



FW: NIST points for consideration

Juan Lasheras o 'Bill Lehr'

06/10/2010 12:53 PM

Cc: "Marcia K McNutt"

Bill,

Based on Ira's comments it looks that you will have a hard task ahead of you in the teleconference today. Please, demand from each team to clearly explain their assumptions and methodology, and to provide HARD SCIENTIFIC EVIDENCE of any claim they make. "Pick-a-number-any-number" is not an acceptable scientific method.

Juan

From: ira leifer [mailto:ira.leifer@bubbleology.com]

Sent: Thursday, June 10, 2010 8:30 AM

To: Wereley, Steven T.

Cc: Espina, Pedro I.; Poojitha Yapa; Juan Lasheras; Ömer Savas; James J Riley; Alberto Aliseda; Paul Bommer; Mark K Sogge; Martha N Garcia; Possolo, Antonio; Marcia McNutt; Bill Lehr; Gallagher, Patrick D.; Kimball, Kevin A.; Boehm, Jason

Subject: Re: NIST points for consideration

Dear Colleagues,

I have been re-analyzing the old data and my more thorough analysis (writing out clearly always helps) has pushed numbers higher.

However, my super quick look at the plume suggested factor of two emission variability on second time scale. So for example (not real numbers) three randomly chosen segments showed 30k, 45k, and 60k (and these are underestimates). This variability is a strong indicator of a significantly stronger flow. the approach which worked easily for the pervious flow, does not here, another indicator of a stronger flow, and although I have not has a chance yet, it appears to me that vorticity generation is significantly greater, another indicator of a stronger flow. Tracking the fluid motions in this plume is very challenging, and a centerline ratio of 4 or higher could be correct. I looked through some old manuscripts on blowout studies in the 80s last night (Milgram's work, and also Topham), and there is justification (also the spreading angle for strong flows was a function of the flow. This would increase oil emissions by a factor of two or more.

Sincerely,

Ira Leifer

PS I side with Steve here, combining numbers is always to be avoided - If I combined data because of uncertainty limits, then I never would have identified storm driven effects on increasing seepage (hydrostatic pumping) in the air pollution monitoring data. Interestingly, that will happen when the hurricanes come.

On Jun 10, 2010, at 8:08 AM, Wereley, Steven T. wrote:

Pedro, your thinking is correct for statistical errors but not for systematic or bias errors. For instance, we use GORs ranging from 0.25 to 0.5. If we used the wrong value to calculate the pre-cut flow then we also used the wrong value in the post-cut flow. Another systematic issue is how the turbulent structures that we track relate to the average velocity of the jet or plume. Most of us have assumed a value between 1.5 and 2.0 for this relationship. While this value can change with Reynolds number and plume configuration, you can figure that a major portion of that variation is systematic. What this tells us is that we need to be more careful about separating random and systematic uncertainties. Certainly we will have considerable statistical uncertainties but the bulk of our uncertainty range is systematic.

From conversations with many of the plume team members over the last days, I think most of us would like our individual reports compiled into the group report and then the plume team group report made publically available. We should discuss this further in the telecon.

Best,

Steve Wereley, Professor of Mechanical Engineering
Birck Nanotechnology Center, Room 2019, 1205 West State Street
Purdue University
West Lafayette, IN 47907
phone: 765/494-5624, fax: 765/494-0539
web page: <http://engineering.purdue.edu/~wereley>

From: Espina, Pedro I. [<mailto:pedro.espina@nist.gov>]
Sent: Thursday, June 10, 2010 10:58 AM
To: Poojitha Yapa; Ira Leifer; Juan Lasheras; Ömer Savas; James J Riley; Alberto Aliseda; Paul Bommer; Wereley, Steven T.; Mark K Sogge; Martha N Garcia
Cc: Possolo, Antonio; Marcia McNutt; Bill Lehr; Gallagher, Patrick D.; Kimball, Kevin A.; Boehm, Jason
Subject: NIST points for consideration
Importance: High

Colleagues,

We would like you to consider a few things prior to our conversation this afternoon.

1. You all have reported confidence in your results that ranges from about 20% to 50%. That means that adifference between your pre- and post- cut-off results will only be statistically significant if the flow increased by more than that confidence interval as a consequence of the cut.
2. Given the uncertainty of the methodology that you are using, there is about an equal chance that anydifference that you see in pre- and post- cut-off results is due to the cleaner geometry and video than due to a real change in flow.
3. Due to 1 & 2, it is statistically unjustifiable to report two results (i.e., pre- and post- cut-off). In other words, your two sets of results may be identical within your ability to make these measurements.

Finally,

- We suggest that the reports from all members of the Plume Team be made available to the public (e.g., via a website). We believe that this will enhance the credibility of the joint result from the group.

Pedro

Pedro I. Espina, Ph.D.
Program Analyst
Program Office, Office of the Director
Tel: +1 301 975 5444

<:}}}}>< * <:}}}}>< * <:}}}}><

Marine Sciences Institute
University of California
Santa Barbara, CA 93106-5080 USA
(805)893-4931 (Tel)

<http://www.bubbleology.com>

OFF CAMPUS OFFICE - Preferred for ship/Fax/mail

6740 Cortona Dr, UCSB Engineering Research Center
Ocean Engineering Laboratory,
Goleta CA 93117
Fax (805)893 4927

<:}}}}>< * <:}}}}>< * <:}}}}><