

**QIBA Ultrasound Shear Wave Speed (SWS) Combined Call:
System Dependencies and Phantom-System Measurement Testing Subcommittees**

Friday, August 28, 2014; 11 AM CT

Draft Call Summary

Notes provided by Dr. Wear

In attendance

Keith Wear, PhD (Co-Chair)

Kathy Nightingale, PhD (Moderator)

Michael André, PhD

Paul Carson, PhD

Shigao Chen, PhD

David Cosgrove, MD

Ted Lynch, PhD

Mike MacDonald, PhD

Stephen McLeavey, PhD

Yasuo Miyajima, MS

Nancy Obuchowski, PhD

Nicolas Rognin, MSc, PhD

Ned Rouze, PhD

Cedric Schmitt, PhD

Matthew Urban, PhD

Michael Wang, PhD, MASc

Hua Xie, PhD

RSNA

Joe Koudelik

Julie Lisiecki

Moderator: Kathy Nightingale, PhD

Kathy Nightingale gave a presentation. From Tim Hall, the Lovett equation suggests we need a salinity of about 45 (4.5g of NaCl in 100 mL of water) for coupling medium. The equation used for saline is found in JR Lovett, J Acoust Soc Am 63, 1713-1718, 1978, equation 3. The equation for sound speed in pure water is found in GS Kell J Chem Eng Data 1975 also in Kaye and Laby (5th), p29.

Kathy requests that participants use 4.5 g NaCl in 100 mg water to match 1540 m/s.

Ted supplied 3 phantom recipes and 3 samples for each recipe (total of 3 X 3 = 9 phantoms). There is very good agreement for Duke measurements taken on 8/10 and 8/22, indicating good stability. Multiple phantoms from each recipe are very consistent.

Phantoms indicate some bubbling and discoloration, but it is minor. It is possible to take measurements avoiding the bubbles.

The phantoms are in ranges of values of phase velocity (200 Hz) and dispersion that are consistent with Duke measurements in human liver. This is encouraging.

Ned Rouze will send the best 3 phantoms (best one from each recipe, with respect to minimal bubbles) to Hua Xie's group at Philips for measurement. Ned will send the three worst phantoms back to CIRS to investigate potential problems in packaging that could produce discoloration/delamination on the membranes. Ned will keep the 3 middle phantoms at Duke.

Hua Xie will hopefully be able to make measurements within approximately 2 weeks and hopefully will be able to report results at the next QIBA SWS / Phantoms teleconference. Hua will check to see if values of dispersion are consistent with Philips human data. Hua will also measure commercial group SWS. If time permits, Hua will measure phase velocity at 200 Hz also, but this is not necessary.

It was noted that Hua should note things that need to be done (e.g. all the proper machine settings) with the Philips system and that this information should be sent to Philips clinical sites. However, Hua has already done this.

Someone should contact the clinical sites to find out their time constraints for performing measurements after Hua Xie. Assuming Hua Xie's measurements go well, the phantoms will be sent to the clinical sites. Julie will generate a schedule and shipping addresses for the 6 clinical sites: Mass General (Samir), Southwoods (Barr),

University of Rochester (McAleavey), Mayo (Chen, Ehman, Urban), Washington DC VA (Garra), UW Madison (Hall). Clinical labs will have 9 days to take measurements. Mayo will be last on this list as they will be making MRE measurements as well and will take longer.

Toshiba participants noticed delamination problems from phase 1 phantoms, and they will ask Siemens (Andy) to ship to Ted for analysis. Shigao Chen will ship Mayo's phase 1 phantoms to Toshiba if they are in good shape.

Companies should prepare protocols and send them to the clinical sites and also to Tim Hall. Tim Hall is preparing a generic protocol.

It would be valuable for Cedric Schmitt at Rheolution to perform mechanical testing on the phase 2 phantoms recipe. This might be possible if Ted Lynch at CIRS can pour specimens that would be appropriate for mechanical testing. Ted will look into this possibility.

Please note: There is **no Ultrasound call** scheduled for **Friday, August 29, 2014**. Please see the September schedule below. Thank you.

September Schedule:

- **Friday, September 5, 2014:** No call
- **Friday, September 12, 2014:** Technical Committee – Mr. Milkowski
- **Friday, September 19, 2014:** Systems/ Phantom SC – Dr. Wear
- **Friday, September 26, 2014:** Clinical SC – Dr. Samir

[Conferences for Ultrasound](#) on QIBA Wiki have been updated (as known) for 2014 – 2015. Updates welcome.