Approved
Minutes of ASC OP Meeting
Sunday, August 26, 2007, 2:00 p.m. – 5:00 p.m.
Marriott Hotel and Marina, Enincitas Room
333 West Harbor Drive, San Diego, CA, 92101

| Present | Participants (11 of 21 + 2 alt.) | Representing |
|---|---|---|
| ☒ | **Committee Members** | |
| ☒ | David Aikens | Zygo Corporation |
| ☐ | Sam Bailey (alternate) | Davidson Optronics, Inc. |
| ☒ | Gordon Boultbee | JDS Uniphase Corporation |
| ☐ | Andrei Brunfeld | Xyratex |
| ☐ | Bryan Clark (alternate) | Xyratex |
| ☒ | Walter Czajkowski | APOMA (Edmund Optics) |
| ☐ | Frank Dombrowski | Gage-Line Technology, Inc. |
| ☒ | Marla Dowell | IEE/LEOS (NIST) |
| ☒ | Lincoln Endelman | SPIE (Endelman Enterprises) |
| ☒ | Charles Gaugh | Davidson Optronics, Inc. |
| ☐ | Thomas Germer | NIST |
| ☐ | John Hamilton (by phone) | Northrop Grumman |
| ☐ | Rudolf Hartmann | Retired |
| ☐ | Hal Johnson | Harold Johnson Optical |
| ☒ | Allen Krisiloff | Triptar Lens Co., Inc. |
| ☒ | Jonathan McGuire | Northrop Grumman Laser Systems |
| ☒ | Bruce Netherton | Lockheed Martin Coherent Technologies |
| ☐ | Kathleen Richardson | School of Materials Science & Eng., Clemson |
| ☒ | William E. Royall (by Phone) | Eastman Kodak Company |
| ☐ | Peter Takacs | Brookhaven National Lab. |
| ☐ | Trey Turner | Research Electro-Optics, Inc. |
| ☐ | Steven VanKerkhove | Corning Tropel |
| ☒ | Ray Williamson | Ray Williamson Consulting |
| | **Observers (1)** | |
| ☒ | Gene Kohlenberg | OEOSC |

**Welcome and Introductions**

D. Aikens opened the meeting at 2:04 p.m.

**Adoption of Agenda**

G. Boultbee asked to add a discussion concerning the relationship between ANSI/OEOSC OP3.001, "Optical Glass," ISO 12123, the ISO glass specification, which is under development, to Other Business. G. Boultbee moved that the draft agenda be adopted. R. Williamson seconded the motion, which carried unanimously.

**Approval of the January 21, 2007 ASC OP Meeting Draft Minutes**

A. Krisiloff moved that the draft minutes be approved. C. Gaugh seconded the motion; the motion passed unanimously.

**Reports**

**Optical Surface Imperfection Standard Revision**

G. Boultbee said that Northrop Grumman had presented the results of their gage R&R study. J. Hamilton's report was not available at the meeting time, but J. McGuire presented the data that he had collected. The conclusion is that comparative standards have a lot of short comings, particularly at the number 10 scratch value. J. Hamilton will make his data available soon.

The Task Force also discussed the status of OP1.002, and agreed to provide a notation for scratch widths that extends the range below the current number 10. G. Boultbee will be drafting that notation section. D. Aikens has volunteered to draft a foreword for the second edition that will be included with the original foreword.

C. Gaugh asked about the status of a NIST designed round-robin comparison of imperfection testing among a group of companies. G. Boultbee replied that since C. Gaugh was not at the meeting, the round-robin test was not discussed.

**Wavefront Specification Project**

Since S. VanKerkhove was not at the meeting, D. Aikens covered this item. He first asked the Secretary if the version of BSR/OEOSC OP1.005 on the web is the original from the previous meeting, or an updated version. The Secretary replied that he had added the definitions of the Zernike Polynomials, but he has not yet moved them to the beginning of the definition section as the Task Force suggested at the last meeting. The Secretary was waiting for confirmation from S. VanKerkhove before making that change. The pictures of all of the equations in the document are now active math equations. He updated the styles of the added material so that the table of contents will work properly.

At the last international standards meeting of ISO/TC 172/SC 1 the US volunteered to edit the next edition of ISO 10110-8. D. Aikens used it as a starting point for a draft of the new BSR/OEOSC OP1.004 that he will e-mail to the secretary to put on the web site for the meeting that will occur on the next day after this meeting.

**Status of Military Acceptance of OP Standards**

John Salerno e-mailed the technical persons in the army, Mark Napolitano and Rex Powell, who are responsible for making the decision to include ANSI/OEOSC OP1.002-2006 in the recognized list of standards for military use. The Secretary said that he is waiting for a response from them. D. Aikens asked if anyone on the committee knew either of these two gentlemen. If so, he asked them to please contact the two army contacts to ask how the decision process is coming.

The Secretary said that J. Hamilton uses a company called IHS to get his military specifications. IHS pulls specifications, burns them onto a CD and offers them for sale. IHS does not list OEOSC standards on its website. The old MIL-O-1383 is listed as a "legacy" standard. The Secretary contacted IHS to ask that OP standards be listed where the old military specifications are located. The IHS technician could not find the reference on their website, so the Secretary forwarded the information to him. To date there has been no further correspondence from IHS.

Currently the scratch and dig military specification is part of a newer MIL-PRF-13830, which also includes environmental specifications. That specification would have to be revised to remove the old MIL-O-1380 scratch and dig material.

G. Boultbee asked if others new that the military specifications could be downloaded for free off of the Internet. The Secretary said that the address is http://assistdocs.com/search/search_basic.cfm for the form where documents can be searched.

J. McGuire said that he has learned that military contractors, such as Northrop Grumman, are no longer bound to use specifications such as MIL-PRF-13830 in their entirety on drawings. This has reduced the need to wait for the military to adopt OP standards. B. Netherton said that the only requirement is that everyone use the AS 9100:2001 Aerospace Standard. L. Endelman asked if J. McGuire quotes OP standards on his drawings. He says that he has not, but he now knows that he can use any standard that he can get the vendor to accept. B. Netherton said that the problem is that many vendors do not know about OP standards yet.

**Request for on-site Training**

D. Aikens said that periodically OEOSC gets requests for on-site surface imperfection evaluation training. One query came from FT Optics in New Hampshire, who decided not to pursue the training because of the price for the class. They will do an in-house version. A second query came about a possible event in the fall.

**ISO/TC 172/SC 1 Meeting in Paris**

D. Aikens, G. Kohlenberg, A. Krisiloff and R. Williams represented the US at the June ISO/TC 172/SC 1 meeting in Paris. SC 1/ WG 3 has asked the US to provide experts for environmental and transportation standards. D. Aikens confirmed that G. Boultbee was still willing to be a participant. This will be an activity by correspondence; travel will probably not be required. G. Boultbee said that most of these are standards up for periodic review. They cover humidity, temperature, fungus, e.t.c. B. Netherton volunteered to participate. D. Aikens asked B. Netherton to send him an e-mail saying that he is willing to participate that D. Aikens could forward to ISO/SC 1/WG 3. There is also a need for experts for SC 1/WG 4, global reference dictionary, and NODIF. L. Endelman said that he had been dropped, but was now restored as the US expert.

D. Aikens reported that ISO policy does not permit the use of a three-letter mnemonic to identify the modulation transfer function even though that has been the custom in the optics community. ISO allows only a single letter to designate a function. The ISO standards have already been modified by ISO central. The US and Britain complained. All of the technical persons at the meeting were upset. As a result OP needs to send a letter to ANSI asking ANSI to lobby ISO to permit the traditional use of three-letter mnemonics for MTF, LSF, OTF, PSD, etc.

M. Dowell moved that ANSI be petitioned to contact ISO concerning this issue. G. Boultbee seconded motion. The motion carried unanimously.

D. Aikens said that the letter should probably contain references to half a dozen traditional optics texts that use the accepted mnemonics with a request that ANSI asks ISO to reconsider its decision so that what is considered standard language can continue to be used. A. Krisiloff volunteered to write the letter.

D. Aikens asked what OP wants to do concerning the global reference dictionary, which will include all optical items, with definitions and commercial suppliers. At the Boulder presentation fields in the database included price and suppliers. D. Aikens did not know if ISO intended to populate those fields, but they currently are listed in the definition of the database. D. Aikens asked if this is something that the US should be concerned about. It is primarily being developed by German and French experts. D. Aikens questioned whether OP is the proper organization to deal with this. L. Endelman asked how the committee wanted him to vote on this issue. B. Netherton said that he is opposed to the concept if it includes suppliers and pricing. He said that the next step could be that those listed in the database would become the "approved" vendors; that is wrong. J. McGuire asked how it could be kept fluid. He suggested that there may be alternatives that would be more appropriate.

D. Aikens added that it appears that ISO wants to maintain copyright ownership of the data and receive royalty for symbols created for international standards that are contained in the database. That would be particularly damaging to commerce. L. Endelman said that this dictionary idea came from Germany who has been working on it for about six years. G. Boultbee said that he sat in on the last of the sessions in Boulder, and did not hear anything about copyright. Perhaps that is a red herring. D. Aikens said that he thought he got the information about royalty off of the ISO website, and perhaps the two are not related.

D. Aikens said that as the Head of Delegation, he does not know how the US should respond to this database. The issue is too big to grasp.

G. Kohlenberg said that this is an issue that should be referred to ANSI for guidance. C. Gaugh said that he presumed that other organizations, such as OSA and SPIE, would want to know about this issue, too.

A. Krisiloff asked if the US TAG should withdraw from this project. L. Endelman said that the TAG should not withdraw from this project because the US would have no input. A. Krisiloff then urged that L. Endelman continue to be active. C. Gaugh asked if the US could take a more aggressive approach to get rid of the cost and vendor information.

D. Aikens suggested that this subject be put on the OP agenda for January.

**ISO Standards Development Projects**

D. Aikens has returned to the position that ISO 10110 should be adopted as a US national standard. This will allow OEOSC to sell it and get revenue. He plans to develop a training course to help the US industry understand the standard. ISO 10110-1 could be modified to include other material pertinent to the US.

W. Royall asked if the US would also separate testing from the standard as ISO does. D. Aikens countered by asking W. Royall his opinion. W. Royall said it may be a little early to make such a decision. D. Aikens said that the drawing notation could be adopted without adopting the 14999 series of reports.

B. Netherton asked how this would affect the Y14.5 standard. D. Aikens said he did not know if the ISO equivalent and Y14.5 are being rationalized.

A. Krisiloff said that OP needs human resources to handle any changes to ISO documents for American standards. What is the path of least resistance? Perhaps this would be an opportunity to try to get other US companies involved to provide more human resources.

B. Netherton: whenever you plan to justify your existence, that is the wrong direction. We need to decide how to do the right things for the country. M. Dowell suggested that this problem could be discussed in a training course to get the information to the public.

B. Netherton said that Lockheed management understands that it needs to become active in the development of US standards.

J. McGuire said that the US should probably look at the accuracy of imperfection testing according to the ISO standard in addition to the US standard. OEOSC should go to US companies and tell them that OP is considering adopting ISO standards because it doesn't have the human resources to develop US tailored standards. Then ask the companies if they are comfortable with the move to ISO standards. B. Netherton said that the ISO standard is structured to better support US requirements than what we currently have. The user friendliness of it is still a key drawback. ASME Y14.18, the US optical drawing standard, has been withdrawn.

A. Krisiloff moved that OP form a Task Force to adopt ISO 10110 as a US national Standard. R. Williamson seconded the motion. G. Boultbee suggested that interested parties be contacted concerning this subject. Lockheed and Northrop want to be active in this task. D. Aikens appointed himself as Task Force Leader with the assumption that B. Netherton and J. McGuire will consider volunteering to be permanent Task Force Leaders.

D. Aikens will write a press release for the secretary to issue.

**Future of ASME Y14.18 Optical Drawing Standard**

W. Royall has been seeing an increased use of ISO 10110 (about 10%). Off-shore customers are applying ISO 10110 correctly, while US customers are applying it incorrectly. He said that he observed that US adoption of ISO standards has been verbatim. If an

ISO document is adopted with changes, then the the US number should be changed. A. Krisiloff asked W. Royall if he was saying that the US should adopt ISO standards verbatim to reduce confusion. W. Royall said yes.

He is seeing ASME Y14.5 drawings in the majority. However, there is no consistency with optical notations. D. Aikens said that he is seeing a hodge podge of drawing techniques.

A. Krisiloff asked if the Japanese drawings are the same as the German standards. W. Czajkowski said that he observes that the new young engineers generate their drawings using the optical software output without any consideration as to how the drawing will be used. They have no idea what the drawing codes mean. At Edmund the 5% – 10% of all drawings that he sees in ISO format are coming from misinformed young engineers. He sees drawings from Japan as both ISO and old Japanese standards. D. Aikens said that France and Germany are in general using ISO 10110 correctly.

A. Krisiloff asked if the US should push for changes to the ISO drawings at the international level, rather than modify a national standard based on an international standard. D. Aikens said that he observes other countries adopting ISO and then going to the standards meetings with specific changes that they need to be able to use the standard more effectively. In some cases a country will modify the standard and make it a national standard before offering it to the ISO committee.

G. Boultbee said that the US could adopt the portions of ISO 10110 that are not controversial. D. Aikens said that the parts reference all of the others.

W. Royall said that there are two communities: one follows Y14.18 and another ISO. He proposed that a document be developed to help US companies make a transition from Y14.5 type of drawings to ISO 10110 type of drawings, explaining the equivalences and differences. He said that Bob Parks made a good start in his OSA handbook about ISO 10110.

D. Aikens contacted Bob Parks and learned that the handbook is currently out of print, and OSA is not interested in releasing an updated version.

A. Krisiloff moved that OP drop any plans to update ASME Y 14.18. C. Gaugh seconded the motion. The motion carried unanimously.

A. Krisiloff moved that OP create a Task Force to proceed to adopt ISO 10110 standards as US national standards. R. Williamson seconded the motion. G. Boultbee suggested that OP determine to what extent others are willing to volunteer to work on this project as opposed to putting someone on the spot. D. Aikens asked for a show of hands indicating who would be willing to participate on this Task Force. He observed that just about everyone in the room showed interest. A. Krisiloff asked if Lockheed Martin and Northrop Grumman had individuals who would be willing to be a part of this effort. J. McGuire said that he believes that his company would be willing to take a leadership position in this effort. D. Aikens volunteered to act as interim Task Force Leader of this project and asked J. McGuire and B. Netherton to consider taking over the responsibility.

M. Dowell suggested that a notice be placed on the website soliciting participation on the Task Force. G. Kohlenberg added that he could try to get it on the SPIE website, too. D. Aikens volunteered to write a press release for G. Kohlenberg.

Since there was no further discussion, the motion was passed unanimously.

At this point the committee took a five-minute break.

**Revision of ASC OP Operating Procedures**

A. Krisiloff suggested that this item should be "Review of ASC OP Operating Procedures." G. Kohlenberg said that at the last meeting the group decided that it should do some serious thinking about how the operating procedures should be structured. D Aikens asked if this item could be discussed without recommendations. D. Aikens decided that this topic would be delayed until the next meeting.

**Maintaining Membership List**

G. Kohlenberg reported that during the audit, ANSI proposed that OEOSC keep records of committee membership by year. He will have to revise the database to accomplish that. He presented the current list of members and asked the committee to review it. The committee looked at the list and revised some of the Interest categories.

**ASC OP Membership**

| PrimaryAlternate | Member Type | Company | Last | First | Interest | Original |
|---|---|---|---|---|---|---|
| Primary | Member | APOMA | Czajkowski | Walter | Producer | |
| Primary | Member | Brookhaven National Lab. | Takacs | Peter | General Interest | |
| Primary | Member | Consultant | Williamson | Ray | General Interest | |
| Primary | Member | Corning Tropel | VanKerkhove | Steven | Producer | |
| Alternate | Member | Davidson Optronics, Inc. | Bailey | Sam | User-industrial | Producer |
| Primary | Member | Davidson Optronics, Inc. | Gaugh | Charles | User-industrial | Producer |
| Primary | Member | Eastman Kodak Company (Retired) | Royall | William | Producer | |
| Primary | Member | Gage-Line Technology, Inc | Dombrowski | Frank | Producer | |
| Primary | Member | Harold Johnson Optical Lab | Johnson | Hal | Producer | |
| Primary | Member | IEEE/LEOS (NIST) | Dowell | Marla | General Interest | |
| Primary | Member | JDSU | Boultbee | Gordon | Producer | |
| Alternate | Member | JDSU | Catching | Benjamin | Producer | |
| Primary | Member | Lockheed Martin Space Systems Company | Morrill | Michael | User-industrial | |
| Primary | Member | National Institute of Standards and Technology | Germer | Thomas | General Interest | |
| Primary | Member | Northrop Grumman | Hamilton | John | User-industrial | Producer |
| Primary | Member | Olympus America, Inc. | Knaur | John | Producer | |
| Alternate | Member | Photon, Inc. | Fleischer | John | Producer | |
| Primary | Member | Photon, Inc. | Guttman | Jeffrey | Producer | |
| Primary | Member | Research Electro-Optics, Inc. | Turner | Trey | Producer | |
| Primary | Member | Retired | Hartmann | Rudolf | General Interest | |
| Primary | Member | School of Materials Science & Engineering | Richardson | Kathleen | General Interest | |
| Primary | Member | SPIE (Endelman Enterprises) | Endelman | Lincoln | General Interest | |
| Primary | Member | Xyratex | Brunfeld | Andrei | User-industrial | Producer |
| Alternate | Member | Xyratex | Clark | Bryan | User-industrial | Producer |
| Primary | Member | Zygo Corporation | Aikens | David | User-industrial | Producer |
| Alternate | Member | Zygo Corporation | Smythe | Robert | User-industrial | Producer |
| Primary | Observer | Argonne National Laboratory | Assoufid | Lahsen | General Interest | |
| Primary | Observer | Asml Optics LLC | Bajuk | Dan | General Interest | |
| Primary | Observer | Brysen Optical Corporation | Bronstrop | Daniel | Producer | |
| Primary | Observer | Cen. for Opt. Mat. Sci. and Eng. Tech. | Ballato | John | General Interest | |
| Primary | Observer | College of Optics & Photonics: CREOL & FPCE | Harvey | James | General Interest | |
| Primary | Observer | College of Optics and Photonics | Van Stryland | Eric | General Interest | |
| Primary | Observer | IEEE LEOS | Linke | Rich | General Interest | |
| Primary | Observer | Lawrence Livermore National Laboratory | McBurney | Michael | User-industrial | |
| Alternate | Observer | QED Technologies | Tricard | | General Interest | |
| Alternate | Observer | SPIE | Scotti | Ron | General Interest | |
| Primary | Observer | Triptar Lens Co., Inc. | Krisiloff | Alan | Producer | Use-industrial |
| Primary | Observer | University of Central Florida | Pearson | James | General Interest | |
| Alternate | Observer | Zygo Corporation | Evans | Chris | Producer | |

| | |
|---|---|
| | 0 |
| Producer | 9 |
| User-industrial | 5 |
| General Interest | 7 |

**Other Business**

**Raw Optical Glass:** G. Boultbee said that ISO/TC 172/SC 3 is working on an update to ISO 12123, bulk glass. He agreed to be involved even though he does not consider himself an expert in the area. He got input from M. Dowell; both his and her comments were directed at converting the document to standard English. He submitted the comments through normal channels. He then read the minutes of OP's previous meeting where concern was voiced that OP3.001 was not been widely accepted. One of the comments at that meeting was that OP changed the parameters from what the glass manufacturers wanted. So he started comparing OP3.001 and the draft of ISO 12123; Schott is the project leader of that standard. G. Boultbee did not find much difference between the two standards with the exception of grade numbers. ISO does not have grade numbers, which he thought to be odd since ISO likes that kind of nomenclature. He distributed copies of tables from ISO 12123 to the committee and asked if grade numbers out of OP3.001 should be proposed for ISO 12123 so that our national standard and the ISO standard would be more in sync. He noted that the ISO standard has a table of refractive index tolerance limits for all glasses. The US standard has two columns of tolerance limits: the second for indices greater than 1.83. He asked if anyone knew why OP made that change. D. Aikens said he vaguely remember something about it being

more difficult to manufacture those high index glasses so that the tolerance was larger based on a percentage of the index value. M. Dowell said that there are few glasses in that region of the index space. D. Aikens said that this should be something that the glass manufacturers would be interested in, and since there are no glass manufacturers in the US, it should not be an issue for us. G. Boultbee said that he would put in the suggestion, and if the others are opposed to it, then he would not push it. W. Czajkowski said that he remembered that OP3.001 reversed the order of the of grades because it was not possible to introduce grades below 0 as quality improved. However, such a reversal could cause great confusion in industry.

G. Boultbee said that if the committee wants him to withdraw his previous comments in favor of including this data, then the decision has to be made within a week. He said that he will check Schott's website to determine if the US proposal is at odds with industry practice before sending in his revised comments.

**Round-Robin Scratch and Dig Test**

D. Aikens said that some time ago OP had proposed a scratch-and-dig round-robin evaluation among as many companies as were willing to participate to see how a set of prepared scratches would be evaluated. This is a different type of test than what Northrop Grumman did. C. Gaugh said that his company is still very much interested in participating in this project. He had some manufacturability issues that delayed the program by one year. Davidson is now ready to proceed. Some organization must become the owner of these prepared samples. OEOSC could be that organization to purchase the samples and be responsible for them while the round robin occurred. M. Dowell said that there had been talk of NIST being the responsible agency, but it would not be her division, rather the Precision Measurements Division. She said that NIST had the design for round robins, but the problem is to convince another division to take on the project. It would be good to have NIST involved to reevaluate the samples as they move from company to company to make sure that they had not been damaged.

C. Gaugh said that as soon as the round-robin rules were in place, Davidson could provide the prepared samples. Each company would evaluate the samples using their own company procedures and report the results along with a description of the procedures used. M. Dowell said that they were doing similar tests with the semiconductor industry, but the participants did not want to divulge their procedures because they considered them to be proprietary. It took about two years for eight companies to complete the task. D. Aikens said that he could predict that the results of this test would be all over the map, and therefore, it would not be worth doing.

W. Czajkowski moved that the round-robin test be abandoned. B. Netherton seconded the motion. The motion carried with G. Boultbee abstaining.

**Time and Place for Next OP Meeting**

M. Dowell moved that the OP meeting be held in San Jose, CA during Photonics West on January 21, 2008 at 8:30 a.m. W. Czajkowski seconded the motion, which carried.

**Adjourn**

Since there was no further business to come before the committee, R. Williamson moved that the meeting be adjourned. B. Netherton seconded the motion. The meeting was adjourned at 5:03 p.m.