NCSLI 173 Metrology Practices

Condensed Minutes
St. Paul Convention Center, Meeting Room 8, 3 pm to 4:30 pm
7/28/2016

Click links to jump to topics of interest.

Contents

1 Attendees, Introductions 1
2 Minutes Review 1
3 Status Updates Since Last Meeting 1
  3.1 173.4 Measurement QA End-to-End (RP-19) 2
  3.2 173.1 Calibration Interval Analysis (RP-1) 2
  3.3 173.2 Measurement Decision Risk Analysis (RP-18) 3
  3.4 173.3 SPC for Metrology (RP-XX) 3
  3.5 173.5 Uncertainty Analysis (RP-12) 3
4 General Discussion 3
5 Action Items 3

1 Attendees, Introductions

Bill Miller, Lockheed Martin
Chris Bailey, Fluke
Curtis Ashford, Boeing
Dennis Jackson, NSWC Corona
Gerhard Mihm, Bundeswehr
Howard Castrup, Integrated Sciences Group
Jeff Gust, Fluke Calibration
Jorge Martins, National Instruments
Mark Kuster, Pantex Metrology
Milen Todoraken, Fluke
Nam Phan, NSWC Corona
Rene Davis, Fluke
Steve Dwyer, NSWC Corona
Suzanne Castrup, Integrated Sciences Group
Zoe Cline, Fluke

2 Minutes Review

Corrections to the March, 2016 meeting minutes: None

3 Status Updates Since Last Meeting

Mark Kuster noted that the NCSLI office has posted the new subcommittee-WG charters on the NCSLI web site’s MPC pages. The MPC page reverted to an old state after a recent web server upgrade but the office has restored the new version. Doug Parker also set up an MPC community page for forum-blogging-sharing purposes. Please contact the chair if you have ideas for using that resource.
The committee heard RP development and related status updates and held discussion as follows, focused on our current priority, RP-19.

3.1 173.4 Measurement QA End-to-End (RP-19)

Working Group Chair: Howard Castrup, Integrated Sciences Group

Howard Castrup summarized the RP’s background and concepts, the original ETS software (source code theoretically exists in the public domain) and the NASA document version. He has begun editing the NASA document to transform it into a draft RP, including a template for software development, and estimated five weeks to finish. The committee proposed a six week review cycle so contributors should plan to begin in mid September and finish before November. Mark Kuster noted that attendees may download the January 2016 Metrologist for an article discussing the RP’s potential benefits and applications.

Dennis Jackson noted that reviewers may not catch the issues that will show up during application and that the process involves complicated math. Howard Castrup indicated that the RP and software tackled the various mathematical and practical difficulties. Suzanne Castrup suggested having many examples as did Bill Miller, since results depend heavily on the input data quality. Reviewers should think of real applications while awaiting the draft in order to also evaluate the RP’s practicality. Previous review volunteers include Dennis Dubro, Gary Olsen, Greg Cenker, Steve Dwyer, Dennis Jackson, Nam Phan, Merek Barylak and Mark Kuster. Curtis Ashford will coordinate a review with Gary, and Bill Miller also volunteered. Mark Kuster suggested that those presenting similar topics at the conference, e.g., AssetSmart and CENAM representatives. Howard Castrup may approach Paul Reese and John Harben as well.

Suzanne Castrup summarized an example oil field application that brought an immediate ROI. Steve Dwyer, Bill Miller, and Suzanne Castrup noted that metrology still bases decisions on requirements instead of ROI but that ultimately cost factors should drive the requirements. Jeff Gust noted that quality test systems improve yield via lower false reject rates. Dennis Jackson hoped that the RP would help guide designers in choosing product specs as cases frequently arise in which neither specs nor the end-item tests correlate with its performance. Dennis Jackson and Steve Dwyer mentioned that the Navy has once more begun an attempt to involve Metrologists in system design and development stages. Jeff Gust pointed out that most companies, including Fluke begin development with all parties supporting the end-item design. Bill Miller noted that different programs achieve similar reliability from different approaches: many redundant uncalibrated items supporting the program versus only a few calibrated instruments.

Committee members suggested other techniques and material that the RP might envelop such as (Curtis Ashford, Steve Dwyer) the effects of placing a check standard in a process. Dennis Jackson presented RP-related material at the MSC. Suzanne Castrup suggested guidance for obtaining the input information, perhaps a separate chapter. Steve Dwyer mentioned that the Navy has documents detailing where to obtain requirements and other input data and Bill Miller has some references also. Mark Kuster suggested that we stick to the existing five week draft plan and then develop the additional material during the first-draft review. Howard Castrup indicated that would work.

3.2 173.1 Calibration Interval Analysis (RP-1)

Working Group Chair: Mark Kuster, Pantex Metrology

Mark Kuster observed that most committee members will soon contribute heavily to RP-19 and therefore postponing the RP-1 update still makes sense. Jeff Gust agreed and reminded the committee that it always has the option to simply reaffirm the current version. Steve Dwyer and Mark Kuster noted that the previous revision omitted a number of worthy topics in the interest of time. Steve Dwyer recommended that we not reaffirm the document. Mark Kuster noted that he may take on obligations with a new MII (metrology information infrastructure) committee and would like a new chair when the time comes to update RP-1.

Gerhard Mihm summarized the new draft NATO document STANAG 4704 “Calibration Intervals”. It references RP-1 and IEC OP-AAG010-Ed.1.1 “Calibration Intervals for Test Equipment Requiring Calibration; IEC System for Conformity Testing and Certification of Electrotechnical Equipment and Components”. It recommends RP-1 statistical methods as a first choice, followed by single-asset analysis, OEM intervals,
class grouping, and the IEC method in that order. We should review the IEC document to see what it recommends.

Related to establishing an NCSLI reference library to improve general awareness of NCSLI resources (the EPRI calibration interval document apparently had no knowledge of RP-1), Mark Kuster reported he had just discussed DOIs (digital object identifiers) with Hy Tran. Hy pulled up the new publisher’s web site and verified that the publisher has completed indexing and assigning DOIs to all the current and past Measure papers. No work has begun and the initiative remains uncertain for treating Metrologist articles and past proceedings papers likewise. Howard Castrup noted that publishing conference papers may require more peer review than currently used. Jeff Gust speculated that the archival committee might reform to review past proceedings to find the gems for official indexing and mentioned that the 171 committee discussed this also. Suzanne Castrup suggested that NCSLI should at least index the RP-referenced papers. Jeff Gust and Bill Miller will take an action item to the board for discussion. Bill Miller reported that the board approved a WG for OOT impact and resolution.

3.3 173.2 Measurement Decision Risk Analysis (RP-18)

Working Group Chair: Howard Castrup, Integrated Sciences Group

No particular discussion—work remains on developing examples.

3.4 173.3 SPC for Metrology (RP-XX)

No discussion

3.5 173.5 Uncertainty Analysis (RP-12)

Working Group Chair: Suzanne Castrup, Integrated Sciences Group

Dennis Jackson and Suzanne Castrup discussed plans for reformatting the uncertainty analysis examples.

4 General Discussion

Suzanne Castrup and Mark Kuster reported that 140 VP James Smith has begun presenting RP-5 to the NCSLI Board so MPC members should remain free of that work unless and until board members return it with comments at the October board meeting.

Mark Kuster mentioned that reviewing notes from the NCSLI 2013 panel on test point selection revealed a forgotten suggestion to assemble an RP to cover that topic. It might also logically include related topics such as instrument modeling and validating calibration processes against MQMs over the instrument’s full measurand space. Such an RP might fit well in the MPC lineup; alternatively, since the subcommittee charters now include modeling, each RP might address the topics as appropriate.

At this point, the meeting adjourned.

5 Action Items

- RP-1 WG: Develop interval analysis validation data as part of the methodology effectiveness research (long term).
- Jeff Gust, Bill Miller: Discuss DOI numbers and indexing for selected conference papers with the NCSLI Board.
- Greg Cenker: Identify a liaison between NCSLI and EPRI.
- Howard Castrup: Compile and issue a draft RP-19 for comments by mid-September.
• Reviewers: Complete *RP-19* reviews within six weeks of receiving a draft.
• Suzanne Castrup, Dennis Jackson: Refine the uncertainty analysis format.
• Chairs: Develop short RP presentations for use at region and section meetings.