

589418992-42397-16434-185-210

From: Marcia K McNutt <mcnutt@usgs.gov>
Sent: Wed, 4 Aug 2010 15:08:13
To: GS FOIA 0105 <foia0105@usgs.gov>
Subject: Fw: intermittency

Dr. Marcia McNutt
Director
US Geological Survey
12201 Sunrise Valley Drive, MS 100
Reston, VA 20192
(703) 648-7411
(703) 648-4454 (fax)
(571) 296-6730 (cell)
mcnutt@usgs.gov
www.usgs.gov

----- Forwarded by Janet N Arneson/DO/USGS/DOI on 08/04/2010 03:07 PM -----

From: "wereley, Steven T." <wereley@purdue.edu>

To: Juan Lasheras <lasheras@ucsd.edu>, "'Marcia K McNutt'"
<mcnutt@usgs.gov>, "'Bill Lehr'" <Bill.Lehr@noaa.gov>, "'Espina, Pedro I.'"
<pedro.espina@nist.gov>, "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>, "'ira leifer'" <ira.leifer@bubbleology.com>,
"'Savas@newton.berkeley.edu'" <Savas@newton.berkeley.edu>, "'Paul
Bommer'" <pmbommer@mail.utexas.edu>

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Cc: "'Moran, Kathryn'" <Kathryn_Moran@ostp.eop.gov>

Date: 05/26/2010 01:06 AM

Subject: intermittency

Nice work Juan! I was worried about making this aspect of our analysis quantitative. The question now is what's the appropriate gas/oil ratio for the oil seen coming out of the pipe. Presumably the oil has degassed somewhat creating this intermittent gas cloud. If we have some given net gas/oil ratio, the oil which we see coming out of the riser has partially degassed and so doesn't have this gas/oil ratio but some reduced amount of dissolved gas. Anyone have any thoughts on accounting for that variable?

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>

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

589418992-42397-16434-185-210

From: Juan Lasheras [mailto:lasheras@ucsd.edu]

Sent: Wednesday, May 26, 2010 12:16 AM

To: 'Marcia K McNutt'; 'Bill Lehr'; Wereley, Steven T.; 'Espina, Pedro I.'; pete@gso.uri.edu; 'Alberto Aliseda'; 'James J Riley'; 'Franklin Shaffer'; 'ira leifer'; Savas@newton.berkeley.edu; 'Paul Bommer'

Cc: 'Moran, Kathryn'

Subject: RE:

We just finished making the intermittency measurements I discussed during the teleconference today. I enclose a short PowerPoint summarizing the method and the conclusions.

We have only analyzed the short 5 minute video taken on May 17th (051720101304crater.mpg). It clearly shows the existence of two well defined

periods: a short 10 second period and a longer 2 to 3 minute period when the flow oscillates from pure gas to seemingly pure oil.

There may be even longer periods of gas-oil flow fluctuation in the range of hours or even as long as days that must be characterized.

We should implement the method we have used here to videos as long as possible and taken over many days. It would be great if we could analyze all the records available in this way.

The main conclusion is that the current upper bound flow estimates based on PIV measurements should be corrected to account for the observed oscillations in the gas/oil composition by a factor of at least 50%, and most likely the 75% we discussed today (estimated by Alberto Aliseda and independently verified by Pedro Espina and Poojitha Yapa). Based on these factors, I believe that given the limited information available to us and the short time records analyzed, the prudent scientifically-defensible bounds are 12,000 bpd and 25,000 bpd.

Juan

589418992-42397-16434-185-210

Juan C. Lasheras, Ph.D

Stanford and Beverly Penner Professor of Applied Sciences.

Distinguished Professor of Mechanical and Aerospace Engineering and
Bioengineering.

Jacobs School of Engineering.

University of California, San Diego

La Jolla Ca 92093-0411

(858) 534-5437 office. (858)4493768 cell