

From: Marcia K McNutt/DO/USGS/DOI
Sent: Wednesday, May 26, 2010 11:13:21 PM
To: "Juan Lasheras" <lasheras@ucsd.edu>
Subject: RE: NIST uncertainty estimate

I understand your point perfectly, Juan, and appreciate you sharing it with me. I think several others on your committee believe similarly, and frankly, that is why it was quite easy for the group to agree on just putting forward the lower bounds.

Marcia

Dr. Marcia McNutt
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From:	"Juan Lasheras" <lasheras@ucsd.edu>
To:	"Marcia K McNutt" <mcnutt@usgs.gov>
Date:	05/26/2010 07:53 PM
Subject:	RE: NIST uncertainty estimate

Marcia,

My answer to your last question is Yes. Only speaking for myself, that is a fair assertion. Thus, my reservations to venture an upper limit without having a much better estimate of the historical record of the gas/oil ratio discharging from the various leaks, which we have all agreed is the largest unknown in the problem. We have arrived at the lower bounds using the PIV measurements and then assuming a 75% gas - 25% oil ratio of volumetric flow rates at the point of discharge (sea bottom). This ratio is consistent with BP and the estimates made by several members of the group.

My personal position is to err on the conservative side. Of course, one can always assume the worst-case scenario – 100% oil being continuously discharged (as Steve Wereley has publically done in the press and in Congress) and arrive at an upper bound. I will personally consider this not only unscientific but also imprudent and reckless, given the poor quality and short time records we have analyzed.

Although I have clearly stated my position in the four teleconferences, I have not copied this e-mail to the rest of the group because I don't think necessary at this point to openly criticize Steve Wereley in front of the whole team.

Juan

Juan C. Lasheras

Chairman of the Division of Fluid Dynamics of the American Physical Society

From: Marcia K McNutt [mailto:mcnutt@usgs.gov]
Sent: Wednesday, May 26, 2010 3:41 PM
To: Wereley, Steven T.; ira leifer
Cc: Espina, Pedro I.; Bill Lehr; Juan Lasheras; pete@gso.uri.edu; Alberto Aliseda; James J Riley; Franklin Shaffer; Savas@newton.berkeley.edu; Paul Bommer; Gallagher, Patrick D.; Kimball, Kevin A.; Boehm, Jason; Wright, John D.; Johnson, Aaron; Moldover, Michael R.
Subject: Re: NIST uncertainty estimate

Steve -

Maybe I can comment. We know that all scientific models that attempt to recreate natural processes are imperfect. Some of that imperfection is captured in formal statistical uncertainty but often much of it is not. We can only account for the known unknowns, so to speak, not the unknown unknowns. This entire process of estimating the flow by independent methods is in effect an attempt to try to mitigate the effect of the unknown unknowns because they will affect each calculation differently.

What I believe I was hearing from the flow team was that the effect of the unknown unknowns and the known unknowns affects the upper limit more than the lower, hence the hesitation to put forth a number lest it be misused.

Is this fair?

Marcia

From: "Wereley, Steven T." [wereley@purdue.edu]
Sent: 05/26/2010 06:17 PM AST
To: ira leifer <ira.leifer@bubbleology.com>
Cc: "Espina, Pedro I." <pedro.espina@nist.gov>; Bill Lehr <bill.lehr@noaa.gov>; Juan Lasheras <lasheras@ucsd.edu>; Marcia McNutt; "pete@gso.uri.edu" <pete@gso.uri.edu>; Alberto Aliseda <aaliseda@u.washington.edu>; James J Riley <rileyj@u.washington.edu>; Franklin Shaffer <Franklin.Shaffer@NETL.DOE.GOV>; "Savas@newton.berkeley.edu" <Savas@newton.berkeley.edu>; Paul Bommer <pmbommer@mail.utexas.edu>; "Gallagher, Patrick D." <patrick.gallagher@nist.gov>; "Kimball, Kevin A." <kevin.kimball@nist.gov>; "Boehm, Jason" <jason.boehm@nist.gov>; "Wright, John D." <john.wright@nist.gov>; "Johnson, Aaron" <aaron.johnson@nist.gov>; "Moldover, Michael R." <michael.moldover@nist.gov>
Subject: RE: NIST uncertainty estimate

Hi all. My intention was to be naïve with my last comment about uncertainty. What does uncertainty represent if not the range of possible values? I think someone will do the math and I did and ask us about it. We should have an answer about how we can have an uncertainty without an upper bound...

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From: ira leifer [mailto:ira.leifer@bubbleology.com]
Sent: Wednesday, May 26, 2010 4:58 PM

To: Wereley, Steven T.

Cc: Espina, Pedro I.; Bill Lehr; Juan Lasheras; Marcia McNutt; pete@gso.uri.edu; Alberto Aliseda; James J Riley; Franklin Shaffer; Savas@newton.berkeley.edu; Paul Bommer; Gallagher, Patrick D.; Kimball, Kevin A.; Boehm, Jason; Wright, John D.; Johnson, Aaron; Moldover, Michael R.

Subject: Re: NIST uncertainty estimate

Hi Steve,

Only if you assume that the flux is representative based on the 1.5 cycles recorded. True one could make that assumption. But . . .

BP was streaming (decent quality) video this AM from the riser which looked largely unchanging over the three hours I had it in the corner of my desktop. I would propose using that data for an upper estimate and applying Pedro's calculation to get the uncertainty.

Warmest regards,
Ira

On May 26, 2010, at 1:52 PM, Wereley, Steven T. wrote:

Hi all. In a moment of calm I was reflecting on our conversation this afternoon. Doesn't Pedro's uncertainty analysis give us a route to calculating some kind of upper bound? If the lower bound is x and the uncertainty is 40%, $x/0.4$ gives us the expected value and $x/0.8$ gives us the upper bound, to 95% confidence interval. If that isn't the case, then what does the uncertainty mean?

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From: Espina, Pedro I. [<mailto:pedro.espina@nist.gov>]

Sent: Wednesday, May 26, 2010 11:24 AM

To: Bill Lehr

Cc: Juan Lasheras; Marcia McNutt; pete@gso.uri.edu; Alberto Aliseda; James J Riley; Franklin Shaffer; ira leifer; Savas@newton.berkeley.edu; Paul Bommer; Wereley, Steven T.; Gallagher, Patrick D.; Kimball, Kevin A.; Boehm, Jason; Wright, John D.; Johnson, Aaron; Moldover, Michael R.

Subject: Re: NIST uncertainty estimate

Bill,

Enclosed the NIST uncertainty estimate for the PIV estimation of the leak on top of the BOV. Bottom line: whatever the PIV guys say +/- 40% (see final page). Because the gas/oil ratio dominates the uncertainty, similar values are likely for PIV estimates at other leak sites.

I am yet to respond to the questions of Ira and Peter, but I will look at those now.

Pedro

On 5/26/10 9:59 AM, "Bill Lehr" <bill.lehr@noaa.gov> wrote:

Attached is mydraft report to the FRTG

- Please send corrections to me as soon as possible
- Juan, your ppt will be included as an appendix
- Pedro, I put you old version in as a placeholder because the new one was not displaying properly. Perhaps you could send it to me as a pdf file?
- Jim, Alberto, and Omer, I need you bio's

Pedro I. Espina, Ph.D.

Program Analyst

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