

**From:** Tom Hunter  
**Sent:** Monday, October 18, 2010 10:58 AM  
**To:** Marcia K McNutt  
**CC:** Mark K Sogge; Ratzel, Arthur C  
**Subject:** Re: post mortem on BOP?

Marcia

you have raised a good point, one that will be the source of much discussion. The primary impact of the BOP at earlier times can be inferred from the pressure measurements around the end of may just before the top kill attempt. The kink and riser were still in place. the kink was viewed as a few percent obstruction. The only thing that would be an influence by the BOP would be if its impedance changed over time, perhaps by erosion. I am not sure there is any evidence from the limited subsequent pressure measurements, but we know that 25K bpd were being collected around late june and early july. Further the calculations of flow escaping the tophat 4 with 3 open vents and much skirt leakage support the 60k bpd range for that time. I have not seen the inspection reports of the BOP. The team working the flow will have to spend considerable time addressing this phenomena. The assumption in the lab calculation is that the BOP restriction was not time dependent. Art and Ron D. will need to worry this.

tom

----- Original Message -----

**From:** "Marcia K McNutt" <mcnutt@usgs.gov>  
**To:** Tom Hunter, "Arthur C Ratzel" <acratze@sandia.gov>  
**Cc:** "Mark K Sogge" <mark\_sogge@usgs.gov>  
**Sent:** Sunday, October 17, 2010 1:30:14 PM  
**Subject:** post mortem on BOP?

Dear Tom and Art:

Are either of you following or "in on the know" on the investigation on the BOP? The reason I ask is the following. I am trying to wrap up, with Mark's help, the final FRTG report, and as you know, we ended up on July 15 with a flow scenario that had essentially a high flow rate early in the incident of 62,000 BPD ramping down to 53,000 BPD at the end with a few discontinuities for changes in the configuration at the wellhead (riser removal, addition of capping stack).

The one set of flow rate measurements that is entirely at odds with that scenario are the pre-riser-cut estimates from the Plume Team. They had estimates that were in the range 25,000 to 35,000 BPD, and if I adjust those numbers for the oil/gas ratio that the WHOI team provided, the corrected rates should be about 30,000 to 45,000 BPD, far less than the 60,000 BPD numbers. Of course, the WHOI team also measured 57,000 BPD, but I note that their field data was collected POST TOP KILL, whereas the previously quoted numbers from the Plume Team were pre-Top Kill. After the riser cut, the teams agree.

So here is my question to you, is there any evidence from the post-mortem on the BOP that there could have been significant changes in the resistance to flow in the BOP caused perhaps by flow of mud and junk through the BOP during Top Kill that changed the flow rate by 45,000 BPD to 57,000 BPD, a jump of some 25%? Note that this would be BEFORE the riser was cut.

Thanks for any help. I don't want to cast any dispersions on the pre-riser cut Plume Team estimates if they in fact WERE reflecting reality!

Marcia

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Dr. Marcia McNutt

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