well would be counter-productive. He told me a story about a leaking deepwater well that he was involved in killing. A nuclear package was on its way to the well site but – fortunately – the well stopped by itself before a nuke was deployed. I'm not sure whether this is classified information, so I won't disclose the name of the well. Bea also discussed alternatives in the form of high-pressure, high-temperature conventional explosives, echoing what Bill Clinton said recently].

WB: Thank you for your generous time and for sharing your expertise with us, Dr. Bea.

Bea: You're welcome.

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