



MINUTES OF THE 64th ANNUAL CNC/CIE MEETING

2019-October-31

The 64th annual meeting of the Canadian National Committee of the Commission Internationale de l'Éclairage (CNC/CIE) was held on Thursday, October 31, 2019 at the National Research Council of Canada, 100 Sussex Drive, Ottawa, Ontario, Board Room, 1st floor.

Note: the following acronyms may be used in this report:

APR	Annual Progress Report
CIE	Commission Internationale de l'Éclairage
CIE-BA	CIE Board of Administration
CIE-CB	CIE Central Bureau
CIE-DD	CIE Division Director
CIE-USNC	US National Committee
CISET	NRC Advisory Committee on International Science, Engineering and Technology
CNC/CIE	Canadian National Committee of the CIE
CNC-BA	Canadian National Committee Board of Administration
CORM	Council for Optical Radiation Measurement
CoP	CNC/CIE Code of Procedure
CIE/USA	US National Committee of the CIE
ICSU	International Council for Science
IESNA	Illuminating Engineering Society of North America
ISO	International Organization for Standardization
IRO	International Relations Office of the NRC
JTC	Joint CIE Technical Committee
M/AM	Members and Advisory Members of the CNC/CIE
MC	Mirror Committee
NC	CIE National Committee
NRC	National Research Council of Canada
NRC-IRO	NRC Government and International Relations office
NRC-MSS	NRC Measurement Science and Standards portfolio
NRC-CONST	NRC Construction portfolio
NRCan	Natural Resources Canada
SCC	Standards Council of Canada
TC	CIE Technical Committee



1. Reports from Division Members:

The Division Members' reports were presented as a plenary session with the Canadian and US committees together. The hyperlinks on the Division names below lead to the slide presentations posted on the CNC/CIE website. The CNC members' official reports are included in the combined meeting minutes and Division Member's reports document that will be available to members once the meeting minutes are approved.

1.1 [Division 1 Vision and Colour:](#)

J. Hovis began his presentation on Division 1 activities by reporting that Ellen Carter is no longer the Associate Director of Division 1. He then stated that the major Division 1 publications for this year (since the last AGM) were *Part 1: CIE Standard Colorimetric Observer (ISO/CIE 11664-1:2019 Colorimetry)*, *Part 3: CIE Tristimulus Values (ISO/CIE 11664-3:2019 Colorimetry)*, *Part 4 CIE 1976 L*a*b Colour Space (ISO/CIE 11664-4:2019 Colorimetry)*, *Discomfort Caused by Glare From Luminaires with a Non-Uniform Source Luminance (CIE 232:2019)*, *Validity of Formulae for Predicting Small Colour Differences (CIE 230:2019)*, *CIE System for Metrology of Optical Radiation for IPRGC-Influenced Responses to Light and the 4th Edition of Colorimetry (CIE S 026/E:2018)*.

There were 2 new technical committees both of them being joint ones; (1) JTC-16 (D1/D8) Validity of chromatic adaptation and (2) JTC-17 (D1/D2/D8) Gloss measurement and gloss perception: A framework for the definition and standardization of visual cues to gloss. He then presented an overview of the various technical committees, highlighting their activities during the year and commenting on any publications, changes of chairs and activities extensions for each technical committee. Then an overview of the joint-technical committees was provided, highlighting any chair changes, document publications/reviews and recommendations made by the committees. He also provided an overview of reporterships and found that there are no American or Canadian members for the Division 1 reporterships. The published reports, activities and any closures of the reporterships was described in detail by J. Hovis.

J. Hovis concluded the presentation by going over the future meetings for Division 1, highlighting the 5th CIE Symposium on Colour and Visual appearance held in Hong Kong during the week of April 20-25 2020. Division 1 will meet in 2021 at the CIE Mid-Term meeting in Penang Malaysia during the week of April 19-28 2021 and in 2023 at the 30th CIE Session in Ljubljana, Slovenia during the week of September 15-23 2023.

1.2 [Division 2 Physical Measurement of Light and Radiation:](#)

J. Zwinkels began her presentation of Division 2 activity by going over recent Division 2 membership changes, the major one being the appointment of a new director, Tony Bergen from Australia. J. Zwinkels then went over the most recent Division 2 meeting held in Washington DC during the month of June, explaining that she had been unable to attend and Luke Sandilands attended in her place for Canada.

There were 15 technical committees that met at the meeting as well as one reportership. Some highlights of the Washington meeting included 4 new technical committees and 1 new JTC proposal, 4 new reportership proposals and one new liaison proposal. These 4 new TCs include (1) Measurement of Haze with Hseueh-Ling Yu as proposed chair, (2) Adaptive and Modulated Lighting with Jianping Rosa Wang as proposed chair, (3) Revision of S010 (ISO 23539:2005)



Photometry the CIE system of physical photometry with Anders Thorseth as proposed chair and J. Zwinkels submitting membership request for this TC and (4) Unified Metrology Systems for Light Pollution with Constantinos Bouroussis as proposed chair. The new JTC is on Terms and Definitions for Horticulture Lighting and came out of discussion in Division 6 with Paul Dekker as proposed Division 2 chair. J Zwinkels then went over the 4 new Reporterships proposed after the meeting; (1) Characterization and measurement of horticulture lighting products with proposed reporter Qian Li (DR 2-83), (2) CIE D2 strategy on spectrophotometry with proposed reporter Joanne Zwinkels (DR 2-84), (3) Quality indices for light dosimeters including visual and non-visual effects with proposed reporter Florian Stuker (DR 2-85) and (4) Definitions for bidirectional scattering surface reflectance distribution function (BSSRDF) with proposed reporter Alejandro Ferrero (DR 2-86). J. Zwinkels said that there is a call for experts for the new Division 2 TC 2-92 for the International standard format for the electronic transfer of luminaire optical data with chair Ian Ashdown. This new TC will provide a data exchange format supporting most lighting applications including light changing and horticulture.

J. Zwinkels then talked about dissolutions and changes to TCs; 4 TCs were dissolved including TC-271, TC 269 and 8 reporterships that were dissolved after publication of technical report. J. Zwinkels then talked about Division 2 publications including reports and recent technical notes; CIE-235 from TC-250, CIE-233 from TC-251, CIE-231 from TC-269, CIE-229 from TC-249 and CIE-198-SP2 from TC-272. International and draft international standards published during this year were also talked about; CIE-DIS-25-SP1 from TC-83, CIE-S026 from JTC-9 and a CIE position statement on blue-light hazard was issued in April 2019. Canadian participation was discussed with members on 8 TCs and JTCs, 1 reportership and 1 liaison.

Finally future meetings were discussed; the 5th CIE Symposium on Colour and Visual appearance held in Hong Kong during the week of April 20-25 2020 and the Midterm meeting in Penang Malaysia during the week of April 19-28 2021 were highlighted.

1.3 Division 3 Interior Environment and Lighting Design:

J.A. Veitch began her presentation of Division 3 activities by highlighting leadership changes, which included a new Division Director and a new Secretary. A need to recruit a new Division 3 Editor was identified and J.A. Veitch asked those in attendance to get in touch with anybody from a CIE country who might be interested in taking on that responsibility. J.A. Veitch then talked about how at the most recent meeting in Washington DC they took the opportunity to recognize the contributions of Division 3 members who had recently passed away.

J.A. Veitch then talked about the 4 Division 3 publications over the last year; (1) CIE 232:2019 Discomfort Caused by Glare from Luminaires with a Non-Uniform Source Luminance (JTC-7), (2) CIE S 026/E:2018 CIE System for Metrology of Optical Radiation for ipRGC-influenced Responses to Light (JTC-9), (3) ISO/CIE TS 22012:2019(E) Light and Lighting – Maintenance Factor Determination – Way of Working (JTC 11) and (4) ISO/CIE 20086:2019(E) Light and Lighting – Energy Performance of Lighting in Buildings (JTC 6). Other accomplishments included contributing to the CIE research strategy and being active on various task groups including the joint advisory group on ISO-TC-274. J.A. Veitch also talked about the closure of TCs and reporterships that published reports this year including JTC-7, JTC-9, JTC-11, R 3-29 and R 3-31.

Canadian/American Division 3 activity included the JTC 4 meeting in Washington (need for new leadership and refinement of scope), JTC 14 Integrative Lighting with their next meeting on Nov.



4, 2019, and JTC 15 Lighting of Indoor Workplaces. J.A. then mentioned some reporterships she was working on and a research forum on Matters relating to temporal light modulation.

J.A. Veitch highlighted Canadians who are active in D3-related activities through the Canadian Mirror committee to ISO TC 274; T. Lau is active in ISO/TC 274-JWG 1, ISO/TC 274 JWG 2 and ISO/TC 163 while C. Sampson serves as a liaison officer from ISO TC 274 to ISO TC 205/WG 7. J.A. Veitch also mentioned that Division 3 members are tasked with providing input to a survey that closes at the end of that day.

J.A. Veitch concluded the presentation by talking about future meetings; (1) 2020 in June on WebEx, (2) 2021 April 19-28 Midterm meeting in Penang Malaysia, (3) 2022 WebEx meeting and (3) 2023 September 15-23 CIE 30th Session in Ljubljana Slovenia.

1.4 Division 4 Transportation and Exterior Applications:

J.A. Veitch presented the report for Division 4 activities on behalf of C. Suvagau. J.A. Veitch began the presentation by explaining that Division 4 was formed by combining the old Division 4 and Division 5 and its scope is to study and prepare guides for the design of exterior lighting and light signaling. J.A. Veitch then went over the leadership organization of Division 4; highlighting the Division Director, Secretary and Editor while also highlighting the 3 subdivisions and their respective associate directors.

The last Division 4 meeting was held in Washington DC, from June 19 to 21, 2019 in conjunction with the Quadrennial Session of the CIE with a large number of TC and JTC meetings being held as well. JTC 13 Depreciation and maintenance of lighting systems is a joint Division 3/4 committee and JTC X is now numbered JTC 8 Lighting education. J.A. Veitch then went over the new technical committees and their chairs as well as new Reporterships.

J.A. Veitch then provided a summary of existing/current publications in Division 4 noting that there are 10 publications marked as “current”, 13 publications that are currently handled, 5 publications prepared/suggested for revision, 5 publications proposed for archival/withdrawal, 5 publications with pending reviews and 8 publications that will expire in 2018.

For future meetings, J.A. Veitch stated that their next meeting is in May 2020 in conjunction with the CIE Obtrusive Light Workshop at the Technical University of Ostrava, Czech Republic and that they have an additional meeting in April 2021 in conjunction with the CIE Midterm Meeting in Penang, Malaysia.

J.A. Veitch provided an overview of the status of Division 4 TCs and Reporterships stating that Division 4 incorporates 15 TCs, 10 Reporterships, participates in 2 JTCs and has 9 Liaison Officers with other organizations. She also went over the publication status of documents produced by each of the TCs and JTCs. J.A. Veitch briefly talked about the dissolution and changes to TCs and Reporterships highlighting 5 that have dissolved/changed. J.A. Veitch concluded the presentation by requesting that any questions about this presentation should be directed to C. Suvagau.

1.5 Division 6 Photobiology and Photochemistry:

S. Qutob began his presentation of Division 6 activities by stating the scope and activity of Division 6 which is to study and evaluate optical radiation and biological and photochemical systems. He then went the leadership structure of Division 6, highlighting the change in Division Director has from John O’Hagan to Luc Schlangen.



S. Qutob then went over the current TCs; (1) JTC-4 Visual, Health, and Environmental Benefits of Windows in Buildings during Daylight Hours (chaired by David Sliney), (2) JJTC-5 Joint Technical Committee to Revise CIE S009/IEC 62471 (chaired by John O'Hagan), (3) JTC-08 International Lighting Vocabulary (chaired by Peter Zwick) and (4) JTC-14 Integrative Lighting CIE/ISO (chaired by John O'Hagan). JTC-4 is being led by Division 3 Interior Environment and Lighting Design but is currently without a co-chair. S. Qutob said that JTC-4 members were going to meet the next day to discuss ways to move forward, as the JTC had been delayed for various reasons, but still felt urgently needed. JTC-4 was going to produce a report on non-visual effects of lighting with more reference to biology and quantitative guidance.

S. Qutob said that JTC-5 relates to Photobiological Safety of Lamps and Lamp Systems in IEC. He noted that the IEC participation was not registered with IEC, so the CIE is going to complete and present it to the IEC for a jointly-badged standard. He also noted that with JTC-5 there is a slight delay from Division 2 Physical Measurement. It was suggested that some references to technical measurements should be removed. There was acknowledgement that most general purpose LEDs are considered safe. In April the CIE released a position statement on LEDs and the bluelight hazard.

S. Qutob then went over JTC-08 activity with John O'Hagan explaining that the process was nearing completion to have a revised International Lighting Vocabulary (ILV). He further stated that the CIE Central Bureau's Peter Zwick has lead this work, coordinating with the IEC's technical editor and ISO. The new standard is hoped to be published soon (next year) and will have a number of revisions and new terms.

S Qutob then went over JTC-14 activity mentioning that an analysis of published scientific studies and review experience from published application studies on non-visual effects of light on humans with the aim to provide guidance for safe and beneficial use in lighting applications beyond illumination for vision. JTC-14 is a joint TC with Division 4 Transportation and Exterior Applications that has produced a mature document which is projected to be completed within 6-36 months. S. Qutob then highlighted progress reports from the Reporterships and Liaison Officers highlighting any reports that were published.

S. Qutob briefly talked about other activities related to Division 6 highlighting two Division publications: (1) ISO/CIE 17166:2019(E) Erythema reference action spectrum and standard erythema dose and (2) CIE S 026/E: 2018 CIE System for Metrology of Optical Radiation for ipRGC-Influenced Responses to Light publications. S. Qutob then went over the future division research strategy outlining 6 plans/ideas for a CIE D6 research agenda before concluding his presentation by going over future Division 6 meetings that were upcoming; (1) Next Division meeting via WebEx from June 27-30, 2020 and (2) CIE Midterm meeting in April 22, 2021 Penang Malaysia.

1.6 Division 8 Image Technology:

Po-Chieh Hung presented the report for Division 8 Image Technology. He began the presentation by talking about the leadership structure of Division 8 highlighting the Division Director, Associate Director and Secretary. He also talked about the most recent Division 8 meeting which was held in Washington DC, as well as a "mini" Division 8 meeting held in Paris where a small number of Division 8 members participated.

He then provided a summary of the TCs that are currently active in Division 8; (1) TC-8-30, (2) TC-8-14, (3) TC-8-16 and (4) TC-8-17. He also mentioned that there are 4 JTCs. It was mentioned that



there are 4 Reporterships; (1) R-14 Office Lighting for Imaging, (2) Survey on Stereoscopic Imaging concerned with evaluating 3D images, (3) Adjustment Platform and (4) Literature Survey on Uniform Colour Space for Imaging Application for Encoding White Colour Gamut and High Dynamic Range Images. Division 8 has a single Research Forum that is not too active.

Po-Chieh Hung then went over TC and Reportership updates that took place over the year. TC-8-16 was highlighted as being the most updated TC as they have had meetings on WebEx and in Paris and have produced a writing draft of a document. TC-8-17 was identified as being in good shape with their meeting at the end of July in the UK and have started writing a writing draft for a technical report. JTC-8 was also mentioned as being in good shape with a writing draft scheduled to be finished either this year or at the beginning of next year. There was a problematic Reportership that finished doing measurements but delayed publication of their report. There was a closure of a Reportership with the intention of forming a new TC and a questionnaire was circulated to potential participants with 10 responses. The responses to the questionnaire indicated that the scope of this TC should be narrowed and a discussion about the responses followed.

The presentation concluded with a discussion of future meetings, the next formal Division meeting will be held in Hong Kong in conjunction with the Symposium on Colour and Visual Appearance in April 20-25 2020 and a smaller meeting in conjunction with the Colour and Image Conference.

At this point the plenary session ended and the two NCs met separately for business meetings in the afternoon.

2. Call-to-Order and Approval of Agenda:

The 64th annual meeting of the CNC/CIE was called to order at 13:32 EST on Thursday, October 31, 2019 by V. Venkataramanan, President.

Nine members of the Board of Administration were in attendance in person or by teleconferencing, which constituted a quorum according to the CoP. The list of all attendees is attached as [Appendix B](#). Teleconferencing using the Government of Canada Webex system was arranged and hosted by J.A. Veitch.

3. Minutes of the 63rd Annual CNC/CIE meeting:

The minutes of the 63rd Annual Meeting were not commented on. The minutes of the 63rd Annual Meeting will be distributed electronically to members for approval.

3.1 Action Items:

Action items (AI-1 to AI-7) from the 63rd annual meeting minutes (see Appendix C of the Minutes of the 63rd Annual Meeting) were discussed.

- *Action items AI-1 and AI-2 were not yet done and are to be kept as action items for this meeting.*
- *Action item AI-3 is done as the CIE-CB has been informed of new CNC/CIE Division 4 country member C. Suvagau.*
- *Action item AI-4 and AI-5 are done.*



- *Action item AI-6 was not done, S.M. McFadden posted press releases and calls for experts on the webpage but this was never expanded so that people who do not access the website can access this information.*
- *Action item AI-7 is done.*

3.2 Matters Arising:

In the 63rd annual meeting minutes under section 2.1: Action items, it was written that ‘the procedure to update signatures on CNC/CIE cheques would require the signature of the previous Secretariat, Bill Neil.’ S.M. McFadden noted that this was incorrect and that the previous Secretariat Bill Neil’s signature would not be required to update signatures on CNC/CIE cheques. A. Ghaemi noted this mistake and agreed to make the necessary correction in last year’s Annual Meeting minutes before circulating it to members for approval.

4. President’s Report:

V. Venkataramanan presented his report with discussion. This report is attached as [Appendix D](#). He noted that J.A. Veitch and L. Whitehead began their terms as Vice-President Technical and Vice-President without portfolio, respectively, and that this was the first time 2 Vice Presidents from Canada were serving at once. V. Venkataramanan also reported that member Martyn Timmings will receive a certificate recognizing achievement for his Division 5 work. J. Hovis then asked those in attendance if the minutes and general assembly are posted anywhere, and J.A. Veitch stated that they were posted but that the average member cannot access it and that the general member assembly meeting minutes will be posted to the member’s only area of the website.

V. Venkataramanan then talked about the APR which has changed considerably compared to last year. V. Venkataramanan then noted that this will be his last year as President of the CNC/CIE and reflected on the challenges and valuable learning experiences he had during his 8 years as President. He then thanked everyone in attendance for their efforts and said that he would continue to serve the CNC/CIE as a member, and those in attendance responded with applause.

5. Vice-President’s Report:

J.A. Veitch presented her report. This report is attached as [Appendix E](#). J.A. Veitch began the discussion by mentioning that she worked with A. Ghaemi on the administrative side of the Secretariat duties and assisted in S.M. McFadden’s work as Treasurer. J.A. Veitch said that one of her bigger tasks this year was serving as Chair of the Mirror Committee to ISO-TC-274. She also mentioned that she contributed to this year’s APR. J.A. Veitch said that she assisted in the organization of the technical meetings that took place during the CORM-CIE 2019 Annual Technical Conference but that the majority of the organization was done by J. Zwinkels. Everyone in attendance at the meeting thanked J. Zwinkels for her work in organizing the meetings that were held this week. There were no questions for J.A. Veitch about her Vice-President’s report.



6. Secretary's Report

J.A. Veitch presented a report on behalf of herself and A. Ghaemi together. The report is attached as [Appendix F](#). J.A. Veitch noted that the Secretariat duties were a team effort between herself, A. Ghaemi, and S.M. McFadden.

She noted that this year there were more letter ballots done, and that several of these ballots were CIE initiated with regards to standards being voted on by National Committees. J.A. Veitch mentioned that there seemed to be more participation from CNC/CIE members in ballots, and there is one ballot currently open until the end of today on Test Method for OLED luminaires and OLED light sources. J.A. Veitch then stated that A. Ghaemi handled the internal CNC ballots and that he was also involved on a ballot for nominations to the new CIE Board of Administration. J.A. Veitch thanked those who voted for her.

J.A. Veitch then mentioned that the Secretariat maintains 4 mailing lists; one list for CNC/CIE members, one list for affiliates, one list for the Board of Administration and a list that contains all of these contacts (all). J.A. Veitch noted that there is back and forth communication between the Secretariat and the Membership subcommittee to maintain an email list that is up to date. V. Venkataramanan stated that he will see if he can recruit new members, he has a list of potential members from Laval, and he will collect this list and submit it to M. Mossman. There were no questions or comments about the Secretariat report.

7. Financial Report:

S.M. McFadden presented her report with discussion. The report is attached as [Appendix G](#). S.M. McFadden stated that the CNC/CIE earned \$1865 from publication sales during the year. J.A. Veitch then asked S.M. McFadden about the CIE credit notes, and asked if the \$1800 figure in her report was money owed to the CNC/CIE for past sales or for new sales this year. S.M. McFadden responded stating that the \$1800 in her report is for new publication sales that took place this year.

V. Venkataramanan then asked S.M. McFadden about there being no expenses relating to hosting the website, and S.M. McFadden responded that the CNC/CIE has not yet received the invoice for hosting the website from the webmaster, and that this expense will be about \$100 .

S. Coyle then asked S.M. McFadden if the CNC/CIE has any banking fees, and S.M. McFadden replied by saying that the bank typically would charge the CNC/CIE \$1.95 every month, but because the CNC/CIE maintains a balance that exceeds \$5000, this waives the monthly banking fee.

S.M. McFadden then talked about expenses related to hosting the CORM-CIE 2019 Annual Technical Conference and stated that CORM provided for the expenses and that once Eventbrite (website collecting fees for the event) releases the ticket sales for hosting the event, this disbursement of funds will be coordinated with CORM. S.M. McFadden also noted that approximately \$9000 dollars of profit was anticipated from the CORM meeting and half of that would be retained by the CNC/CIE. S.M. McFadden then went into more detail about how Eventbrite collects and releases ticket sales stating that Eventbrite hold the ticket sales until the event happens and that CORM advanced the money needed to cover the event.



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S.M. McFadden noted that next year's Treasurer Report will have a significantly higher amount of expenses. V. Venkataramanan then noted that in the ISO-TC-274 Plenary Meeting held in May 2019, Eventbrite held on to the ticket sales unless specifically requested to release it. S.M. McFadden said that the fees for hosting the event on Eventbrite was close to \$3000. S.M. McFadden then concluded her report and there were no questions or comments about the Treasurer's report.

8. NRC Annual Performance Review of the CNC/CIE:

V. Venkataramanan began the discussion of the NRC Annual Performance Review (APR) by stating that this year's version was different than the ones done previously. V. Venkataramanan explained that an assigned employee from the NRC, Priyanka Goel, was responsible for carrying out the APR on behalf of Nicole Arbour, who is responsible for the international affiliations program. P. Goel submitted a questionnaire to V. Venkataramanan that he completed with assistance from J.A. Veitch. Ms Goel also had an interview with V. Venkataramanan where she asked questions about the CNC/CIE; including questions about some of its past activities, the history of the committees on the CNC/CIE, and activities that the CNC/CIE has participated in during the last 40 years. V. Venkataramanan also said that there were questions about how the CNC/CIE collects dues, how they are organized, and how participation in international events benefits Canada. V. Venkataramanan then said that Priyanka Goel used this information to prepare the APR report, and that this report was being put together for review before a committee.

J.A. Veitch then talked about how the NRC pays for CNC/CIE membership dues, and as a result must undergo an APR to demonstrate how membership in the CNC provides value to Canada. J.A. Veitch then mentioned that Nicole Arbour is trying to build the case to increase the budget for international affiliations, which has not changed for more than 20 years despite the fact that international affiliation dues have increased during that same time. A. Gaertner then asked J.A. Veitch how much the dues for CIE membership are, and J.A. Veitch said that is approximately 10,000 Euros/year. J.A. Veitch closed the discussion by mentioning that the CIE dues are higher than for other international affiliations, but that the CIE does useful activities that justify the higher cost.

9. Membership and Election Subcommittees

9.1 Membership Subcommittee

M. Mossman presented her report with discussion. This report is attached in [Appendix H](#). M. Mossman stated that the CNC/CIE Board of Administration consists of 14 members, there are 40 CNC/CIE Members (including the 14 Board of Administration members) and 62 CNC/CIE Affiliates. M. Mossman stated that she maintained the membership list throughout the year and that 2 names have been removed from the membership list by request/retirement. M. Mossman stated that recruitment is an ongoing process and that getting people of interest to register as affiliates is not difficult to do as there are no fees for membership.

J.A. Veitch then noted that sending email to the ALL members list causes some emails to bounce back and that this is a consistent problem with Outlook. J.A. Veitch said that there needs to be a



feedback loop for M. Mossman to know which email addresses are causing email bounce back. There were no questions or comments for the Membership and Elections report.

9.2 Election Subcommittee

The nominations for 2019 are as follows:

Executive positions:

- CNC President: Jeff Hovis willing to be nominated
- CNC Vice President: Jennifer Veitch willing to renew
- CNC Treasurer: Shirley Coyle willing to be nominated
- CNC Secretary: Amin Rasoulof willing to be nominated

BA Member-at-Large:

- Andre Laperriere willing to renew
- Venkat Venkataramanan willing to be nominated

Division members:

- Division 2: Joanne Zwinkels willing to renew
- Division 3: Jennifer Veitch willing to renew
- Division 4: Crisitau Suvagau willing to extend position until 2023
- Division 6: Sami Qutob willing to renew

Members:

- Chrisnel Blot willing to renew
- Kurt Ising willing to renew
- Thomy Nilsson willing to renew
- Sharon McFadden willing to be nominated
- Joe Bastianpillai willing to be nominated

It was agreed by all members in attendance that a letter ballot circulated through email would be done for voting on member renewals and new appointments. J.A. Veitch mentioned that there is a need to maintain geographical balance for the Board of Administration as J. Love's resignation means losing a representative from Alberta. J.A. Veitch stated that there might be the reduction of a single member of the Board of Administration after nominations are voted on. A need to look at the list of members for geographical balance and the need to have non-uniform term durations for members were identified as two important considerations. There were no questions or



comments from those in attendance about Membership and Elections Subcommittee Membership.

10. Mirror Committee to ISO/TC 274

J.A. Veitch stated that the Mirror committee was merged and is now functioning as a subcommittee of the CNC/CIE. J.A. Veitch explained that there were action items this year concerned with filling out ballots. Other ongoing action items were concerned with the desire to maintain a necessary balance on the subcommittee and to seek financial support for the subcommittee.

10.1 Review 2018 Action Items:

Action items from the 6th annual ISO-TC-274 meeting were discussed and deemed completed.

10.2 ISO TC 274 Business:

10.2.1 Outstanding ballots/comments needing discussion

J.A. Veitch stated that there are 3 outstanding ballots that need to be responded to by those in the Mirror committee; 2 of these ballots are trivial and 1 is a substantial review on a document on commissioning. J.A. Veitch reminded Mirror committee members to access the SCC website and respond to the ballot. J.A. Veitch said that the 2 open items that have a sooner ending date are (1) concerning whether there should be a workshop at the next plenary meeting of ISO-TC-274 with participation in the meeting in Oxford and (2) appointing a person from TC-274 to be a liaison between TC-205 with the goal of better coordination of things related to light and lighting. This is important because the potential for duplication is high and if TC-205 does not have the right experts in their activities then there exists the potential for good work to be overlooked. J.A. Veitch reminded those who were members of the Mirror committee to log on to the SCC SiteScape site and submit their comments.

J.A. Veitch then explained that the Division members are automatically members of the Mirror committee. There is an application process through the SCC that needs to be completed and then J.A. Veitch approves the application. J.A. Veitch stated that the CNC/CIE members of the Mirror committee are Division members, S. Coyle, I. Ashdown, P. Prior, C. Greene, C. Sampson, T. Lau, V. Venkataramanan, J.A. Veitch and S.M. McFadden. J.A. Veitch then talked about the evaluation of the Mirror committee by SCC and highlighted the importance of voting on every ballot and making sure that every ballot is decided on by the consensus of the committee. It is important for members of the committee to log on to the website and indicate something for the ballot, even if it is to abstain.

10.3 Reports on 2019 Activities

J.A. Veitch stated that there were 13 ballots for MC-ISO-TC274 since the last meeting which included reviews of documents and voting on approval of joint ISO-CIE standards led by CIE. J.A. Veitch further noted that sometimes the ISO committees ask for an opinion on a CIE document that is undergoing review and even in these circumstances it is important to register an opinion,



even if it is to abstain from voting (rather than repeating the same comments in CIE and ISO) as it shows the SCC that we are a viable group.

10.3.1 Chair's Report

J.A. Veitch talked about the relationship between the SCC and the CNC/CIE and stated that a year ago the SCC changed the way it wanted to relate to organizations that host Mirror committees. In order for the CNC/CIE to become a Standards Administering Organization an application form had to be filled out and reviewed; and J.A. Veitch and V. Venkataramanan completed this form for SCC review. J.A. Veitch said that the SCC determined that the right information was not provided in 2 categories; (1) documenting how the CNC/CIE keeps its records of the mirror committee and (2) providing a mechanism for members to question the decision the MC-ISO-TC 274 makes.

J. Zwinkels asked J.A. Veitch if the SCC had provided any specific recommendations for what they were looking for in those 2 categories and J.A. Veitch stated that the common space to access CNC/CIE documents on the NRC server (DocZone) that was recently set up should satisfy the record keeping requirements of the SCC once it is populated with documents. J. Zwinkels then asked J.A. Veitch about the benefit provided to the CNC/CIE by having the SCC recognize it as a standards administering organization and J.A. Veitch replied that the benefit is that it allows the CNC/CIE to maintain control over the way ISO-TC-274 Mirror committee relates to Canada and allows for better coordination efforts between the 2 organizations and the avoidance of potential conflicts.

J.A. Veitch stated that there is a need to improve communication between the various groups, particularly the various ISO committees whose scope includes light and lighting-related topics.

10.3.2 ISO/TC 274 Chair's Advisory Group

.S.M. McFadden stated that she had missed the last CAG meeting but that there were no major things happening with this working group.

10.3.3 ISO/TC 274/JWG 1 (Energy Requirements for Lighting in Buildings)

J.A. Veitch also stated that T. Lau has proposed an ISO technical report document which would be a double badged CIE-ISO report:ISO/CIE AWI TR 3092 Light and lighting – Energy performance of lighting in buildings – Explanation and justification of ISO/CIE 20086. This user guide will facilitate the uptake of ISO/CIE 20086, making it more widely useful to its stakeholder community. Mr. Toby Lau is the leader of this project.

10.3.4 WG 2 (Commissioning)

J.A. Veitch stated that T. Lau is active in WG 2, she is active in JWG 4 and 5, and L. Whitehead returned to the meeting at 14:59PM. J.A. Veitch said that T. Lau is working on building better liaison with CSA and that they have been a financial supporter for the Mirror Committee. J.A. Veitch then said that JWG 1 is always looking for new members, consumers and public interest. The meeting was adjourned at 15:02EST.

10.3.5 JWG 4 (Integrative Lighting)

J.A. Veitch said that there was nothing new to report for JWG 4.



10.3.6 JWG 5 (Lighting of Workplaces)

J.A. Veitch said that there was nothing new to report for JWG 5.

10.3.7 Liaison Representatives

10.3.7.1 ISO/TC 163 to ISO/TC 274

J.A. Veitch stated that T. Lau attended the Plenary Meetings for ISO/TC 163 and ISO/TC 205. J.A. Veitch noted that one issue raised at those meetings was the need to avoid overlapping work items.

10.3.7.2 ISO/TC 274 to ISO/TC205/WG7

C. Sampson serves as a liaison representative between ISO/TC-274 and ISO-TC-205/WG 7, and also as the CIE liaison representative to ISO/TC 205/WG7. J.A. Veitch then stated that it would be wise to accept the conflict of interest in order to have the right experts participate in creating good documents. J.A. Veitch stated that in ISO/TC 205/WG7 there is currently the development of a document on day lighting that is being led by Nancy Clanton of the USA, and she is confident that a good document will result at the end of the day (even though it might have been preferable to develop this document within the CIE).

10.4 SCC Matters

J.A. Veitch stated that this year's annual report was neither short nor friendly and had to demonstrate scope of industry sector and wanted to draw from authorities. She further stated that this was a very detailed and complicated report and that this was larger to the Canadian economy and had been growing over the last 5 years. J. Hovis asked J.A. Veitch if it is in the construction industry, and J.A. Veitch replied that she believed it has to do with LEDs and chips.

10.4.1 MC Administration

There was nothing to report for MC Administration.

10.4.2 MC Accreditation & Financial Assistance

Our application for SCC accreditation for the MC-ISO-TC 274 was successful and we received financial assistance from SCC, part of which was matching funds in respect to contributions from BC Hydro and CSA.

10.4.3 MC Membership & Balance

J.A. Veitch remarked that membership overlaps with the members of the CNC/CIE with a good balance. She further stated that achieving harmonization will cause CNC rules to take precedence over SCC rules for the Mirror Committees.

J. Zwinkels asked if there is still support received from NRCan, and J.A. Veitch replied that the MC-ISO-TC 274 receives financial support from BC Hydro and CSA and from SCC, with the hope to negotiate other sponsorship opportunities in the future. J.A. Veitch also stated that sponsorship money can be spent on sending a non-federal government employee to the Plenary Meeting, but it would not be possible (for example) to send herself or J. Zwinkels under SCC rules for funding. There were no further comments or questions from those in attendance about the MC Membership & Balance.



11. Ad hoc Subcommittees:

11.1 Website Subcommittee:

S.M. McFadden presented her report with discussion. The report is attached as Appendix H.

S.M. McFadden began the discussion by noting that the US leads the list of countries that access the site followed by Canada and Brazil. J. Zwinkels thinks that the new Division 2 editor, who is from Brazil, may be responsible for the unusually increased activity from Brazil. S.M. McFadden also noted that there were significant downloads from France and that this is due to the French press releases of events on the site.

S.M. McFadden stated that in the past year accounts were opened for all members and that those members who have not obtained their login credentials can ask her for them.

S.M. McFadden stated that the publication code for purchasing CIE documents at a 66.7% discount can be found in the member's only area of the site. J.A. Veitch noted that there is still a need to find a student to do the History of Lighting project for Canada and J. Hovis stated that he would keep an eye out for any candidates.

11.2 Events Subcommittee:

J. Zwinkels remarked on the amount of work done in organizing the meeting but felt like it was a success. V. Venkataramanan thanked everybody at the NRC team for hosting and organizing the meeting. J.A. Veitch thanked the members of J. Zwinkels' Photometry and Spectrophotometry team for their help in organizing the meeting.

12. Other Business

12.1 Correspondence

There was no other correspondence to report.

12.2 Date and Place for next year's meeting:

J.A. Veitch started the discussion by stating that she will leave the organizing/planning of next year's meeting with J. Hovis, expecting him to be confirmed as our new President. It was noted by those in attendance that it had been a long time since a meeting was held in Western Canada. J.A. Veitch asked J. Hovis about hosting the event at the University of Waterloo as it has a large student population and can partner with the IES. J. Hovis stated that it is difficult to find space to host meetings during the school year and that the best time to host a meeting would be during the fall reading week in the month of October. It was noted that further discussion about the date and place for next year's meetings would continue once membership elections concluded.

12.3 Any other business

J.A. Veitch started the discussion by stating that having the CNC/CIE as a standards administering organization with the SCC could require it to be a legally incorporated entity. At the present moment the CNC/CIE is an informal group that is associated with the NRC. J.A. Veitch further stated her concern with the fact that that because of the high amount of dues collected for the joint CORM-CIE meetings held this year, the annual CNC/CIE revenue collected this year is close to the \$39,000/year revenue limit



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for HST remittal. J.A. Veitch suggested that there is a need to consider incorporating the CNC/CIE as a non-profit group. This has its own associated costs but could provide benefits in terms of regularizing CNC/CIE activities.

in response to a question from A. Gaertner, J.A. Veitch further stated that she did not believe that legally incorporating the CNC/CIE as a non-profit group would cause any issues with NRC-IRO as they maintain partnerships with many different legal entities.

J. Hovis asked J.A. Veitch about the structures of other CIE countries and she stated that most other countries are either an arm of a national lighting body or are incorporated legal entities, with the CNC/CIE being the exception to this. The discussion ended with J.A. Veitch reminding everyone in attendance at the meeting to keep the possibility of incorporating the CNC/CIE as a non-profit group in mind.

13. Adjournment

The meeting was adjourned at 16:15pm EST.

Ali Ghaemi

Administrator, Canadian National Committee of the CIE

Email: CNC-CIE-Secretariat@nrc-cnrc.gc.ca



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- APPENDIX A: Agenda for the 64th CNC/CIE Annual Meeting
- APPENDIX B: Attendees to the 64th CNC/CIE Annual Meeting
- APPENDIX C: Action Items from the 64th CNC/CIE Annual Meeting
- APPENDIX D: President's Report
- APPENDIX E: Vice-President's Report
- APPENDIX F: Secretary's Report
- APPENDIX G: Treasurer's Report
- APPENDIX H: CNC/CIE Web Site Report
- APPENDIX I: CNC/CIE Membership Subcommittee Report

Division Member Reports



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APPENDIX A

CNC/CIE 64th Annual General Meeting Proposed Agenda

DATE: Thursday, Oct. 31, 2019

TIME: 08:30 – 12:00 EDT (Division Reports – Joint Session)

13:30 – 17:00 EDT (CNC/CIE Business)

LOCATION: National Research Council of Canada

100 Sussex Dr, Ottawa, Ontario K1A 0R6 Canada

Board Room, 1st floor

**Webex is available for remote participation during the afternoon session.
 Request details from jennifer.veitch@nrc-cnrc.gc.ca.**

RSVP: A. Ghaemi

Administrator, CNC/CIE

Tel: 613-993-6450

Email: CNC-CIE-Secretariat@nrc-cnrc.gc.ca

<http://www.cnc-cie.ca/>

Joint Session with CIE/USNC

08:30 – 12:00 EDT

Reports from Division Members –	Canada	US
Division 1: Vision and Colour	J. Hovis	E. Carter
Division 2: Physical Measurement of Light and Radiation	J.C. Zwinkels	Y. Zong
Division 3: Interior Environment and Lighting Design	J.A. Veitch	C. Bernecker
Division 4: Transportation and Exterior Applications	C. Suvagau	R. Gibbons
Division 6: Photobiology and Photochemistry	S. Qutob	G. Brainard
Division 8: Image Technology	T. Akhavan	M. Derhak



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CNC/CIE Business

13:30 – 17:00 EDT

Call to Order and Approval of Agenda	V. Venkataramanan
Minutes of the 63rd Annual CNC/CIE meeting	V. Venkataramanan
. Action items	
. Matters arising	
President's report	V. Venkataramanan
Vice-President's report	J.A. Veitch
Secretary's report	A. Ghaemi & J.A. Veitch
Financial Report	S.M. McFadden
NRC Annual Performance Review of the CNC/CIE	V. Venkataramanan
Membership and Elections	
. Membership and Elections Subcommittees	M. Mossman
. M & E Subcommittee Membership	V. Venkataramanan
. Mirror committee to ISO/TC 274	J.A. Veitch
1. Review 2018 action items	
2. ISO TC 274 Business	
.1. Outstanding ballots/comments needing discussion	
3. Reports on 2019 Activities	
.1. Chair's report	J.A. Veitch
.2. Chair Advisory Group	S. McFadden & T. Lau
.3. JWG 1 (Energy Requirements for Lighting in Buildings)	T. Lau
.4. WG 2 (Commissioning)	T. Lau
.5. JWG 4 (Integrative Lighting)	J.A. Veitch
.6. JWG 5 (Lighting of Workplaces)	J.A. Veitch
.7. Liaison Representatives	
7.1. ISO/TC 163 to ISO/TC 274	T. Lau



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- 7.2. ISO/TC 274 to ISO/TC205/WG7 C. Sampson
 - 4. SCC Matters J.A. Veitch
 - .1. MC Administration
 - .2. MC Accreditation & Financial Assistance
 - .3. MC Membership & Balance
 - . Ad hoc Subcommittees
 - 1. Website Subcommittee J. A. Veitch
 - 2. Events Subcommittee J. A. Veitch
 - . Other Business V. Venkataramanan
 - 1. Correspondence
 - 2. Date and Place for next year's meeting
 - 3. Any other business
 - . Adjournment V. Venkataramanan
-



APPENDIX B

CNC/CIE 64th Annual Meeting

Attendees

Name	CNC/CIE Affiliation	Other Affiliation
Venkat Venkataramanan	President	University of Toronto
Jennifer Veitch	Vice-President, Division 3 Rep.	NRC-Construction
Ali Ghaemi	Administrator	NRC-MSS
Amin Rasoulof	Member	NRC-MSS
Jeff Hovis	Member, Division 1 Rep.	University of Waterloo
Lorne Whitehead	Board of Administration	University of British Columbia
Michele Mossman	Board of Administration	University of British Columbia
Shirley Coyle	Member	Cree Lighting
Joanne Zwinkels	Board of Administration, Division 2 Rep.	NRC-MSS
Arnold Gaertner	Board of Administration	NRC-MSS
Jeremie Gerhardt	Observer	IRYStec
Cristian Suvagau*	Division 4 Rep.	B.C. Hydro
Conor Sampson*	Member	CS Design
Harold Murray*	Member	Independent Consultant
Sharon McFadden*	Treasurer, Division 1 Rep.	Retired

* attended via teleconference / Webex



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APPENDIX C

Action Items from the 64th Annual Meeting of the CNC/CIE

Action Item	Responsible	Action	Status
2019-AI-1	All	Recruit a bilingual candidate for the Website Subcommittee	OPEN
2019-AI-2	All	Recruit a Chair of Events Subcommittee to replace temporary Chair V. Venkataramanan	OPEN
2019-AI-3	J.A. Veitch and A. Ghaemi	Develop a system for disseminating a call for experts and press releases to relevant groups that are interested in the activity of the CNC-CIE	OPEN



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APPENDIX D

CNC/CIE President's Report

October 2019

Venkat Venkataramanan

vvenkat@imc.utoronto.ca

I am pleased to present this brief report on my activities this year as CNC President.

I attended the 29th General Assembly of CIE in Washington, DC. There were significant developments for the CNC. Jennifer Veitch started her term as the Vice President – Technical and Lorne Whitehead as a Vice President. Martyn K. Timmings was awarded a Certificate in appreciation for his distinguished and valuable service as the Canadian Member of Division 5. Copies of reports and the minutes of the GA are available through the CIE ColTool. I also attended the Division 2 discussions.

I attended various WebEX meetings of the General Assembly throughout the last year, representing Canada.

I completed the revised format Annual Performance Review. Thanks to Dr. Jennifer Veitch, VP for the assistance in the process.

I have been continuing my activities as a lighting researcher and educator at the University of Toronto. We have started a new research program in lighting for the ageing adults, with a specific focus on persons with Alzheimer's and dementia. We work closely with Age-Well Network Centre of Excellence.

I thank the collegial National Advisory Committee for smooth and efficient conduct of affairs and for their continued efforts in popularizing lighting and advancement of lighting research.

This is my final year as President of the CNC. I received valuable and timely assistance from all members of the CNC throughout my tenure and my sincere thanks to all. I have enjoyed this role and look forward to continuing to serve as a member of the CNC.



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APPENDIX E

CNC/CIE Vice-President's Report

October 2019

Jennifer A. Veitch, Ph.D.

j_a_veitch@jdarchitect.ca / jennifer.veitch@nrc-cnrc.gc.ca

In my capacity as Vice-President of the CNC, this year I undertook five tasks.

1. I continued to work with Ali Ghaemi on the administrative side of the CNC/CIE, and took the lead on responding to CIE NC ballots.

2. I assisted as needed to support the President and Treasurer in the ongoing work of CNC business.

3. I served as Chair of the Canadian mirror committee to ISO-TC 274. Details of this committee's work will be discussed during this meeting under item 10 when we discuss MC-ISO-TC 274 business.

4. I contributed to the preparation of input to the annual performance report (APR) to the NRC Government and International Affiliations Office (NRC-GIA), which was led by the President. (This will be discussed under item 7).

5. I contributed to the planning and organization of the joint CORM-CNC/CIE technical days preceding this meeting.



APPENDIX F

CNC-CIE SECRETARY'S REPORT TO THE 64th ANNUAL MEETING

October 2019

Ali Ghaemi and Jennifer Veitch
CNC-CIE-Secretariat@nrc-cnrc.gc.ca

At present there is no formally appointed Secretary. Ali Ghaemi served as administrator, supported by the Vice-President, Jennifer Veitch. This report covers Secretariat activities for the period from 2018-Nov-06 to 2019-Oct-25.

1. Communications:

a. Distribution of Documents via the CNC/CIE Webpage and Electronic Mailings:

CIE notifications, announcements and Press Releases were distributed by the CIE-CB to the NC's via email with supporting documents available on the CIE website (www.cie.co.at) using Collaboration Tools. These documents were downloaded and made available on the CNC/CIE website. General interest documents with no commercial content were downloaded and redistributed to the CNC/CIE-ALL contacts list, while letter ballots were distributed to Members or the Board of Administration as required.

b. In communication with the Secretary, please use the NRC email address CNC-CIE-Secretariat@nrc-cnrc.gc.ca. Both the Secretary and Vice-President have access to this mailbox which is monitored at a minimum, every few days.

2. Letter Ballots:

a. CIE Ballots: National Committee Letter Ballots circulated by the CIE Central Bureau were distributed to members for voting. Decisions were taken based on the consensus of those voting, as per the CNC/CIE Code of Procedure. Letter ballots for 2018/19 were:

- NCLB1805 Ballot for voting on ISO/CIE/FDIS 20086 Energy Performance of Lighting in Buildings: Approved
 - NCLB1806: CIE Budget for 2019; CNC Approved
 - NCLB1901: Ballot for voting on ISO/CIE/FDIS 11664-1; Approve with comments
 - NCLB1902: Ballot for voting on ISO/CIE/FDIS 11664-3; Approve with comments
 - NCLB1903: Ballot for voting on ISO/CIE/FDIS 11664-4; Approve
 - NCLB1904: Ballot for voting on ISO/CIE/FDIS 17166; Approve
 - NCLB1905: Ballot for voting on the publication of the document CIE/DIS S025-SP1:2019 Test Method for OLED Luminaires and OLED Light Sources; Abstain
 - LB NC1906 Ballot for Commenting on the hosting proposals for the 30th Quadrennial Session of the CIE: CNC sent comments
- b. Ballots for CNC/CIE internal matters: We ran three e-mail ballots for decisions required by the CNC/CIE membership:
- CNC Ballot: Approval of Pierre Gallant to stand for membership in the Canadian National Committee of the CIE; Approved
 - CNC Ballot: Member appointments and renewals 2019-2022. Approved renewal of members Ian Ashdown, Shirley Coyle, Barbara Kolesnik, Keith Niall and Mankajee Shrestha, and new member



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appointments of Deborah Gottesman (Gottesman Associates), Li-Lin Tay (Team Leader NRC Photometry and Radiometry) and Amin Rasoulof (Research Officer, NRC Photometry and Radiometry).

- CNC1901: Nominations to new CIE Board of Administration: Approved

3. **CNC/CIE 2019 Annual Meeting:**

We both contributed to the organizing of the joint CORM-CNC/CIE-USNC/CIE technical meetings and the 64th Annual Business Meeting of the CNC/CIE. Primary leadership for the technical meetings was undertaken by CORM, led by Joanne Zwinkels with committee members Tim Moggridge, Sharon McFadden, and Shirley Coyle.

- ### 4. **Annual Performance Review of the CNC/CIE:** This was led by the President this year, as it was undertaken by a telephone interview with the NRC Government and International Affiliations office. Jennifer Veitch contributed information to a supporting document.

5. CNC/CIE Code of Procedure: No changes proposed at present.

6. **Executive Committee Actions:**

- ### 7. **Requests for Funding:** None received.

8. **CNC/CIE website:**

The website operates at the web address of www.cnc-cie.ca. See the separate Website subcommittee report.

9. **Mailing Lists:**

At the present time 4 mailing lists are maintained: Members (40), Affiliates (62), Board of Administration (14) and All (102). Affiliates and all receive CIE material (press releases of CIE publications) and notices of conferences. Members and Board of Administration receive more CNC information including ballots, and the Minutes of the annual meeting and related information.

9. **Membership:**

A list of CNC/CIE Members and Affiliates is available from the Secretary and will be included in the 2019 Annual Report. See the detailed Membership / Elections and Nominations subcommittee report (M. Mossman, Chair) for details.



APPENDIX G

CNC/CIE Treasurer's Report to the CNC/CIE 64th Annual Meeting

31 October 2019

Ottawa, Ontario

The financial statement for the period 31 October 2018 to 15 October 2019 is presented below.

Financial Report 31 October 2018 – 31 October 2019

Balance (31 October 2018)		\$18432.58
Income:		
Payment from CIE for publication sales:	\$1865.04	
Total Income:		\$ 1865.04
Expenses:		
No expenses during this time period		
Total Expenses		\$ 0.0
Net Income (Loss)		\$ 1865.04
Balance (15 October 2018)		\$20297.62

Respectfully submitted

Sharon McFadden
Treasurer, CNC/CIE



APPENDIX H

CNC/CIE Web Site Report

October 2019

Jennifer Veitch and Sharon McFadden

Domain

We are and will remain www.cnc-cie.ca.

Usage

Usage increased significantly over the past year. Over the last 12 months we averaged 407 unique visits and 2695 visits per month as compared to 228 unique visits and 322 visits in 2018. However, only about 9% of the visits or 71 per month lasted longer than 30 seconds. Visitors downloaded an average of 74 documents each month.

The most visits were from the U.S. with Canada second and Brazil third. If bandwidth is taken into account, the top users of our site were the US and Israel, at over 200 MB per month followed by Canada and France at around 60 MB. Some of the increase in downloads was due to the joint meeting this year, but there was also a notable interest in presentations from previous meetings.

Content

Over the past year, Sharon has:

- Created accounts for all members for the members only area. You can find out your login information by contacting the CNC Secretariat or by emailing Sharon McFadden. The Members only area contains Division minutes, copies of documents out for ballot, and the discount code that can be used by Members when purchasing CIE documents. In the future, ballot documents will only be available in the members area so all members are encouraged to activate their accounts.
- Added in information on ISO TC 274 including a small paragraph on the main page and a new page with all the current TC 274 Working Groups.
- Added in a section on the main page listing all new CIE Technical Committees.

We are still looking for someone to at least proof read the French content of the French web pages. Very little of the content is changed regularly so it is not an onerous job. If you could provide this assistance, contact the CNC/CIE Secretariat.

We encourage members to visit the website and offer suggestions for improvements and additions.

History of Lighting in Canada

This project remains uncompleted. If you have an interest, or if you know someone who does, we do have lots of material that could be compiled. It would be an interesting student project.

Maintenance

The cost for the domain registration, site hosting, and maintenance remains low, at ~\$100 per year. I recommend we keep our current arrangement, which seems to be working well.



APPENDIX I

CNC/CIE Membership Subcommittee – Chair's Report October 2019

Prepared by: Michele Mossman

The current membership includes:

- 14 Members of the CNC/CIE Board of Administration
- 40 Members (includes the 14 Members of the Board of Administration)
- 62 Affiliates

During 2019, the following activities were carried out by the Membership Subcommittee:

- We maintained the detailed membership database. This database is circulated to subcommittee members whenever entries are updated.
- Two names were removed from the membership list during 2019. These members either requested to be removed from the list because they had retired or moved away from Canada.

Nominations for 2019:

Executive positions:

- CNC President: Jeff Hovis willing to be nominated
- CNC Vice President: Jennifer Veitch willing to renew
- CNC Treasurer: Shirley Coyle willing to be nominated
- CNC Secretary: Amin Rasoulof willing to be nominated

BA Member-at-Large:

- Andre Laperriere willing to renew
- Venkat Venkataramanan willing to be nominated

Division members:

- Division 2: Joanne Zwinkels willing to renew
- Division 3: Jennifer Veitch willing to renew
- Division 4: Crisitan Suvagau willing to extend position until 2023
- Division 6: Sami Qutob willing to renew

Members:

- Chrisnel Blot willing to renew



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- Kurt Ising willing to renew
- Thomy Nilsson willing to renew
- Sharon McFadden willing to be nominated
- Joe Bastianpillai willing to be nominated



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2019 CNC/CIE Division Member Reports



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Division 1: Vision and Colour

Report to CNC/CIE 64th Annual Meeting National Research Council of Canada

100 Sussex Dr, Ottawa, Ontario K1A 0R6 Canada Board Room, 1st floor

Jeff Hovis

Email: jhovis@uwaterloo.ca

1 Introduction

The annual Division 1 meeting was held Friday 21st June 2019 in Washington DC, USA, as part of the 29th CIE Session. Twenty countries were represented, and 16 guests were present. The CNC/CIE was represented by J. Hovis. A draft of the minutes is available by contacting J. Hovis.

1.1 New Technical Committees and Reporterships

JTC-16 (D1/D8) Validity of chromatic adaptation

JTC-17 (D1/D2/D8) Gloss measurement and gloss perception: A framework for the definition and standardization of visual cues to gloss

1.2 Division publications

CIE S 026/E:2018 (Luc Schlangen) CIE System For Metrology of Optical Radiation for IPRGC- Influenced Responses To Light. (Dec 12, 2018)

CIE 015:2018 (Ellen Carter) Colorimetry, 4th Edition (Oct 23, 2018).

CIE 230:2019 (Klaus Richter) Validity of Formulae for Predicting Small Colour Differences (Jan 1, 2019).

CIE 232:2019 ((Naoya Hara) Discomfort Caused by Glare from Luminaires with a Non-Uniform Source Luminance (June 1, 2019)

ISO/CIE 11664-1:2019 Colorimetry - Part 1: CIE standard colorimetric observer. (Jul 1, 2019)

ISO/CIE 11664-3:2019 Colorimetry - Part 3: CIE tristimulus values. (Jul 1, 2019)

ISO/CIE 11664-4:2019 Colorimetry - Part 4: CIE 1976 L*a*b* colour space. (Jul 1, 2019)

1.3 Future meetings

2020-Apr-20:25. Division 1 Meeting will be held as part of the 5th CIE Symposium on Colour and Visual Appearance, in Hong Kong

2021-Apr-19:28. Division 1 Meeting will be held as part of the CIE Mid-term Meeting, in Penang, Malaysia

2023-Sep-15:23. Division 1 Meeting will be held as part of the 30th CIE Session, in Ljubljana, Slovenia

2 Current Canadian participation in Division 1 activities

List Canadians who Chair or participate in Technical Committees, handle a Reportership, act as a Division Officer or act as a liaison.



Activity	Title	Canadian Members
TC1-83	Visual Aspects of Time-Modulated Lighting Systems	L. Whitehead (member)
TC 1-95	The Validity of the CIE Whiteness and Tint Equations	J. Zwinkels (member)
JTC 8	Terminology	S. McFadden (outgoing member)

3 Highlights of Division Work Programme

Alex Forsythe from the Academy of Motion Picture Arts and Science gave a presentation on the spectral similarity index (SSI) at the recent Division 1 meeting, which they developed as to a specification of the colour rendering properties of LED sources in the film industry. Subsequently, Lorne Whitehead agreed to make contact with their group, on behalf of the CIE, to explore synergies with the CIE colour fidelity metric, Rf.

3.1 Overview of the status of TCs and Reporterships

3.1.1 TC1-76 Unique Hue Data (Sophie Wuerger)

Work continues on the Technical Report. Currently addressing comments made by the Division Editor

3.1.2 TC1-81 Validity of Formulae for Predicting Small Colour Differences (Klaus Richter)

The technical report was published as "CIE 230:2019 Validity of Formulae for Predicting Small Colour Differences," and the TC was closed.

3.1.3 TC1-83 Visual Aspects of Time-Modulated Lighting Systems (Dragan Sekulovski replaced by Malgorzata Perz)

During the recent D1 Meeting, the members voted to change the chair from Dragan Sekulovski to Malgorzata (Gosia) Perz and extend the activities by 1 year.

3.1.4 TC1-86 Models of Colour Emotion and Harmony (Li-Chen Ou)

Division 1 members voted to close the technical committee as requested by the committee members.

3.1.5 TC1-84 Definition of Visual Field for Conspicuity (Nana Itoh)

The Division editor is reviewing a working draft of the technical report

3.1.6 TC1-89 Enhancement of Images for Colour Defective Observers (Po-Chieh Hung)

Committee members are reviewing a draft.



3.1.7 TC1-91 Methods for Evaluating the Colour Quality of White-Light Sources (Yandan Lin)

The revised version of the technical report has been sent to the Division Editor.

3.1.8 TC1-92 Skin Colour Database (Kaida Xiao)

The committee published their findings on the variability of skin colour measurements (Wang et al., Color Res App 2018:43(4), pp. 458-470.

A report is being prepared.

3.1.9 TC1-95 The Validity of the CIE Whiteness and Tint Equations (Minchen Wei)

Since the last meeting, the Chair, Robert Hirschler resigned, and Minchen Wei was approved as the new Chair. The committee requested an extension to complete the technical report. Division 1 members approved an extension to 2021.

3.1.10 TC1-96 A Comprehensive Model of Colour Vision (Kaida Xiao)

Progress since 2016 has been good. The remaining tasks include:

To complete the remaining work on CAM16 extension to unrelated colours To circulate the 1st report by the end of 2019, and

To complete the TC in June 2020.

3.1.11 TC1-97 Age- and Field-Size-Parameterised Calculation of Cone-Fundamental-Based Spectral Tristimulus Values. (Jan Henrik Wold)

The final technical meeting was held in Washington, DC, 2019. This work will address some of the shortcomings of the Technical Report on Fundamental Chromaticity Diagram with Physiological Axes

3.1.12 JTC 1 (Divisions 1, 2, 4, and 5) Implementation of CIE 191:2010 Mesopic Photometry in Outdoor Lighting (Stuart Mucklejohn)

Work is continuing on the technical report.

3.1.13 JTC 7 (Divisions 1 and 3) Discomfort Caused By Glare from Luminaires with a Non-Uniform Source Luminance (Naoya Hara)

Technical report CIE 232:2019 Discomfort Caused by Glare from Luminaires with a Non-Uniform Source Luminance was published in 2019

· JCT7 was closed.

3.1.14 JTC 8 Terminology (Peter Zwick)

Division 1 members provided feedback on IEC questions about D1 terms on the first draft of International Electrotechnical Vocabulary Part 845: Lighting, ED2. This was based on CIE S 017 ILV: International Lighting Vocabulary.

In January, Division 1 members again provided feedback on a revised document – most issues were easily resolved. Work continues.

3.1.15 JTC 9 (Divisions 1,2, 3, and 6) CIE system for metrology of IPRGC influenced light response. (Luc Schlangen)

CIE S 026/E:2018 CIE System for Metrology of Optical Radiation for IPRGC-Influenced Responses to Light was published in 2018.

JCT9 was closed.



3.1.16 JTC 10 (Division 1 and 8) A New Colour Appearance Model for Colour Management Systems: CIECAM16 (Changjun Li & MR Luo)

Work continues on the final draft technical report. The goal is to publish the final report and close the JTC by 2020.

3.1.17 JTC 12 (Division 1, 2 and 8) The Measurement of Sparkle And Graininess (Alejandro Ferrero & Y. Kwak)

Progress on the draft technical report continues.

3.1.18 JTC 16 (Division 1 and 8) Validity of Chromatic Adaptation (Minchen Wei & Kaida Xiao)

This JTC was formed in late 2018. The first meeting was held on June 2019. The terms of reference include 1) review of the existing chromatic adaptation transforms and propose modifications by including a two-step transform to take into account the effect of white light chromaticity on degree of chromatic adaptation.

3.1.19 JTC 17 (Division 1,2 and 8) Gloss Measurement and Gloss Perception: A Framework for the Definition and Standardization of Visual Cues to Gloss (F Leloup)

This TC was formed in 2019. The terms of reference are: to describe recommendations for standardised visual assessment conditions of individual, established cues to gloss, to make recommendations for the definition of a standard gloss observer for individual diagnostic cues and, based on the findings from the above, to suggest optical methods and metrics for describing gloss in correlation with the established gloss cues.

3.1.20 R1-60 Future colour difference-evaluation (G Cui)

No report this year

3.1.21 R1-62 Typical LED Spectra (Sophie Jost)

This reportership was tasked to select the typical LEDs for the update of CIE 15 Colorimetry. The is completed. S. Jost has agreed to prepare a brief Reportership Report detailing the method of selection so that it can be kept in the Division 1 records for future reference.

3.1.22 R1-63 Tristimulus Integration (Changjun Li)

Established to derive one preferred method of integration, which then could be included in CIE documents

3.1.23 R 1.64 Real Colour Gamuts (Changjun Li)

There was no report this year. However, the question arose regarding the definition of the gamut in this context. R. Luo replied that the gamut is based on the Pointer gamut of colours found in nature.

3.1.24 R1-66 The Effect of Dynamic and Stereo Visual Images on Human Health (Hiroyasu Ujike)

The report is now being finalized and will be completed and submitted to Division Editor in Aug. 2019

3.1.25 R 1.67 Revisiting Correlated Colour Temperature (Youngshin Kwak)

There was no report this year

3.1.26 R 1.68 A Gamut Area Measure and Colour-Shift Graphic, Based On CIE 13.3-1995 (Kees Teunissen, Yohsi Ohno, K. Mukai)

After discussing the feedback from DR-168ED/TN, it was decided not to pursue the publication of a CIE TN. Instead, it was agreed to include the CRI-based method in the TC 1-91 technical report as



one of the featured methods. One issue was that the CRI-based method should be published first with all necessary details (which could not be included in the TC 1-91 TR). Fortunately, the members of the Global Lighting Association approved the publication of the CRI-based method on their website, along with a tool to calculate the CRI and associated CRI-based index values.

Since December 2018, the two documents (a pdf with the details and an Excel tool for calculating the index values) can be downloaded from the GLA website: <http://www.globallightingassociation.org/library>.

Members voted to close the reportership.

3.1.27 RF-03: Matters related to Colour Rendition (K Teunissen)

This research forum was established in October 2017, and the second meeting was in Taipei on April 2018. There is additional information about the forum on CIE website: <http://www.cie.co.at/researchforum/rf-03>.

This research forum (RF) is related to CIE strategy top priority topic #2: "Colour Quality of Light Sources Related to Perception and Preference". The RF will provide a discussion and information- and data-sharing platform to support the development of a comprehensive method that characterizes all colour rendition aspects of white-light sources and lighting systems for general lighting purposes.

a. 3.2 Dissolution of and changes to TCs and Reporterships

Closed Technical Committees

TC1.81 Validity of Formulae for Predicting Small Colour Differences

TC1-95 The Validity of the CIE Whiteness and Tint Equations (Minchen Wei)

Robert Hirschler resigned as chair, and Minchen Wei was approved as the new chair

JCT7 Discomfort Caused By Glare from Luminaires with a Non-Uniform Source Luminance JCT9 CIE system for metrology of IPRGC influenced light response.

Closed Reporterships

R 1.68 A Gamut Area Measure and Colour-Shift Graphic, Based On CIE 13.3-1995
Committee/Reportership Changes

TC1-83 Visual Aspects of Time-modulated Lighting Systems. Malgorzata Perz replaced Dragan Sekulovski as chair

JTC 8 Terminology S. McFadden submitted her resignation as a member of the JTC. A new member from Division 1 will be added.

4 Other Division News

We thank Sharon McFadden for her work on the Terminology Joint Committee



International Commission on Illumination
Commission Internationale de l'Eclairage
Internationale Beleuchtungskommission



Canadian National Committee Comité national canadien

Division 2: Physical Measurement of Light and Radiation

Report to 12th Biennial Meeting of CNC/CIE and CIE-USNC

NRC Ottawa, October 31, 2019

Dr. Joanne Zwinkels

Email: joanne.zwinkels@nrc-cnrc.gc.ca

1 Introduction

The 2019 annual meeting of CIE Division 2 (D2) took place on June 20, 2019, in conjunction with the CIE Quadrennial meeting in Washington, DC, preceded by two days of D2 TC meetings. I was not able to attend these D2 meetings but Dr. Luke Sandilands of NRC attended as my proxy as Country member representing Canada.

1 Highlights

1.1 *New Technical Committees and Reporterships*

Proposals for Four (4) new TCs and One (1) new JTC:

TC Proposal: **Measurement of haze**

Proposed Chair: Hsueh-Ling Yu (TW)

TC Proposal: **Adaptive and modulated lighting**

Proposed Chair: Jianping Rosa Wang (CN)

TC Proposal: **Revision of S010 (ISO 23539:2005) Photometry – the CIE system of physical photometry**

Proposed Chair: Anders Thorseth (DK)

TC Proposal: **Unified metrology system for light pollution**

Proposed Chair: Constantinos Bouroussis (GR)

New JTC Proposal: **Terms and definition for horticulture lighting**

Proposed D2 Chair: Paul Dekker (NL)

Background: This was a new TC proposed in D6 but it is considered by D2D that this should be a JTC (D6/D2)



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recherches Canada



Proposals for Four (4) new Reporterships:

Reportership Proposal: Characterization and measurement of horticulture lighting products

Proposed Reporter: Qian (Cherry) Li (CN)

After the meeting, this reportership is: DR 2-83

Reportership Proposal: CIE D2 strategy on spectrophotometry

Proposed Reporter: Joanne Zwinkels (CA)

After the meeting, this reportership is: DR 2-84.

Reportership Proposal: Quality indices for light dosimeters including visual and non-visual effects

Proposed Reporter: Florian Stuker

After the meeting, this reportership is: DR 2-85

Reportership Proposal: Definitions for bidirectional scattering surface reflectance distribution function (BSSRDF)

Proposed Reporter: Alejandro Ferrero (ES)

After the meeting, this reportership is: DR 2-86

1.2 Division publications

There have been several D2 or Joint (with D2) publications since last meeting:

CIE 233:2019 Calibration, Characterization and Use of Array Spectroradiometers;

CIE 231:2019 CIE Classification System of Illuminance and Luminance Meters;

CIE 018:2019 The Basis of Physical Photometry, 3rd Edition;

CIE 198-SP2:2018 Determination of Measurement Uncertainties in Photometry Supplement 2: Spectral measurements and derivative quantities

CIE 229: 2018 Groundwork for Measurement of Effective Intensity of Flashing Lights

CIE DIS 025-SP1/E:2019 Test Method for OLED Luminaires and OLED Light Sources

CIE S 026/E:2018 CIE System for Metrology of Optical Radiation for ipRGC-Influenced Responses to Light

1.3 Future meetings

- **D2 2020 meetings** in connection with 5th **CIE Symposium on Colour and Visual Appearance**, Hong Kong, 20-25 April 2020. Includes tutorial and workshop day, and annual



meetings of D1, D2, D6 and TC meetings

- **D2 2021 meetings** in connection with **CIE Midterm Meeting**, Georgetown, Malaysia, 17-25 April 2021 (conference from 20-22 April 2019).
- **CIE 2023, 30th Quadrennial Session**, Slovenia, September 2023

2 Current Canadian participation in Division 2 activities

Activity	Title	Canadian Member
<i>Eight TCs/JTCs:</i>		
TC 2-59	Characterisation of Imaging Luminance Measurement Devices	T. Moggridge (member)
TC 2-77	Fundamental Concepts	J. Zwinkels (member)
TC 2-80	Spectroradiometric measurement of light sources	J. Zwinkels (member)
TC 2-82	Revision of CIE S014-2	J. Zwinkels (member)
TC 2-90	LED reference spectrum for photometer calibration	J. Zwinkels (member)
TC 2-92	International standard format for the electronic transfer of luminaire optical data	I. Ashdown (TCC)
JTC-08	Terminology in light and lighting	S. McFadden, J. Zwinkels (members)
JTC-01	Implementation of mesopic photometry in outdoor lighting	J. Zwinkels (member)
<i>One Reporter:</i>		
DR 2-84	CIE D2 Strategy on Spectrophotometry	J. Zwinkels (Reporter)
<i>One Liaison:</i>		
L2-3	ISO TC6: Paper, Pulp and Board	J. Zwinkels (member)
<i>One Officer:</i>		
Division 2	Associate Director	J. Zwinkels

3 Highlights of Division 2 Work Programme

3.1 Overview of the status of D2 TCs and Reporterships

The active D2 TCs, JTCs and Reporterships are listed below. The most recent Minutes are attached.

3.1.1 TC2-xx or JTC-xx: Title (chair)

- JTC-17 (D1/D2/D8)** Gloss measurement and gloss perception: A framework for the definition and standardization of visual cues to gloss (D2C: Obein)
- JTC-12 (D1/D2/D8)** The measurement of sparkle and graininess (D2TCC: Ferrero)
- JTC-08 (D1/D2/D3/D4/D6/D8)** (D2TCC: Blattner)
- JTC-01 (D4/D1/D2)** Implementation of mesopic photometry in outdoor lighting (D2TCC: Goodman)

- TC 2-92** International standard format for the electronic transfer of luminaire optical data (Ashdown)
- TC 2-91** Optical measurement methods of LED packages and LED arrays (Schneider)
- TC 2-90** LED reference spectrum for photometer calibration (Poikonen)
- TC 2-89** Measurement of Temporal Light Modulation of Light Sources and Lighting Systems (Schakel)
- TC 2-88** Standard Reference Solar Spectra for Industrial Applications (Suga)
- TC 2-87** Broadband UV LED radiometric measurements between 320 nm and 420 nm (Eppeldauer)
- TC 2-86** Glare Measurement by Imaging Luminance Measurement Device (ILMD); (Chen)
- TC 2-85** Recommendation on the geometrical parameters for the measurement of the Bidirectional Reflectance Distribution Function (BRDF); (Obein)
- TC 2-84** Recommendations on LED package test data reporting (Poppe)
- TC 2-83** CIE Standard on test methods for OLED light sources (Vander Meersch)
- TC 2-82** Revision of CIE S014-2 (Csuti)
- TC 2-81** Update of CIE 065:1985 (Absolute Radiometers); (Smid)
- TC 2-80:** Spectroradiometric measurement of light sources (Schneider)
- TC 2-79:** Integrating sphere photometry and spectroradiometry (D.H.Lee)
- TC 2-78:** The Goniophotometry of Lamps and Luminaires (Bergen)
- TC 2-77:** Fundamental Concepts (Bergen)
- TC 2-76:** Characterization of AC-driven LED Products for SSL Applications (Chou)
- TC 2-75:** Photometry of Curved and Flexible OLED and LED Sources (H-L Yu)
- TC 2-74:** Goniospectroradiometry of Optical Radiation Sources (Pan)
- TC 2-68:** Optical Measurement Methods for OLEDs used for Lighting (Yamauchi)
- TC 2-67:** Photometry of Lighting and Light-signalling Devices for Road Vehicles (Reiners)
- TC 2-62:** Imaging-Photometer-Based Near-Field Goniophotometry (Krüger)
- TC 2-59:** Characterisation of Imaging Luminance Measurement Devices (Krüger)
- TC 2-50:** Measurement of the Optical Properties of LED Assemblies (Distl)

•TC 2-29: Measurement of Detector Linearity Summary (Eppeldauer)

4.1.2 Reporterships DR2-xx: (Reporter) Title

DR2-60 (Teresa Goodman) Discussion on the definition of Luminance/Radiance

DR2-64 (Edwin Mofokeng) TN on Errors of Measurement in Spectrophotometry

DR2-69 (Johannes Ledig) TN on the validation of a near-field goniophotometer

DR2-70 (Roman Dubnicka) Guide for the Field Photometric Measurements for the Verification of Lighting Systems

DR2-75 (Tony Bergen) TN on the use of “Accuracy” and related terms in the specifications of testing and measurement equipment

DR2-76 (Udo Krüger) TN on measurement uncertainties for testing of LED Lamps, Luminaires and Modules

DR2-77(Tongsheng Mou) Measurement of Quantities Relating to Photobiological Safety of Lighting Products

DR2-78 (Annette Koo) Investigation of the need for documentary guidance relating to 0°:d (d:0°) reflectance instrument

DR2-79 (Hsueh-Ling Yu) Measurement of total transmittance, diffuse transmittance, and transmittance haze

DR 2-80 (Anders Thorseth) Metrology of laser-based lighting

DR 2-81 (Dennis Couzin) Flash effective intensity calculation

DR 2-82 (Tony Bergen) TN on clarification of the difference between adjustment, calibration and verification

DR 2-83 (Quian (Cherry) Li) Characterization and measurement of horticultural lighting products

DR 2-94 (Joanne Zwinkels) CIE D2 Strategy on Spectrophotometry

3.2 Dissolution of and changes to TCs and Reporterships

4.2.1 The following Three TCs and One Reportership will be closed.

TC 2-51 Reason: publication of CIE 233:2019

TC 2-69 Reason: publication of CIE 231:2019

TC 2-72 Reason:: publication of CIE 198-SP2:2018

DR 2-60 Reason: publication of TN within one month of D2 2019 meeting

4 Other Division News

5.1 Work in Progress/ Recently Completed

CIE LB D02-1916 D2 voting on AD/TN of TC 2-78; Deadline: 2019-11-23

CIE LB D02-1915 D2 voting on approval of two new TCs; Deadline: 2019-11-03

CIE LB D02-1914 D2 voting on AD/TR of TC 2-50; Deadline: 2019-09-29

CIE LB D02-1913 D2 commenting on ED/TR of TC 2-79; Deadline: 2019-10-19



CIE LB D02-1912 D2 commenting on ED/TN of TC 2-78; Deadline: 2019-09-12

CIE LB D02-1911 D2 commenting on ED/TR of TC 2-76; Deadline: 2019-09-10

CIE LB D02-1910 D2 voting on AD/TN of DR 2-75; Deadline: 2019-08-02

5.2 Call for Experts for CIE D2 TCs:

TC 2-92 International Standard Format for the Electronic Transfer of Luminaire Optical Data

The new TC will provide a data exchange format supporting most lighting applications, including colour-changing and horticultural luminaires. The new data exchange format will be defined in terms of XML. If you have some expertise in the field and are committed to contribute to work on this new standard, then please fill out the TC membership and copyright agreement forms and send them to the TCC (ian_ashdown@helios32.com) with copy to CIE CB (ciecb@cie.co.at).

Chair: Ian Ashdown (CA)

5.3 Technical Discussions at CIE D2 meeting (2019)

5.3.1 Future Directions in Photometry

D2D showed a presentation file “future directions in LED photometry,” which contains a review of history of standard lamps and CCT of Illuminant A. CCT of Illuminant A was 2,848 K from year 1931, changed several times afterwards with re-definitions of the temperature unit, and until recently was 2,856 K that is rounded from 2,855.542 K. With the new definition of SI in 2018, the CCT of Illuminant A should be changed to 2,855.496 K. With this background, CIE 015 Colorimetry, 4th edition was updated in 2018, which defines CIE Source A with CCT of 2,855.5 K.

5.3.2 D2 Strategy

The D2D asked the D2 members to let him know if they have applied for funding using the research strategy as a motivation. Refer also to EURAMET website showing projects which are in progress and which used the research strategy as a reference [<https://www.euramet.org/>]. One of the European projects is relating to light pollution. Constantinos Bouroussis is one of the leaders of the project and he introduced the project briefly.

5.4 Changes in D2 Management Team

New D2D: Tony Bergen (AU) replacing Peter Blattner (CH)

New D2E: Thiago Menegotto (BR) replacing Jim Gardner (AU)

New D2S: Dong-Hoon Lee (KR) replacing Tony Bergen (AU)



Division 3: Interior Environment and Lighting Design

Report to CNC/CIE 64th Annual Meeting

Ottawa, ON, 2019-Oct-31

Jennifer A. Veitch, Ph.D.

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1 Introduction

The 2019 meeting of Division 3 was held in Washington, D.C., on June 21, 2019. The minutes are available to CNC/CIE Members on the Members area of the website.

2 Highlights

2.1 New Technical Committees, Reporterships, and Other Activities

JTC 18 (D3/D4) Lighting Education (JTC Chair, D3: Piotr Praki, PL)

The summary of the terms of reference: “To revise and update CIE 99:1989 and to provide recommendations on curricula for higher education and continuing education. To propose recommendations for education of lighting professionals and recommend options to improve and support continuing lighting education throughout the professional working life.”

The committee had its first meeting in Washington, D.C. New members willing to contribute to the work would be welcome.

2.2 Division publications

Since the last CNC/CIE report in October 2018, D3 has completed:

- CIE 232:2019 *Discomfort Caused by Glare from Luminaires with a Non-Uniform Source Luminance* [JTC 7]
- CIE S 026/E:2018 *CIE System for Metrology of Optical Radiation for ipRGC-Influenced Responses to Light* [JTC 9]
- ISO/CIE TS 22012:2019(E) *Light and Lighting — Maintenance Factor Determination — Way of Working* [JTC 11]
- ISO/CIE 20086:2019(E) *Light and Lighting — Energy Performance of Lighting in Buildings* [JTC 6]

2.3 Future meetings

2020: Webex, June

2021: April 19-28, Midterm meeting, Penang, Malaysia

2022: WebEx

2023: September 15-23, CIE 30th Session, Ljubljana, Slovenia

3 Current Canadian participation in Division 3 activities

Canadians who Chair or participate in Technical Committees, handle a Reportership, act as a Division Officer or act as a liaison are listed below. This list includes activities that ended during the reporting period. Increased participation by Canadians in CIE TCs – including students and those early in their careers – would be most welcome.

Activity	Title	Canadian Members
JTC 4	Visual, Health, and Environmental Benefits of Windows in Buildings during Daylight Hours	M. Mossman (Member)
JTC 14	Integrative Lighting	J. Veitch (Member; D3 Chair)
JTC 15	Lighting of Indoor Workplaces	J. Veitch (Member)
R 3-33	Documentation Template for Studies on Non-image-forming Effects	J. Veitch (Reporter)
RF-02	Matters Relating to Temporal Light Modulation	J. Veitch (Convenor)
<i>LO</i>	<i>Liaison officer from Cie-D3 to ISO TC 205/WG 7</i>	<i>C. Sampson</i>

In addition, Canadians are active in D3-related activities through the Canadian mirror committee to ISO TC 274. Although these are not, strictly speaking, CIE activities, they are indicative of Canadian participation in the broader work of recommendations and standards for light and lighting.

<i>ISO/TC 274-JWG 1 [CIE JTC 6] (CIE-ISO)</i>	<i>Energy performance of lighting in buildings</i>	<i>T. Lau</i>
<i>ISO/TC 274 JWG 2</i>	<i>Commissioning process of lighting systems</i>	<i>T. Lau</i>
<i>ISO /TC 274</i>	<i>Liaison officer from ISO TC 274 to ISO TC 205/WG 7</i>	<i>C. Sampson</i>
<i>ISO/TC 163</i>	<i>Liaison officer from ISO TC 163 to ISO TC 274</i>	<i>T. Lau</i>

4 Highlights of Division Work Programme

The joint CIE-IES-Taylor & Francis-sponsored special issue of the journal *LEUKOS* on Applied Lighting Research Methods was published just prior to the CIE Quadrennial Session. Thanks to the sponsorship of the IES, delegates to the Session received a hard copy of the issue. All papers in the special issue are available freely online via Gold Open Access. J. Veitch was lead author on one paper and on the editorial, and served as one of the two guest editors.

D3 (like all Divisions) is tasked with reviewing its Research Strategy to determine whether any updates are required. This strategic review is under way at time of writing. It might result in additions or modifications either to the Division work plan, or to the larger CIE Research Strategy.

4.1 Overview of the status of TCs and Reporterships

D3 has adopted a standard template for reporting TC status. Reports on each TC are available as



part of the meeting minutes available to CNC/CIE Members at www.cnc-cie.ca.

<i>Activity</i>	<i>Title</i>	<i>Chairman</i>	<i>Status</i>
JTC 4 (D3/D6)	Visual, health, and environmental benefits of windows in buildings during daylight hours	empty (D3) D. Sliney (D6)	Work is not progressing, and steps need to be taken..
JTC 6 (CIE-ISO)	Energy Performance of Lighting in Buildings	S. Moghtader	This will be made a continuing committee in parallel with ISO/TC 274/JWG 1. Its work plan consists of work items in the ISO side. A new Chair is sought, to avoid conflicts of interest between the ISO and CIE leadership roles.
JTC 8 (all Ds)	Terminology	P. Zwick (CIE-TM); P. Thorns for D3.	This is a standing JTC. The outcome of the work to reconcile the eILV with the IEC Electropedia entries for lighting will have its FDIS ballot in autumn 2019.
JTC 13 (D4/D3)	Depreciation and Maintenance of Lighting Systems	D. Gasparovsky (D4) Peng Zhuang (D3)	Communications with the D3 co-chair have been sporadic; a new leader might be needed.
TC 3-54	Revision of CIE 16-1970: Daylight	Y. Sutter	Term of the TC will likely be extended because the progress has been so interrupted.
TC 3-55	Metrics for sunlighting and daylight passing through sunshading devices	M. Fontoynt	Work not progressing; TCC informed that April 2020 deadline is firm.
TC 3-56	Assessment of Discomfort Glare from Daylight in Buildings	T. Iwata	Progressing slowly. Firm deadline of 2019-12-31 will be enforced by CIE-BA.
JTC 14	Integrative Lighting	J. O'Hagan	Work progressing; next meeting Nov. 4, 2019.

<i>Activity</i>	<i>Title</i>	<i>Chairman</i>	<i>Status</i>
JTC 15	Lighting of Indoor Workplaces	E. Mochizuki	Three meetings have been held, but serious work will begin only after publication of EN 12464 (which occupies many members at present).
R3-32	Guidelines for Post-Occupancy Evaluation of Lighting Installations	V. Garcia-Hansen	Work beginning
R 3-33	Documentation Template for Studies on Non-image-forming Effects	J. Veitch	Work under way. Draft 95% complete, but waiting for definitions being established in JTC 14.
RF-02	Matters Relating to Temporal Light Modulation	J. Veitch	ongoing

4.2 Dissolution of and changes to TCs and Reporterships

The following activities have been closed.

<i>Activity</i>	<i>Title</i>	<i>Chair</i>	<i>Reason</i>
JTC 7 (D3/D1)	Discomfort caused by glare from luminaires with a non-uniform source luminance	N. Hara (D3) Y. Akashi (D1)	Completed work plan, published CIE 232:2019
JTC 9 (D6/D1 /D2/D3)	Quantifying ocular radiation input for non-visual photoreceptor stimulation	L. Schangen (D6) N. Itoh (D1) P. Blattner (D2) H. Noguchi (D3)	Completed work plan, published CIE S026/E:2018.
JTC 11 (ISO/CIE)	Light and Lighting – Maintenance factor – Way of working.	N. Parry	Completed work plan, published ISO/CIE TS 22012:2019(E) <i>Light and Lighting — Maintenance Factor Determination — Way of Working</i>
R 3-29	Variable transmission glazing	J. Mardaljevic	Closed because of lack of progress.
R 3-31:	Available Daylighting Metrics	J. Mardaljevic	Closed because of lack of progress.

5 Other Division News

As always, we would like to see more Canadian participation in Division 3 activities and TCs.



International Commission on Illumination
Commission Internationale de l'Éclairage
Internationale Beleuchtungskommission



Canadian National Committee Comité national canadien

Anyone interested in becoming more active in the CIE should contact me for more information about opportunities.

2019 marked the beginning of a new Division Management Team. The incoming Director of CIE Division 3 is Mr. Peter Thorns (UK), supported by Associate Division Directors for Daylighting - Dr. Martine Knoop (DE) and Electric Lighting - Dr. Nozomu Yoshizawa (JP).

D3 seeks a new Division Editor. This person need not be a native English speaker, but does need strong language and technical skills to perform the role. The Division Editor is responsible for reviewing all Division publications before they go from the TC (as a Working Draft) to the CIE Central Bureau for the balloting process.



National Research
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Division 4: Transportation and Exterior Applications

Report to CNC/CIE 64th Annual Meeting

Ottawa, October 31 2019

Cristian Suvagau

Email: cristian.suvagau@bchydro.com

6 Introduction

Division 4 Scope: *To study and prepare guides for the design of exterior lighting and light signaling.*

The Div. 4 officers for 2019-2022 are:

- Division Director Dionyz Gasparovsky (SK)
- Division Secretary Maurice Donners (NL)
- Division Editor Nigel Parry (GB)

Division 4 established 3 Subdivisions (each with an Associate Director):

- AD#1-Steve Fotios (GB) - Fundamentals in outdoor lighting
- AD#2-Raoul Lorphevre (BE) - Lighting & signaling for transport
- AD#3-Sermin Onaygil (TR) - Exterior applications

Last Division 4 meeting was hold in Washington, DC, from June 19 to 21, 2019 in conjunction with the Quadrennial Session of the CIE. The following Div. 4 technical committees hold meetings at the event:

- TC 4-33 Discomfort Glare in Road Lighting
- TC 4-50 Road Surface Characterization for Lighting Applications
- TC 4-51 Optimization of Road Lighting
- TC 4-52 Lighting for Pedestrians: New Empirical Data
- TC 4-53 Tunnel Lighting Evolution
- TC 4-54 Road lighting for Ageing Drivers
- TC 4-58 Obtrusive Light (light pollution) from Colourful and Dynamic Lighting
- TC 4-60 Traffic Lights
- TC 4-XX Adaptive Road Lighting (pre-meeting)
- JTC 01 Implementation of CIE 191:2010 Mesopic Photometry in Outdoor Lighting
- JTC 13 Depreciation and maintenance of lighting systems.
- JTC x Lighting education (pre-meeting across all Divisions)

Div. 4 workshops hold at the Quadrennial CIE Session in Washington:

- **In search of new approach to the maintenance factor** - Aim of the workshop was to overview and summarize currently available knowledge and experience with depreciation of lighting system components, to discuss options how to gather bulk of data from laboratory and field measurements and to discuss actual proposals for re-structuring and parting the maintenance factor from different perspectives.

Summary of the workshop will be reported and used for the work of CIE JTC 13.

More information can be found on the CIE website.

7 Highlights

7.1 New Items

Technical Committees

TC 4-40 Performance Evaluation Of Retro-Reflective Traffic Signs

Chair: Dionyz Gasparovsky (SK)

TC 4-27 Artificial Light And Its Impact On The Natural Environment

Chair: Paul Carlson (US)

TC 4-36 Visibility Design For Roadway Lighting

Chair: Giuseppe Rossi (IT)

TC 4-46 300nm Roundel Signals

Chair: Ron Gibbons (US)

TC 4-XX Adaptive Road lighting

JTC 4-12 Depreciation And Maintenance Of Lighting Systems

Chair: Dionyz Gasparovsky (SK)

JTC 18 Lighting education

Reporterships:

Guide For Floodlighting (revision to CIE 94-1993)

Reporter: Diana del Negro (PT)

Lighting For Open-Cast Mines (revision to CIE 128-1998)

Reporter: Diana del Negro (PT)

Visibility and Glare Study of LED Traffic Signs

Reporter: Tsung-Xian Lee (TW)

Environmental Aspects of Obtrusive Light from Outdoor Lighting Installations

Exterior lighting for ATM facilities

Lighting for Environmentally Sensitive Areas

Visibility under Adverse Weather Conditions

Railway Applications

Liaisonships:

ISO/TC22 SC 5 Lighting and Visibility

Position Statements

Protection of Sites for Astronomical Observations

Human and Environmental Effects of Blue Light in Outdoor Lighting

Research:

Phantom Array Effects in Vehicle Rear Lighting

Lighting for Cycling – Establishing the State of Knowledge

7.2 *Division publications*

Publications produced during the past year:

- CIE 150:2017 Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations, 2nd Edition
- CIE 083:2019 Guide for the Lighting of Sports Events for Colour Television and Film Systems, 3rd Edition
- CIE 140:2019 Road Lighting Calculations, 2nd Edition
- ISO/CIE 8995-3:2018(E) Lighting of Work Places – Part 3: Lighting Requirements for Safety and Security of Outdoor Work Places
- ISO/CIE TS 22012:2019(E) Light and Lighting — Maintenance Factor Determination — Way of Working

Here is summary of the existing/ current publications in the scope of Division 4:

- 10 publications are marked as “current”
- 13 publications are currently handled
- 5 publications are prepared or suggested for revision
- 5 publications are proposed for archival / withdrawal
- 5 publications have pending reviews
- 8 publications will expire in 2018

7.3 *Future meetings*

- 2020 Div. 4 Annual meeting, May 2020, in conjunction with the CIE Obtrusive Light Workshop at the Technical University of Ostrava, Czech Republic
- 2021 Div. 4 Annual meeting, April 2021 in conjunction with the CIE Midterm Meeting in Penang, Malaysia

8 **Current Canadian participation in Division X activities**

List Canadians who Chair or participate in Technical Committees, handle a Reportership, act as a Division Officer or act as a liaison.

Activity	Title	Canadian Members
Div. 4	CNC Division representative	Cristian Suvagau
TC4-58	TC member	Ian Ashdown
	CNC Member	Deborah Gottesman

9 **Highlights of Division Work Program**

9.1 *Overview of the status of TCs and Reporterships*

Currently the Division 4 incorporates 15 Technical Committees, 10 Reporterships, participates in 2 Joint Technical Committees and has 9 Liaison Officers with other organizations:

TC 4-11 High Level Matters (D4/mtg Activities)

Chair: Nigel Parry

TC 4-15 Road lighting Calculations

Scope: To revise and update CIE 12.2 2) To revise CIE 30.2 with the object of incorporating recently developed techniques relating to visibility, glare, and other lighting variables. 3) To recommend whether a CIE/ISO Standard in this area is appropriate.

Chair: Sermin Onaygil (TR)

Status: Awaiting ballot in 2018.

TC 4-33 Discomfort Glare in Road Lighting

Scope: To study the known mathematical description of the discomfort glare in road and vehicle lighting, its scaling and comparisons with field studies and to condense the outcome in a report that should result in methods for discomfort glare assessment. To review or replace Publication CIE 31-1976.

Chair: Stephan Völker (DE)

Status: Due out in 2019.

TC 4-45 Performance Assessment Method for Vehicle Headlamps

Scope: Extend the technical report describing the development of requirements for an objective procedure to evaluate forward-lighting system performance in terms of active safety taking into account latest forward lighting technologies.

Chair: Gert Langhammer (DE)

TC 4-47 Application of LED's in Transport Lighting and Signalling

Scope: To review the application and methods of measurement of LED Systems in transport lighting and signaling as far as they affect the visual performance of the users of the transport system. To prepare a Technical Report which includes the findings of the review and recommendations for the visual characteristics of LED signals and lighting.

Chair: Steve E Jenkins (AU)

Status: Draft finished

TC 4-50 Road Surface Characterization for Lighting Applications

Scope: To revise Publication CIE/PIARC TR 66, 1984 containing the Standards. To propose Methodologies for the Determination of Parameters from Calculation and from Laboratory and on site Measurements, considering also the Evaluation of Uncertainty. To publish Data. Review CIE Publications 47 and 144, excluding the sections on markings.

Chair: Haldun Demirdes (TR)

Status: Finalization of the draft expected in 2020.

TC 4-51 Optimization of Road Lighting

Scope: To develop guidance on optimization of road lighting to balance the benefits and costs. Primary issues include accident risk and energy consumption. Tasks include: - Technical Report or update CIE Publication 93. - Provide analysis of lighting quality

Chair: Per-Ole Wanvik (NO)

TC 4-52 Lighting for Pedestrians: New Empirical Data

Scope: To establish empirical data that might be used to determine design criteria when lighting to meet the needs of pedestrians. The committee will review evidence of, and the applicability of, three approaches to establishing such criteria: 1. by considering how lighting influences the visual needs of pedestrians. 2. by considering the costs and benefits of lighting. 3. by considering current

practice in different regions.

Chair: Steve Fotios (GB)

Status: Finalization of the draft expected in 2019.

TC 4-53 Tunnel Lighting Evolution

Scope: To prepare a revision of CIE 88:2004: "Guide for the lighting of road tunnels and underpasses"

Chair: Raoul Lorphevre (BE)

TC 4-54 Road Lighting for Ageing Drivers

Scope: To propose improvements to the existing road lighting recommendations to provide the required safety and comfort for drivers with a visual system which has deteriorated due to normal healthy ageing processes, based on a review of existing data and performance based empirical data.

Drivers in this context is meant to include drivers of motor vehicles as well as cyclists, including powered bikes (e-bikes, pedalecs, etc.)

Chair: Maurice Donners (NL)

TC 4-55 Guide for the Lighting of Sport Events for Colour Television and Film Systems (new TC number as being moved from Div 5)

To prepare a revision of CIE 83-1989 to better relate to CIE 169:2005 and the present state of the art of HDTV

Chair: Alan Smith (GB)

TC 4-56 Masterplanning Urban Lighting

Scope: To prepare a Guide to Masterplanning Urban Lighting. The Guide shall be used whenever designing new or renewed creative lighting for master planning urban lighting. The Guide includes an integrated approach which takes into consideration functional lighting, floodlighting, decorative lighting and considers functional, aesthetic and emotional aspects of lighting design.

Chair: Mùjgan Serefhanoglu-Sözen (TR)

TC 4-57 Guide for Sports Lighting (new TC number as being moved from Div 5)

Scope: To prepare a Guide for Sports Lighting that excludes lighting for TV and films. This guide will replace the present publications CIE 42-1978, CIE 45-1979, CIE 57-1983, CIE 58-1983 and CIE 62-1984

Chair: Alan Smith (GB)

TC 4-58 Obtrusive Light (light pollution) from Colourful and Dynamic Lighting and its Limitation (new TC number as being moved from Div 5)

Scope: To provide guidelines for the implementation and usage of colourful and dynamic lighting in outdoor applications aiming at limitation of obtrusive light with respect to astronomical observations, humans and night-time environment. To develop metrics for obtrusive light from colourful and dynamic lighting systems and to propose suitable methods for limitation or prevention of obtrusive light from such systems.

Chair: Steve Lau (CN)

TC 4-59 Guide for Lighting Urban Elements

Scope: To revise and update the (obsolete, 20 years-old) publication CIE 94:1993 'Guide for floodlighting', introducing additional and updated information on the current light sources, luminaires and lighting techniques, as well as on the importance of lighting urban elements and the techniques and technology available for this lighting task. To extend the decorative/aesthetical focused guidelines by technical practice and research based recommendations on other issues such

as economic, functional, environmental and urbanistic aspects. To consider the particular case of cultural heritage in order to contribute to its preservation.

Chair: Diana del Negro (PT)

TC 4-60 Road Traffic Lights – Photometric Properties of Roundel Signals

Scope: The purpose of this TC is to revise the international standard ISO 16508:1999/CIE S 006 and to specify requirements to colour, luminous intensity and luminous intensity distribution of 200 mm and 300 mm road traffic signals incorporating the newest LED technology in light signals, dealing specifically with impacts on signal recognition due to the sun including sun phantom and ghosting. Furthermore, TC 4-60 is to provide a test method for determining phantom light luminance ratio.

Chair: Ron Gibbons (US)

TC 4-61: Artificial Lighting and its Impact on the Natural Environment

Scope: To provide guidance on ways to minimize the effects of artificial lighting on the natural environment, including impacts on flora and fauna. This would be accomplished by making recommendations on light levels, spectral distributions, and other specific considerations of a broad range of organisms as well as specific habitats.

Chair: Annika K. Jägerbrand (SE)

JTC 11 (CIE-ISO) Light and Lighting – Maintenance factor – Way of working

Scope: To provide a standardized way of working for determining the maintenance factor for both indoor and outdoor installations using the methodology as described in CIE 154:2003 & CIE 97:2005.

The deliverable will combine insights from IEC standards w.r.t. product performance of luminaires and light sources currently in the market with the existing determination methodology from CIE technical reports. Furthermore, it will reference to the data in the CIE technical reports w.r.t. the impact of the environment on luminaires (accumulation of dirt on surfaces and luminaires).

Chair: Nigel Parry (GB)

JTC 13 (D4/D3) Depreciation and Maintenance of Lighting Systems

Scope: To revise CIE 97:2005 and CIE 154:2003 in order to bring them up to date by incorporating recently used approaches for determination of lumen maintenance of LED lamps, dealing with lamp and ballast/driver survival factor and upgrading the luminaire maintenance factor according to current technologies and environmental factors. To deal additionally with distortion of luminous intensity distribution due to environmental influences. To extend the document by maintenance of LED luminaires regarding their cooling specific requirements.

Chair: Dionyz Gasparovsky (SK)

JTC 18 (D3/D4): Lighting Education

Scope: To revise and update CIE 99:1989 and to provide recommendations on curricula for higher education and continuing education. To propose recommendations for education of lighting professionals and recommend options to improve and support continuing lighting education throughout the professional working life.

Chair: Piotr Pracki (PL)

9.2 Dissolution of and changes to TCs and Reporterships

- TC 5-28 Guide On Limitation Of The Effects Of Obtrusive Light
- R 4-41 Lighting For Elderly



- R 4-48 Intrusive Light
- R 5-16 Photometric Specification And Measurement Of Sports Lighting Installations
- R 5-18 Comparison Of Glare Assessment Methods

9.3 Research Strategy

The following research topics are considered for Div. 4 strategic plan. Topics are either (partially) approached within existing TC other could make the subject of future TC, JTC or RF proposals:

- Adaptive, intelligent and dynamic lighting for Smart Cities, Internet of Things and LiFi Communications
- Depreciation and maintenance of lighting systems
- Phantom array effects in vehicle rear lighting
- Lighting of urban environment with focus on pedestrians & cyclists
- Lighting for the ageing population
- New metrics for LED based lighting systems
- Quality of light versus energy efficiency and cost saving
- Obtrusive light from static, dynamic and colour lighting, and its impact to humans and natural environment
- Urban master planning and floodlighting
- Mine lighting
- Lighting in railway applications

10 Other Division News

Div. 4 Director D. Gasparovsky represented Division 4 in Street Lighting and Smart Controls Conference in Sydney 2019 with a presentation on Adaptive Road Lighting.



International Commission on Illumination
 Commission Internationale de l'Éclairage
 Internationale Beleuchtungskommission



Canadian National Committee Comité national canadien

Division 6: PHOTOBIOLOGY AND PHOTOCHEMISTRY

Report to 2019 Joint CIE NC Canada, CIE NC US with the Council for Optical Radiation Measurements (CORM)

National Research Council of Canada

1200 Montreal Road, Ottawa, Ontario K1A 0R6 Canada Bldg. M-24

DATE: Thursday, Oct. 31, 2019

TIME: 10:15 to 10:45am

Dr. Sami Qutob

Email: Sami.Qutob@hc-sc.gc.ca

Attendees, country and division roles (* via Webex)

John O'Hagan (JOH) GB DD6 (outgoing Division Director)

JTC-05 Chair

JTC-14 Chair for CIE L6-2 WHO Liaison Officer

L6-8 CEN/TC 169/WG 8 Liaison Officer

L6-10 IEC/TC 34 Liaison Officer (incl. WG 6)

NC Rep (National Committee Representative)

VPS (CIE Vice-President Standards)

Luc Schlangen (LS) NL DD6 (incoming Division Director)
 NC Rep

Eric Liggins (EL*) GB DE6 (Division Editor)

Luke Price (LP) GB DS6 (Division Secretary)

L6-9 CEN TC169 WG13 Liaison Officer

R6-45 Reportership

R6-46 Reportership

David H Sliney (DHS) US ADD6

JTC-04 Co-chair for D6

R6-44 Shared reportership

TC6-64 Chair

Shu Takeshita (ST*) JP ADD6

NC Rep



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Sami Qutob (SQ)	CA	NC Rep
Tongseng Mou (TM)	CN	NC Rep
Natalie Leslie (NL)	DE	NC Rep
Jens Christoffersen (JC)	DK	NC Rep
Coralie Barrau (CBa*)	FR	NC Rep
Terje Christensen (TC*)	NO	NC Rep
Katja M Rebec (KMR*)	SI	NC Rep
George C Brainard (GCB)	US	NC Rep
Annette Steinbusch (AS)	NL	Gold SM Rep (Supportive Member Representative)
Ann R Webb (ARW*)	GB	L6-7 WMO Liaison Officer
Michael Lynn (ML*)	GB	R6-43 Shared reportership
Lorna Wen (LW)	CN	Reportership proposer

BR: Oswaldo Sanchez Jnr

CN: Xiayan Zhu, Dewei Cao, Gong Yinhui, Dandan Hou, Lili Wang, Li Song

JP: Naoyuki Suzuki

KR: Ko Jaz Kyu, Seo-Young Choi (D3 NC Rep)

MY: Vineetha Kalavally

US: Po-Chieli Hung, Sharon Miller, William Mills

TW: Chien Yu Chen

ZA: Edwin Mafakeng

11 Welcome by Director

JOH welcomed everyone to the meeting.

2. Apologies

LP noted having received apologies from ADD Karl Schulmeister, and noted that he had received notifications from EL and Richard Vincent that they would attend by Webex, but there was a chance it might not be possible.

Note both EL and ML attended by Webex but were not audible to the meeting, so could only listen. LP received emails from them during the meeting.

3. Approval of agenda

JOH noted that items being discussed would be visible on the screen for all, and that LP would copy all files to the D6 room on collaboration tools next week. JOH showed the proposed agenda.

The agenda was accepted with an addition of Research Fora to the title of Section 8, which are a new type of body within CIE to allow parties interested in a particular subject to meet to investigate the need to propose future Technical Committees or other more formal CIE future activities.

4. Minutes previous meeting

JOH showed the minutes which had been circulated on Collaboration Tools shortly after the 2018 meeting. The minutes were accepted, as proposed by GCB and seconded by SQ.

5. Progress report from DD6

JOH spoke about his two terms as DD6, and the division officers. LP had taken over as DS6 from Andrew Smedley in 2012, and EL had successfully taken on the role of DE6. The CIE Technical Manager used EL's approach as a model for DEs. At the point of handover to LS as the incoming DD6, both LP and EL would be continuing, and DS, ST and Karl Schulmeister were the three current ADDs.

JOH said that at around item 14 he would handover to LS, but invited him to speak about the new joint division publication S 026. LS showed a short presentation, outlining the implications of the standard on measurement of light in relation to ipRGC-influenced responses to light. Of those present, both he, LP and DS had been involved in JTC-09 which produced the standard published in 2018.

JOH spoke about his key task when he took over at DD6, which had been to rationalise the number of TCs, many of which had been in existence for decades without delivering. Although the number of TCs had not been reduced to zero, it essentially meant that the incoming DD6 had a clean start.

A workshop was planned for August 2020, which would be a re-run of a joint CIE/ICNIRP workshop on "Measurement of Optical Radiation Hazards" held in Gaithersburg, USA, 1-3 September 1998.

JOH noted the importance of the division's work with ISO and IEC, and in particular with ISO TC 274 on Light and lighting, whose secretary was here at the TC meetings. CIE's experience had been that IEC and ISO often proceeded with proposals for standards without having the necessary specialist knowledge on photobiology and photochemistry that CIE and division 6 could provide. In order to support us contributing to these activities, a report had been put together on how we work with other organizations. This also recognized that IES is a member of NC-USA of CIE, so it was important that we were careful not to jeopardize the NC-USA membership.

At the start of this new quadrennial, JOH noted that Peter Blattner is expected to be a dynamic new president of CIE.

6. Secretary's report

LP started his report by thanking JOH for his eight years as DD6, and listed the publications and key events in the division that he had overseen, including various Standards, Technical Reports, Technical Notes and the inclusion of Healthful Lighting as CIE's key research priority area. He explained that the division had 2 TCs, 2 JTC leads, membership of two further JTCs, and at present 4 Reporterships, two of which were linked to S 026 that LS has spoken about before. LP welcomed LS as the new DD6.

7. Editor's report

Due to Webex sound problems LP read out EL's report after item 8:

As in previous years, the DE has continued to work with TC Chairs, Secretariats and CB to progress documents. The incoming DD has kindly asked if I would continue in the role of DE and I was happy to agree. A telecon was held with the incoming DD on 8th May to review the current programme, update status on current/outstanding documents and Division strategy.

TC6-64 report has undergone further revision following comments and questions from CB on the draft that I had reviewed and worked on with the TC secretary. These were resolved via e-mail and a web conference with the TC chair, secretary and CB (Peter Zwick). Progress in getting the final revisions agreed has been extraordinarily slow, but I believe this is now in train.

TC6-52 seems to have stalled at present, unless there is activity of which the DE is unaware. In May 2018 CB asked for DD6 and DE6 to assist the TC in bringing the document to a state where CB is happy with it. I e-mailed DD6 in May 2018 but cannot find a reply.

TC6-43 (phototherapy for hyperbilirubinemia - neonatal jaundice) – I have advised the TC (Mike Lynn) on some minor editorial aspects (copyright for figures etc.) and look forward to seeing the next draft - sent 12/06/19.

8. Progress reports from Technical Committee Chairs and Research Fora

Progress reports received for committees, reporters and liaisons (agenda items 8, 9 and 10) were agreed to be made available on Collaboration Tools, following the meeting.

TC6-52 Proper Measurement of Passive UV Air Disinfection Sources (Richard Vincent)



The activity report was shared on the screen. JOH noted that it was currently with him to complete, and he would continue this to simplify the handover to LS.

TC6-64 Optical Safety of Infrared Eye Trackers Applied for Extended-Durations (David Sliney)

The activity report was shared on the screen. DS set out the current status, and in discussion with JOH it was agreed that this TC report was nearly complete and would also now be finalized by JOH.

JTC-04 Visual, Health, and Environmental Benefits of Windows in Buildings during Daylight Hours (David Sliney)

The activity report was shared on the screen. D3 had been the lead of this joint TC with D6 but were currently without a TCC. The JTC members were meeting the next day to discuss possible ways forward, as the JTC had been much delayed for various reasons, but was still felt to be urgently needed.

JTC-05 Joint Technical Committee to Revise CIE S009/IEC 62471 (John O'Hagan)

This JTC relates to the Photobiological Safety of Lamps and Lamp Systems in IEC. The IEC participation was not registered with IEC, despite the proposed IEC TC76 Secretary thinking it was. So CIE is going to complete and present it to IEC for a jointly-badged standard. This is possible mainly because most JTC5 members are in the IEC WG too.

JOH understood that although DHS had finished an update, he then had a computer failure that meant that the last stage of the updates from that stage needed to be captured and reinserted.

JTC-08 International Lighting Vocabulary (Peter Zwick)

The activity report received by the division was shared on the screen. JOH explained that the process was nearing completion to have a revised International Lighting Vocabulary, just as Peter Blattner had also presented to the conference earlier in the week.

CIE CB's Peter Zwick has lead this complex detailed work, coordinating with IEC's technical editor and ISO, and with the DDs of CIE. The new standard is hoped to be published fairly soon, and will have a number of both revisions and new terms.

It was noted that there are already new terms that have been introduced since the cut-off for inclusion, that will form part of the ongoing process of keeping the ILV up to date.

LS asked if it would be possible to include these new definitions in the online version known as the eilv <http://eilv.cie.co.at>. However, JOH noted that Peter is keen not to have separate versions to manage.

JTC-14 Integrative Lighting CIE/ISO (John O'Hagan, chair for CIE)

JOH is the CIE co-chair for this JTC (or ISO JWG, ISO Chair Raphael Kirsch). The terms Human Centric Lighting and a second term had been rejected by CIE in favour of the agreed term "Integrative Lighting". The JTC would be meeting in the afternoon. Both parties agreed it would be necessary to move quickly on this if it were to have any impact, and had agreed a way ahead abruptly after some initial delay, by setting out separate sections for what is well known to work, what reasonably well known and what lighting features were subject to uncertainty. This was now a mature document, but JOH invited division members to join the meeting, with the provision that the ISO rules for technical work might mean only registered members could attend (note it later turned out the ISO JWG chair had not registered, and although some extra delegates attended, content from the draft report was not shared during that meeting).

8.1 Research Fora

RF-02 Temporal Light Modulation (n/a)

JOH explained the purpose of the new research forums, and explained that RF-02 on Temporal Light Modulation was the one of most interest to the division. It had grown out of a workshop held by Jennifer Veitch in Ottawa in 2017, and there was an email mailing list allowing regular discussion about points of interest, opportunities to share data and ask questions. RF-02 was meeting the following late afternoon, and interested delegates were encouraged to come along.

[Note 1: There are no formal division roles in RFs outside of the Convenor's division, so these may be discussed at annual meetings at the discretion of the DD.]

[Note 2: At this point LP showed and read out EL's report as given above under item 7.]



9. Progress reports from Reporters

R6-43 Illuminators for Treatment of Infant Hyperbilirubinemia (Graham Hart, Michael Lynn)

As above, ML was unable to present the activity himself. ML had kept JOH and LP regularly updated on progress in the run up to the annual meeting, as well as providing his draft Technical Note. JOH explained that due to the changed rules on reporterships, this draft was a shortened version of his intended longer report.

The report dealt with the lamps used to treat neonates for Hyperbilirubin in hospitals. The neonates nowadays always wear eye protection during treatment sessions. Blue wavelengths are used for historical reasons but the use of longer wavelengths might have greater efficacy and have additional safety advantages. OLEDs are another development discussed, which can now be used to wrap the body in a light emitting blanket.

DS asked why this TN would only be shared internally. JOH noted that LS now had the chance to decide how this topic could be taken forward, but there did seem to be some interest in forming a TC to produce an external CIE report.

R6-44 Optical Radiation Hazard Measurements in the Workspace (David Sliney, Robert Angelo)

DS broadly felt that this reportership was no longer worth continuing, and its function was mostly taken over by the liaison with the IEC TC76.

DS, AS, LS and SQ discussed this, and it was felt it would be possible to close this reportership and reopen it if necessary later.

R6-45 Publication and maintenance of the CIE S026 Toolbox (Luke Price)

LP explained that this reportership had been set up for the production and maintenance of a Toolbox to facilitate calculations according to S 026. He noted that this was something of an exception, because the publication was not a TN, but the wording of the terms of reference was explicit.

R-6-46 2nd International Workshop on Circadian and Neurophysiological Photoreception (Luke Price)

LP had been appointed to report on the second workshop from Manchester on circadian neurophysiological photoreception. The first workshop in 2013 had ultimately resulted in S 026, and it was hoped this time there would be a focus on putting together some agreed practical advice for healthy light exposure.

10. Progress reports from Liaison Officers

JOH suggested that the Liaisons should be reviewed by the incoming DD6 following the meeting.

L6-1 IEC/TC 76/WG 9 International Electrotechnical Commission: Optical radiation safety and laser equipment/Non coherent sources (Werner Horak)

No activity report received. JOH was acting convener, as Werner Horak had retired, although not formally notified the end of his liaison. This was related to the JTC 05 work previously discussed, with lots of activity on topics including light sources with lasers that are used as lamps, measurements, UV, and data projectors.

L6-2 WHO-World Health Organization (JOH)

The activity report was shown. JOH explained WHO were working on standards for countries that otherwise have no non-ionising radiation management in place for exposure of the public to products they might buy as well as their exposures as employees and patients. It was of some importance to CIE for its profile with WHO to get its logo on this work.

The new WHO Senior Medical Officer has a background in eye-health, so the topic of myopia, that LW would be presenting on later in the meeting, may be significant in future WHO work.

In JOH's new role as VPS he was interested whether CIE could become a formal liaison partner in WHO terms. ICNIRP (International Commission for Non-Ionising Radiation Protection – see L6-4) were not accepted for this status due to finding the WHO formal process for issuing guidance to formal to comply with, as confirmed by SM.

L6-3 ISO/TC 217/WG 7 International Organization for Standardization: Cosmetics/Sun protection test

methods (Uli Osterwalder)

No report had been received. JOH felt the Liaisons should be reviewed by the incoming DD6 and in this case a new LO might be needed.

L6-4 ICNIRP International Commission on Non-Ionizing Radiation Protection (Karl Schulmeister, KS)

No report had been received. However, SM provided an update. SM noted that ICNIRP were currently updating the old LED statement because the classification of LEDs as lasers or lamps had not been resolved when it was issued. LEDs would now be classified as lamps.

At ICNIRP, the blue light hazard was not considered a concern [for lighting with LEDs]; there was some interest in the effect of short wavelength light on circadian rhythms and in laser pointers; and they were to issue its errata on laser guidelines to clarify about measurement positions. ICNIRP were very active, with most of these publications expected next year.

If KS was likely to have less to do with D6, SM indicated that he would be prepared to take on this liaison and agreed to discuss it with KS.

L6-5 IEC/TC 76/WG 1 International Electrotechnical Commission: Optical radiation safety and laser equipment/Optical radiation safety (David Sliney)

The activity report was shown, due to a mix up with L6-6. DS explained that this was the IEC work on emission limits, and he is happy to continue to report back any activity.

L6-6 ASP American Society for Photobiology (David Sliney)

The activity report was shown. There was some discussion about the alternation between America (ASP) and Europe (ESP) for meeting years, and the possibility of D6 meeting at the next meeting in Chicago 2020.

L6-7 WMO World Meteorological Organization (Ann R. Webb)

ARW briefly talked through her activity report was shown, which would be available on Collaboration Tools after the meeting. There had been no activity since publishing the 2014 report, with no changes currently being planned.

L6-8 CEN/TC 169/WG 8 Photobiology (John O'Hagan)

A short activity report was shown. JOH explained that CEN mirrors ISO within Europe. The WG had no activity to report, having previous published five documents, that were not considered particularly helpful.

L6-9 CEN/TC 169/WG 13 Non-visual effects of light on human beings (Luke Price)

No written activity report has been produced, as there had been no activity this year. LP explained that this WG had published a technical report shortly before CIE S 026, dealing with the same area. He was happy to continue to report back any activity within the WG.

L6-10 IEC/TC 34 Lamps and related equipment (John O'Hagan)

The activity report was shown. JOH emphasised that this liaison was at the TC 34 level rather than WG6 (on Photobiological Safety). A committee draft on the blue light hazard was out for comment by the 21 June. CIE would not support it, and JOH felt that even IEC/TC 76 would probably not either. He said that TC 34, and their views on measurement position, were somewhat difficult to deal with.

11. Dissolution of TCs and Reporterships

At this point JOH said he was effectively was handing over the DD role to LS to complete the meeting.

There were no proposals to wind up TCs, and LS, in conjunction with DS, could consider what to do with R6-44 after the meeting as no further discussion or vote was needed.

[Note: During the following JTC-04 meeting, it was proposed and agreed that this would be better progressing as a new TC under Division 3, provided a chair could be found for it. DS and other D6 members were supportive of this, subject to input from LS.]

12. Proposals for TCs and Reporterships

There were no proposals raised from the floor or Division Officers, although the discussion relating to item



14 was started at this point in the proceedings (recorded under 14. below) and continued informally after the meeting.

13. Division Officers

LS would take over from JOH as DD6. LP and EL would remain as DS6 and DE6 respectively. Going forward, the three ADD roles could be reviewed by the new DD6, with 1 ADD expected not to continue.

14. Future Division Research Strategy

LS discussed his outlook, plans and ideas for a CIE D6 Research Agenda:

1. What light and dark daily pattern (intensity, spectrum, timing, duration) best supports well-being (young/old)? Ongoing activities: JTC 14 “Integrative Lighting” - ISO TC 274/ WG5 ; DR 6-46 “2nd circadian Manchester workshop”; ICNIRP: PG Short Wavelength Light and Circadian Rhythm (JOH, KS, DS – CIE D6)
 - a. Knowledge of dose-response relationships
 - b. Metrics and devices to quantify dose accurately
 - c. Recommendations (particular contexts, light at night indoors,...)?
2. JTC 5 Review of IEC 62471/CIE S009 “Photobiological Safety of Lamps and Lamp Systems”
3. Next to circadian regulation, what physiological and psychological processes are influenced by ocular light exposure?
 - a. Role of inadequate light exposure during childhood in development of myopia?
4. Horticulture lighting: terms & definitions & action spectrum
5. Daylight definition, visual/colour focus: update w.r.t. non-visual, spectral radiance,?
6. Medical uses of light to treat certain skin disorders and hyperbilirubinemia.

There were some technical comments about these topics. LP There was going to be a D2 wearable Division Reportership, and he had been lead to believe he would also be consulted.

TM SLTBR has relevant interest & LS agrees and hopes that a more active collaboration/exchange between CIE and SLTBR can be achieved in future.

LW presented her Light and Myopia slides. These referenced a Brian Holden report. In China the average level of high myopia at age 10 was now higher than the average adult. LW explained that Chinese have a thin sclera, which may be more prone to changing shape. There had been a change in visual tasks and habits [between recent generations, for children]. Visual fatigue was considered a potential core factor, and their research was focused on the mechanisms that lead to visual fatigue.

LW answered several questions, agreeing with the questioners and explaining that the presentation was shortened:

- LP raised the question whether Temporal Light Modulation and flicker should be considered, as this was known to be related to visual fatigue.
- SQ confirmed that the change in visual tasks and habits associated with flicker were accommodation distance indoors compared to outdoors when children are made to spend more time working inside.
- CB thought that it was important to avoid confusing visual fatigue and myopia, and raised other factors such as circadian rhythms and non-light factors that can contribute to myopia development. She was not sure that visual fatigue could explain the whole thing, but stressed the importance of researching the role light played.

LS suggested having a review of this field to put the role of light in myopia development/progression into context, and the importance that researchers jointly took a systematic approach to the problem, and invited



comments after the meeting. He noted a TC proposal was being considered by the BA, and that the scientific consensus and expertise gaps in this field merit further identification, hopefully with engagement and support of global experts.

[Note not forming part of the official minutes: Naoyuki Suzuki (observer, JP) and Xiayan Zhu (observer, CN) supported LS comments and expressed an interest in taking part in joint research efforts.]

14.1 Horticultural Lighting

The Russians had proposed some new work on terminology for horticultural lighting to IEC TC34. This had been supported by China. Peter Zwick had attended a meeting of an Advisory Group of TC34 on this subject. A number of terms were discussed and Peter had divided these into those likely to be the responsibility of CIE, those for IEC and those that were specific terms for the industry.

15 Future meetings

It was intended to continue to hold meetings on alternate years by Webex unless a suitable event made it practical to hold a physical meeting. Based on that plan, the Division 6 meeting would be held at CIE in Penang in 2021, subject to confirmation, and in Ljubljana in 2023.

16 Any Other Business

There was no other business raised.

17 Adjournment

LS thanked the attendees for their participation and time, and adjourned the meeting.

[For a while the meeting continued informally, discussing item 14. on Light and Myopia.]

Luke Price

7 August 2019

[Note the minutes to be finalised following the Division 6 meeting in 2020]



Current list of DMs, TCMs, DRs and LOs

For DRs and LOs see minutes

DMs

AT Austria Karl Schulmeister
AU Australia Urbain Urbain de Plessis
BE Belgium Guy Vandermeersch
BG Bulgaria Angel Pachamanov
BR Brazil Isac Roizenblatt
CA Canada Sami Qutob
CH Switzerland Beat Gerber
CN China Tongsheng Mou
DE Germany Nathalie Leise
DK Denmark Jens Christoffersen
ES Spain David Baeza Moyano
FI Finland Helge Lemmetyinen
FR France Coralie Barrau
GB United Kingdom John O'Hagan
HK Hong Kong S.A.R., China TM Chung
HU Hungary Gabriella Csík
IL Israel Gabriela Dorfman-Furman
JP Japan Shu Takeshita
KR South Korea Meeryoung Cho
MY Malaysia Chang Kee Kwong
NL Netherlands Luc Schlangen
NO Norway Terje Christensen
NZ New Zealand Chris Chitty
PL Poland Urszula Blaszcak
RO Romania Constantin Ion
RS Serbia Zoran Ledinski
RU Russia Roman Belyaev
SE Sweden Thorbjörn Laike
SI Slovenia Katja Malovrh Rebec
TR Turkey Alpin Köknel Yener
TW* Chinese Taipei Chien-Yue Chen
US United States George C Brainard
ZA South Africa Natasha Nel-Sakharova

* CIE Associate National Committee.

TCMs (may include TCMs from other divisions in JTCs)





No change for TC6-52, TC6-64, JTC-04, JTC-05, and JTC-08 (see minutes of previous D6 meetings).
New members during the year are marked with an asterisk, departing members using strikethrough.

JTC 14 Integrative Lighting (ISO TC274 JWG4)

TC chair:

John O'Hagan GB

ISO Co-Chair:

Raphael Kirsch DE

TC members:

Kai Broszio DE

Yi-Chun Chen TW

Po-Chieh Hung US

Ruta Lasauskaite CH

Naomi Miller US

Luke Price GB

Irina Terenetskaya RU

Jennifer Veitch CA

Franz-Peter Wenzl AT

Peter Zwick AT (CIE CB)

