

**From:** Paul Rebstock - *RES*  
**To:** Steven Arndt  
**Date:** 10/03/2007 8:56:04 AM  
**Subject:** Re: FYI on Flowmeter

Thanks, Steve. What I was referring to in our discussion of the CrossFlow UFM was concern over fundamental theoretical issues concerning the measurement process itself - things like, to name just a few: the relationship among wavelength, eddy size, and eddy density; the effects of flow shear, rotation, and other distortions in the flow between the sensing points; the criteria for deciding that a signature at the downstream location does or does not match that at the upstream location, and the uncertainty & probability of error in that decision; the adequacy of the time measurement used to estimate flow velocity.

The attached EMail provides more information regarding my concerns.

The Caldon UFM is probably subject to its own set of physical and mathematical influences related to but different from those that might affect XFlow. The Caldon process is simpler and more straightforward both physically and mathematically, but I doubt it is immune to influence. On the other hand, I am not aware of widespread problems with the Caldon UFM - there have been some cases of accuracy problems, but I don't know any details. In addition, there has been a DPO on the withdrawal of the XFlow approval. I don't know whether it has been fully processed yet.

I believe we could offer some benefit in investigating these devices, but after such a long and difficult history I'm not sure there would be much interest on the part of NRR/NRO for revisiting this. These concerns should be taken into consideration, however, if XFlow is ever resubmitted.

>>> Steven Arndt 9/27/2007 3:34 PM >>>

Please see attached RIS on Ultrasonic Flowmeters. I also had several other reasons why I had problem with the Westinghouse meter.

Steven

**CC:** Russell Sydnor

*F-10*

**Mail Envelope Properties** (47039164.9D2 : 4 : 10616)

**Subject:** Re: FYI on Flowmeter  
**Creation Date** 10/03/2007 8:56:04 AM  
**From:** Paul Rebstock

**Created By:** PJR1@nrc.gov

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**Route**

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**Files**

MESSAGE  
TEXT.htm  
Mail

**Size**

2305  
2172

**Date & Time**

10/03/2007 8:56:04 AM

**Options**

**Expiration Date:** None  
**Priority:** Standard  
**ReplyRequested:** No  
**Return Notification:** None

**Concealed Subject:** No  
**Security:** Standard