The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

BP's Deepwater Oil Spill - White House Press Secretary Gibbs Confirms "Ruptured Oil Well Leaking from Top" and a Seep Two Miles Away (and Open Thread 2)

Posted by Heading Out on July 19, 2010 - 10:05am
Topic: Environment/Sustainability
Tags: deepwater horzon, oil seeps, oil spill, seeps [list all tags]

Because of the number of comments, this is a second copy of this post. The previous post can be found at http://www.theoildrum.com/node/6749.

The White House says the well is leaking at the top and a seep is 2 miles away. Here is the link: http://www.msnbc.msn.com/id/38304846/.

At the end of last week, BP began the testing of the Deepwater well cap, closing all the valves and stopping the flow of oil and natural gas into the Gulf waters. With this cut-off in flow, the volumes to be collected at the surface are rapidly diminishing around the well, and the use, albeit controversial, of the dispersant at the same time as more of the oil was collected, means that the amount making it to the shore has also already diminished. So now the question becomes, does BP restart the collection process by re-opening valves to the surface vessels? It also opens the questions as to how much of the preventative work now being brought up to speed, is actually going to be needed.

The debate as to whether or not to re-open the well is illustrated by the comments by two of the main characters.

---

lly going to be needed.

The debate as to whether or not to re-open the well is illustrated by the comments by two of the main characters.

In his Sunday brief, Doug Suttles noted the success of the new cap, and the fact that there is no evidence of leakage from it. He had noted that the oil in the reservoir is hot, but by monitoring the temperature at the new cap, they had seen, over time, internal temperatures fall to those of the surrounding sea. This would indicate that hot oil is not still reaching the cap, and that fluid flow in the upper sections of the well has ceased.

At the same time the slow but steady increase in pressure within the well indicates that it has integrity, and is able to withstand the build-up in pressure as fluid accumulates around the well down at the level of the initial reservoir. Nevertheless, BP are continuing to monitor and run seismic surveys to make sure that there are no surprises.

On the other hand Admiral Allen sent a letter to BP on Sunday, that raises some new issues.

> My letter to you on July 16, 2010 extended the Well Integrity Test period contingent upon the completion of seismic surveys, robust monitoring for indications of leakage, and acoustic testing by the NOAA vessel PISCES in the immediate vicinity of the well head. Given the current observations from the test, including the detected seep a distance from the well and undetermined anomalies at the well head, monitoring of the seabed is of paramount importance during the test period. As a continued condition of the test, you are required to provide as a top priority access and coordination for the monitoring systems, which include seismic and sonar surface ships and subsea ROV and acoustic systems.
>
> When seeps are detected, you are directed to marshal resources, quickly investigate, and report findings to the government in no more than four hours. I direct you to provide me a written procedure for opening the choke valve as quickly as possible without damaging the well should hydrocarbon seepage near the well head be confirmed.

It seems that those who argue that there are possible leaks from the well into the surrounding sediment have found at least one politically powerful ally.

The phrasing of the letter is, however, a little odd – the "the detected seep a distance from the well and undetermined anomalies at the well head" section raise questions as to – what seep, at what distance? And what about "undetermined anomalies" if they aren't determined are these the "unknown unknowns" we have been warned about in the past? And as comments have noted, there is the question of the legality of re-opening a well, and deliberately restarting to pollute the Gulf.

The press release that the Admiral also issued today expresses concern over the possibility of a sub-surface leak.

> Work must continue to better understand the lower than expected pressure readings. This work centers on two plausible scenarios, depletion of oil from the reservoir and potential leakage caused by damage to the well bore or casing.
>
> While we are pleased that no oil is currently being released into the Gulf of Mexico and want to take all appropriate action to keep it that way, it is important that all decisions are driven by the science. Ultimately, we must ensure no irreversible damage is done which could cause uncontrolled leakage from numerous points on the sea floor.

Do I detect the hidden hand of Dr Chu in that penultimate sentence? I notice that the option of cross-flow is not specifically mentioned as one of the alternatives, particularly near the reservoir, and I get the impression that it is only in the near surface that there is concern about leaks.

There is a second concern with the decision to re-open the well which makes this issue a bit of a hot potato. Whoever makes that decision, and BP seem to have made sure that it is the Admiral who must visibly make it, will be the individual that starts the oil flow back into the Gulf – and that won't be popular.

Admiral Allen recognized that the flow would be restarted in his press release on Saturday

> When this test is eventually stopped, we will immediately return to containment, using the new, tighter sealing cap with both the Helix Producer and the Q4000. Additional collection capacity of up to 80,000 barrels per day is also being added in the coming days.

Kent Wells, in his brief the same day noted that

> if we do decide at any point either during the remainder of the test or following the test, that we want to open the well back up initially we will have to blow it back into the Gulf for some period of time, relevantly short period of time to bring the pressure down on the well so that we can then go in to our collection systems namely the (Q port) valves and the Helix Producer.

While I am not totally sure of the reason for the longer term period of oil release, there have been rumors of a three-day period, there is a relatively simple explanation as to why the pressure in the well has to be released before flow can start back up the riser lines to the vessels on the surface. If the valves between the well and the risers are opened with the well at pressure, then that pressure is immediately transferred to the fluid in the line, and a hydraulic shock, similar to that known as "water hammer," will propagate down the fluid line. Although water hammer is usually seen when a valve suddenly shuts in a pressure line, the same sort of effect can occur when a sudden pressure pulse is applied to the fluid in a line of pipe.

The most dramatic example of that which I have personally encountered was when we were first removing explosive from a casing using a high-pressure waterjet lance, and the flow channel blocked. The resulting bang initially caused us to think that the explosive had reacted. But the round was still there and it was only when we looked at the hose, which had split in several places, and had both end fittings fail, that we realized what had happened. Having a similar failure in a hose carrying oil from the seabed to the surface would create a much greater problem and one much more difficult to fix than ours, which was working in the same sort of pressure range as the fluid contained in the well.

But the pressure can be lowered relatively rapidly over the course of time (a matter of minutes not days, in the same way that the flow was cut-off to the Gulf) so there may be some other issues that are not yet being made public. After all, with the cap holding some intermediate pressure, it is not necessary to vent fluid into the Gulf, as flow is allowed to the surface collection vessels, in a condition that would lower the well pressure from the current levels without putting oil into the water.