Meeting Minutes
ASC OP/TF 7 Lasers Technical Meeting

Sunday January 23, 2022
Stockton Room, 5th Floor
Intercontinental Hotel
Or via Zoom

CALL TO ORDER AND ASSIGNENT OF NOTE TAKER

Michael Thomas called the meeting to order at 10:05 AM PST. Patrick Augino agreed to take notes for the meeting.

WELCOME AND INTRODUCTIONS

In attendance were:
Michael Thomas, Spica Technologies
Jay Nelson, Edmund Optics
Nathan Carlie, Edmund Optics
Dave Aikens, Savvy Optics Corp
Donna Howland, Northop Grumman Corporation
John Arenberg, Northrop Grumman Corporation
John McElhenny, ARMY (Observer)
Gary Shaffer, Quantel USA (Observer)
Ella Field , Sandia National Labs (Observer)
John Bellum, Coherent Technologies
Brian Monacelli, JPL & Pasadena City College
Zach Strobehn, CMM Optics
Michael Youngworth, Young Optical Design
Patrick Augino, Optimax Systems Inc.

AGENDA ITEMS

1. Introductions and assign note taker – M. Thomas
2. Adoption of Draft Agenda – D. Aikens

   D. Howland moved that the agenda be accepted without modification. P. Augino seconded and the motion carried.

3. Approval of the Minutes of the Previous Meeting from February 2, 2020 – M. Thomas

   P. Augino moved that we accept the minutes of the previous meeting without modification. D. Aikens seconded the motion and the motion carried.

   It was noted line Item 3 has an error in the date. It should be listed as 2020 not 2019. The changes were noted and a motion to approve the agenda with the changes as noted was made. Donna Howland moved to accept the agenda with the date change. Jay Nelson seconded and the motion carried.

4. Discuss Membership

   Discussion on membership, M. Thomas noted appreciation of national labs and private employer support provided to this group.

   M. Thomas asked the group to please share information from this meeting with colleagues or others who might be interested in joining.

   P. Augino shared TF7 current membership list.

5. Up Front Statistical Analysis. Refinement of Model – J. Arenberg

   J. Arenberg shared slides 1 thru 7 of the presentation titled "Development of US National Laser Damage Standard: 2021 Status"

   J. Arenberg discussed,
   - Experimental Validations
   - Making a flat top beam
   - Does the scan follow Poisson Statistics?
   - Analytic Investigation – "How Flat is Flat?"
   - Big Questions for Procedure Development
     - When does the process give clear results?
     - Does the probability of agreement on test results vary with test requirements?
     - Are the basis assumptions of the design of the proposed standard valid (major lesson learned)?
     - Are there other inter-laboratory effects that need to be accounted for?

6. Data Supporting Use of Flat Top Beam – M. Thomas

   M. Thomas presented slides 8 thru 9 of "Development of US National Laser Damage Standard: 2021 Status" presentation

   M. Thomas discussed beam setup
   - Commercial laser production 7ns pulse at 10hz
   - Graded mirror resonator producing near Gaussian beam in near and far field
   - Beam profile modified from Gaussian to flat top using π-shaper
   - Output beam imaged through down collimating telescope to produce smaller flat top beam

7. Measurement of damage threshold using multiple sites on low damage defect laden materials – M. Thomas

   M. Thomas presented slides 10 thru 13 of "Development of US National Laser Damage Standard: 2021 Status" presentation

   - Are the test observations independent?
   - Test data is a set of observations, represented as a set of ordered pairs
   - Intervals between damaged sites will be assessed and tested to see if they are Posssion deviates

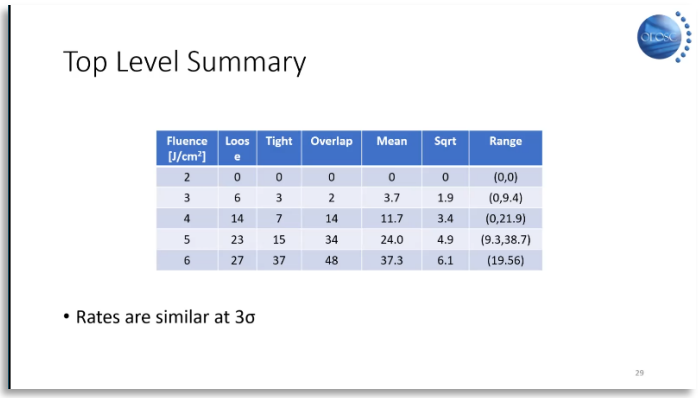
8. Statistical Analysis of Hard Data – J. Arenberg

   J. Arenberg presented slides 15 thru 39 (end) of "Development of US National Laser Damage Standard: 2021 Status" presentation

   Distribution of Damage occurrences

   - 3 levels of damage site grids - tightly packed, loosely packed and overlapped

   Predicted damage sites vs observed:



Initial observations

- Most of the very limited data set appears to be described by Poisson statistics accounting for sample effects
  - Data set are very small and sampling effects are large
- More data required
  - Larger grids
  - More materials

Procedure Development – 2022

- Continue experiment on flat top beam
  - Possible student competition at SPIE
- Complete second part of the initial phase
  - Repeat on additional materials
- Draft inter-lab comparison procedure
- Run limited round robin test and review

9. Preparation of Draft Specification (Work to Date)

   Work is continuing, additional data is important, not ready to draft just yet

10. Round Robin Testing and Corporate Interest

    This item not covered, topic owner was not in attendance.

11. Additional items not on the agenda

    J. Arenberg – asked for interest from companies in attendance for support in sponsoring a student design competition. Multiple speakers voiced support. IODC and OIC possible venues to support. Action: J. Arenberg and M. Thomas to regroup and follow-up on next steps.

12. Next Meeting Date/Time

    - Informal meeting at Orlando DCS April 7, 2022
    - D. Howland moved for an informal in person meeting at DCS in Orlando, 2022, and next formal meeting at the SPIE Laser Damage in Rochester, 2022. D. Aikens seconded and the motion carried.

13. Adjourn

    - D. Aikens moved we adjourn, and N. Carlie seconded the motion. The motion carried, and the meeting was adjourned at 14:15 PST.