



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



MINUTES OF THE 44TH ANNUAL CNC/CIE MEETING

1999-October-15

The 44th annual meeting of the Canadian National Committee of the Commission Internationale de l'Éclairage (CNC/CIE) was held on Friday, October 15, 1999 at the Regal Constellation Hotel, 900 Dixon Road, Etobicoke, Ontario. This year the CNC hosted the joint CNC-United States National Committee (USNC) conference which included a full-day technical session in addition to the separate annual business meetings of each National Committee (NC). A copy of the Conference announcement brochure is attached as Appendix A.

The agenda for the joint meeting of the CNC/USNC held on Friday morning is attached as Appendix B. Terry McGowan of the USNC was unable to attend due to illness. A copy of the Division Members' reports which were presented at the business meeting is attached as a separate document: *Division Members' Reports for the joint CNC/USNC/CIE annual meeting 1999-October-15*. Presentations were made by S.M. McFadden (Division 1), J.C. Zwinkels and N. Johnson (Division 2), I.C. Pasini (Division 3), W.K. Adrian and R.E. Stark (Division 4), J. Roberge and T. Lemons (Division 5), J.A. Veitch (Division 6), and R. Baribeau and M. Stokes (Division 8).

The joint CNC/USNC/CIE conference was held Saturday 1999-October-16 with the following modifications to the program given in Appendix A: Sessions 2, 5, 9, and 12 were canceled, Session 8 was presented by J.A. Veitch using the material from N.J. Miller, Session 11 was presented by P. Parahuz, and a session paper entitled *Sustained Performance Improvement as a Result of Better Lighting* was given by Peter Boyce of Rensselaer Polytechnic Institute in Troy, NY.

Note: the following acronyms are used in this report:

CIE	Commission Internationale de l'Éclairage
CNC/CIE	Canadian National Committee of the CIE
USNC	US National Committee of the CIE
BA	CIE Board of Administration
CB	CIE Central Bureau
NC	CIE National Committee
TC	CIE Technical Committee

1. Call-to-order:

The 44th annual meeting of the Canadian National Committee of the Commission Internationale de l'Éclairage (CNC/CIE) was called to order at 13:35 on Friday, October 15, 1999 by J. Roberge, President.

Eighteen Members and Advisory Members, and four guests were in attendance. The list of all attendees is given in Appendix C.

The agenda, as circulated by mail (Appendix D) was accepted with the addition of three items under Other Business:

- 9.3 Invitation to CIE Divisions 4 and 5 to meet in Toronto 2000 September 1-6.
- 9.4 CNC/CIE participation in the USNC hosting of the 25th Session of the CIE in 2003.
- 9.5 Lighting Education.

2. Minutes of the 43rd Annual CNC/CIE Meeting:

The following items arising from the Minutes were considered:

- 1. Item 2.5 Concerning the CNC/CIE award for H.W. Budde, A.A. Gaertner indicated that this had not yet been done. It was requested that this be done during the next year.
- 2. Item 4 J. Roberge indicated that the CIE mid-term meeting in 2001 would be held in Turkey.
- 3. Item 10.1.5 Concerning E. Wotton's request for roadway lighting information, it was noted that this would be discussed in a presentation during the joint CNC/USNC/CIE conference on Saturday.
- 4. Item 10.3 Would be discussed in Item 9.3 of this meeting.

Moved by J.A. Veitch, seconded by J.A. Love, that the Minutes be accepted as circulated. Passed.
The President invited all attendees to introduce themselves.

3. Election of Reporter for the Lighting Press:

J.A. Love indicated that he had been unable to carry out this task after the last meeting but that he would make every effort for this meeting.

4. President's Report:

J. Roberge presented his report, which is attached as Appendix E. He recommended that our new CNC/CIE President attend the CIE Board of Administration (BA) meetings as an observer, noting that this is more important now that we no longer have a Canadian member on the CIE BA. He thanked the CNC/CIE for their generous support during his term as President of the CNC/CIE.

J.A. Veitch asked whether there were any Canadian companies who could be considered as Supportive Members of the CIE. In reply, it was stated that most Canadian industry is a subsidiary of the USA, although we should publicise the rewards of this form of CIE Membership.

5. Secretary's Report:

A.A. Gaertner presented his report, which is attached as Appendix F.
R.A. Smith moved, J.A. Love seconded, the approval of this report.

6. Publications Report:

A.A. Gaertner presented A.R. Robertson's report, attached as Appendix G.

E. Wotton asked whether any library in Canada had these CIE Publications. J. Roberge stated that none did. E. Wotton moved, R.A. Smith seconded, that a copy of CIE publications of general interest be obtained by CISTI (Canada Institute for Scientific and Technical Information) for reference by Canadians. The CNC/CIE is to sell them to CISTI at cost. This motion is to be sent from the (new) CNC/CIE President to the Director-General of CISTI, with a copy to the President of NRC. Passed unanimously.

Discussion followed concerning moving the CNC/CIE bank account to K. Frank Lin as part of the duties of the Publications Officer. J. Roberge suggested that any cheques spent from the account require any two of a possible four signatures (CNC/CIE officers: President, Vice-President, Secretary, Publications Officer), and that this could be referred to the CNC/CIE executive to execute. It was moved by A. Ketvirtis, seconded by J. Bastianpillai, that the Publications Officer (K. Frank Lin) select the bank to be used, and that signing authority require two signatures out of the possible four signatures. Passed.

7. Nominations and Appointments:

A list of the CNC/CIE Members and Advisory Members (Appendix H) was circulated by the Secretary.

Members:

The Secretary noted that the six Member appointments recommended by the CNC/CIE at its 43rd annual meeting were endorsed by A.L. VanKoughnett, Director-General of NRC-INMS, and all six had accepted this appointment: Werner K. Adrian, Sharon M. McFadden, Réjean Baribeau, Ivan C. Pasini, James A. Love and Joanne C. Zwinkels.

The Secretary indicated that the terms of two of the present Members expire this year: J. Roberge and J.A. Veitch.

J.A. Veitch stated that she was resigning from the position of Canadian Division Member for CIE Division 6, as she had indicated in her Division 6 report. The President expressed that her resignation was received with regret, and thanked her for her enthusiastic work as Division Member. J.A. Veitch suggested J.D. Yvon Deslauriers as a candidate for the Canadian Member for CIE Division 6. Dr. Deslauriers was present at this meeting and indicated that he was willing to accept the nomination, and that his department, Health Canada, would support him in this position. The committee unanimously nominated him to the NRC-INMS as Canadian Division Member to CIE Division 6.

The President reminded the meeting attendees that he had indicated at the 43rd annual meeting that he would resign the presidency at this meeting. He also reviewed the procedure at the 43rd annual meeting requesting volunteers or nominations for the CNC/CIE Presidency. It had also been decided that the potential president should attend the CIE 24th Session in Warsaw (June 1999) as the alternate Canadian delegate to the General Assembly, and receive financial support. He reported that in a telephone conference between J. Roberge, A.R. Robertson, and A.A. Gaertner on 1999-April-21, it was agreed to ask S.M. McFadden if she would be willing to attend the CIE 24th Session as the potential CNC/CIE President. She had agreed and she had attended the Session as the alternate Canadian delegate.

The President then asked whether there were any further nominations for the position of CNC/CIE President. J.C. Zwinkels was nominated, but declined. The committee then unanimously nominated S.M. McFadden as the next CNC/CIE President.

J. Roberge indicated that he was willing to continue as Canadian Division 5 Member. The committee unanimously nominated him to continue in this position.

Advisory Members:

The Secretary indicated that he had a request from Mankajee K. Shrestha to join the CNC/CIE. After some discussion it was agreed to accept him as an Advisory Member subject to the confirmation of his qualifications by the Secretary.

André Laperrière of Hydro Québec had been suggested at the last annual meeting as an Advisory Member. He was present at this meeting, indicated his willingness to become an Advisory Member, and was accepted by the committee. Andrew Silbiger, who also attended this meeting, was suggested as an Advisory Member. He indicated his willingness to serve and was accepted by the committee as an Advisory Member.

J.A. Veitch indicated that D.K. Tiller of NRC-IRC had moved to the University of Nebraska in the USA and suggested that Dr. Guy Newsham be invited to become an Advisory Member. This was approved by the committee.

A question was raised about the membership of R.B. Gibbons who has been in the USA for some time. W.K. Adrian volunteered to discuss this with Dr. Gibbons.

8. CIE 24th Session in Warsaw, June 1999:

This item had been discussed in this morning's joint CNC/USNC/CIE meeting. Further information is presented in the President's report (Appendix E).

B. Kolesnik, who knows many of the members of the Polish National Committee(NC), stated that it had been a privilege for the Polish NC to have had the opportunity to hold the session in Warsaw.

R. Topalova made an open invitation to send her any information which would be useful for her Division 3 reportership *R3-06 Accidents and Lighting*.

The President informed the committee of discussions concerning the complaint by a USSR delegate concerning the conduct of TC 3-30. He stated that he had reviewed the information sent to him by Dr. L.A. Whitehead, the Chair of this TC, and concluded that the complaint was not justified. After some discussion, the committee decided not to make an issue of the matter and to let it rest unless formal procedures were forth-coming from the Central Bureau.

9. Other Business:

9.1 Correspondence:

The President noted various items of correspondence which he had received during the past year.

9.2 Date and Place for Next Year's Meeting:

It was decided to hold the 45th annual meeting on Friday, 2000-October-13, at the Defence and Civil Institute of Environmental Medicine (DCIEM) in Toronto, subject to the approval of S.M. McFadden, who works at DCIEM.

9.3 Invitation to CIE Divisions 4 and 5 to meet in Toronto 2000 September 1-6.

Discussion centered around potential funding for these meetings. J. Bastianpillai volunteered to help with items relating to the City of Toronto. J.A. Love might be able to help with a half-day seminar. W.K. Adrian was concerned with securing some CNC/CIE funding. The President noted that this was a CIE Division meeting and the conference fees should cover the associated costs. He indicated that the CNC/CIE could not subsidise the meeting and that W.K. Adrian, who was the meeting organiser, should plan for a balanced budget. After some discussion, the committee decided that the CNC/CIE would provide \$1000.00 as a safety net for the meeting. This was not to

be considered as a subsidy. This motion was passed.

9.4 CNC/CIE participation in the USNC hosting of the 25th Session of the CIE in 2003.

It was noted that the CNC/CIE would help the USNC in whatever means was possible. The President would handle matters when they arose.

9.5 Lighting Education.

J.A. Veitch informed the committee that Ryerson University has been trying to set up a lighting curriculum. She asked whether the CNC could set up a committee to help them. E. Wotton noted that there were several places in the USA and UK which have a lighting curriculum. It was pointed out that the program at Ryerson was not equivalent. J. Roberge asked whether we should have an effort which involved all of Canada, not just Ryerson. He asked what kind of support was needed. J.A. Veitch indicated that what was probably needed were some individuals in the Toronto area who could provide assistance to the people working on the program at Ryerson—perhaps some type of Steering committee to help develop the concepts and program.

Due to limited time for discussion, it was suggested that this item be included on the agenda of next year's meeting.

E. Wotton indicated that Jerry Dugan of *Lighting Magazine* would be present tomorrow to cover the technical conference part of the meeting. J. Roberge, S.M. McFadden and J.A. Love volunteered to meet with him to discuss this joint CNC/USNC/CIE meeting and the work of the CNC.

9.6 Thank you!

W. K. Adrian expressed the gratitude of the CNC/CIE to J. Roberge for his dedicated work and leadership of the CNC/CIE during his past nine years as President of the CNC/CIE.

10. Adjournment:

The meeting was adjourned at 16:10.

A joint CNC/USNC/CIE session then followed to summarise the days' activities of both NCs and to allow discussion of any items of mutual interest.

The out-going Presidents of the CNC and USNC started the session by presenting the new slate of officers of the respective NCs for the next term. For the USNC, A. Lewis introduced J. Rennilson (President), Terry McGowan (Vice-President), Tom Lemons (Secretary), and Herb Odle (Treasurer). Terry McGowan was unable to be present. For the CNC, J. Roberge introduced Sharon McFadden (President), Werner Adrian (Vice-President), and Arnold Gaertner (Secretary).

J. Rennilson presented information concerning the hosting of the CIE 25th Session in San Diego in 2003 by the USNC. He requested help from the CNC/CIE in planning technical visits before and after the CIE sessions.

S.M. McFadden introduced herself to the group and indicated that the CNC/CIE would keep in touch with the USNC for the San Diego Session. She also hoped that the two NCs would also keep in touch by continuing the tradition of joint meetings as hosted by the USNC in 1997 and by the CNC at this meeting. She thanked the USNC for their participation in this meeting.

K. Frank Lin, who had just assumed responsibility for CIE Publications in Canada, asked the USNC to describe their experience with sales of CIE publications. Tom Lemons who is responsible for sales within the USNC, replied, indicating that they also required that publications

be paid for in advance. He also noted that only one US library had copies of the CIE Publications, and that it did not have an up-to-date collection. He requested K.F. Lin to keep in close communication so that any cross-border requests for publications could be referred to the proper NC publication provider.

J.A. Veitch noted that I.C. Pasini of the CNC had just been named a fellow of the IES. Further discussion followed on various issues, such as funding for CIE and NC meetings. The joint session adjourned at 16:55.



A.A. Gaertner
Secretary, CNC/CIE
Institute for National Measurement Standards
Building M-36
National Research Council of Canada
Ottawa, Ontario K1A 0R6

Tel: (613) 993-9344
Fax: (613) 952-1394
Email: arnold.gaertner@nrc.ca

2000-September-26

LIST OF APPENDIXES

- Appendix A: Brochure for the joint CNC/USNC/CIE Conference
- Appendix B: CNC/USNC/CIE Joint Annual Meeting Proposed Agenda
- Appendix C: Attendees to the 44th Annual Meeting of the CNC/CIE
- Appendix D: Proposed Agenda for the CNC/CIE 44th Annual Meeting
- Appendix E: President's Report
- Appendix F: Secretary's Report
- Appendix G: Publications Report
- Appendix H: CNC/CIE Members and Advisory Members

CONFERENCE COMMITTEE

CHAIRMAN

Ralph A. Smith
Tel: (506) 451-0005
Fax: (506) 451-2211
email:
rasmith@nbnet.nb.ca

PROGRAM CHAIRMAN

James Love
Tel: (403) 220-7428
Fax: (403) 284-4399
email:
love@acs.ucalgary.ca

FINANCE CHAIRMAN

Arnold Gaertner
Tel: (613)993-9344
Fax: (613)952-1394
email:
arnold.gaertner@nrc.ca

HOTEL & REGISTRATION CHAIRMAN

Werner Adrian
Tel: (519) 579-7575
Fax: (519) 579-6292

PROMOTION CHAIRMAN

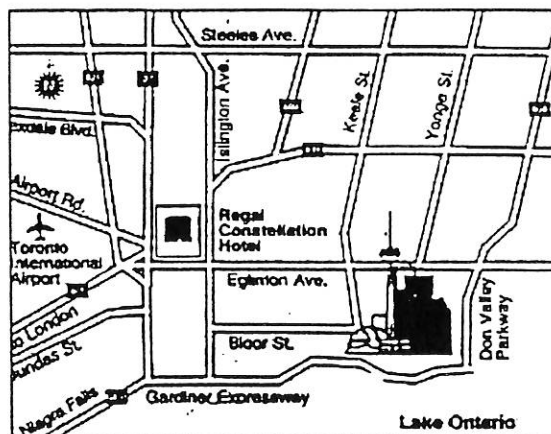
Martyn Timmings
Tel: (416) 960-3450
Fax: (416) 960-1400
email:
mtimmings@canlyte.com

CNC PRESIDENT

Jacques Roberge 774-
Tel: (450) ~~223-1667~~ 0688
Fax: (450) 223-1731
email:
jroberge@login.net

Hotel Location

900 Dixon Road, Etobicoke, Toronto.



CNC/CIE

HOSTS THE

CANADA - UNITED STATES JOINT CNC/USNC CIE CONFERENCE

OCTOBER 14 - 17, 1999



~REGAL CONSTELLATION~
HOTEL
TORONTO, ONTARIO



❖ **THURSDAY, OCTOBER 14, 1999** ❖

7:00 p.m. - 10:00 p.m. **WELCOME !**
Hospitality Room

❖ **FRIDAY, OCTOBER 15, 1999** ❖

8:30 a.m. - 9:00 a.m. Coffee & Snacks

9:00 a.m. - 10:30 p.m. Joint Meeting of
CNC/USNC

10:30 a.m. - 10:45 a.m. Coffee Break

10:45 a.m. - 12:00 noon Joint Meeting of
CNC/USNC

12:00 p.m. - 1:30 p.m. Lunch provided by CNC

1:30 p.m. - 3:30 p.m. Meeting of CNC
Meeting of USNC
(Separate Meetings)

3:30 p.m. - 3:45 p.m. Coffee Break

3:45 p.m. - 5:00 p.m. Meeting of CNC
Meeting of USNC
(Separate Meetings)

5:30 p.m. - 8:00 p.m. Visit to Osram-
Sylvania's Lighting
Centre complete hors
d'oeuvres. Bus
transportation
provided by CanLyte.

8:00 p.m. - 10:00 p.m. Dinner on Own

❖ **SATURDAY, OCTOBER 16, 1999** ❖

8:30 a.m. - 8:45 a.m. Coffee & Snacks

❖ **SATURDAY, OCTOBER 16, 1999** ❖

8:45 a.m. - 9:15 a.m. Session # 1
"The New CIE
Division 8-Image
Technology &
What That Means"
Michael Stokes,
Secretary
CIE, Division 8

9:15 a.m. - 9:45 a.m. Session #2
"75 Years of CIE
Photometry - 1999
Symposium
Report -
Terry McGowan, VP-
USNC

9:45 a.m. - 10:15 a.m. Session #3
"CIE Standards
Processing on the
National Level"
Philip Wychorski,
Chairman - USNC
Standards

10:15 a.m. - 10:30 a.m. Coffee Break

10:30 a.m. - 11:00 a.m. Session #4
"CIE Review of
Systemic Effects
of Optical
Radiation
on Humans"
Dr. Jennifer A. Veitch,
PhD. - NRC

11:00 a.m. - 11:30 a.m. Session #5
"Recent Aspects of
the Biological &
Behavioral
Effects of Light"
Dr. George Brainard,
Jefferson Medica
College
Philadelphia, PA

❖ SATURDAY, OCTOBER 16, 1999 ❖

- 11:30 p.m. - 12:00 noon Session #6
"The Importance of Wavelength in Artificial Lighting Photoneuro-immunology"
 Dr. Joan E. Roberts,
 Professor of
 Chemistry,
 Fordham University
- 12:00 noon - 1:30 p.m. Lunch provided by
 CNC
- 1:30 p.m. - 2:00 p.m. Session #7
"Rod & Cone Area-Intensity Functions in the Far Red, Stiles-Crawford Effects, & Scotopic Efficiency V' λ CIE 1951"
 P. E. Hallett, Dept. of
 Physiology (also
 Zoology,
 Ophthalmology
 & Biomedical
 Engineering)
 University of Toronto
- 2:00 p.m. - 2:30 p.m. Session #8
"The Special Need for Light & Lighting in Northern Climates"
 Naomi J. Miller,
 FIES, IALD, LC
- 2:30 p.m. - 3:00 p.m. Session #9
"Life Test Results of Compact Fluorescent Lamps with Integral Ballasts Operated with a Rapid Cycling Starting Frequency"
 Steve Johnson,
 Lawrence Berkeley
 Laboratory



PRE-REGISTER BY AUGUST 15th, 1999

Make cheques payable to "CNC/CIE" and mail to:

Ms. Heather Matchett, Institute for National Measurement Standards, Building M-36, Room 137, National Research Council of Canada
 Ottawa, Ontario, K1A 0R6, Canada. Mark envelope "PERSONAL".



Registration Fee
 (Includes all EVENTS)

\$ 110.00 CND

\$ 80.00 US

Room Rates & Parking
 ~Regal Constellation Hotel~
 \$ 85.00 / night Canadian -
 Parking \$5.00 / Day

Name: _____
 Company: _____
 Address: _____
 City: _____
 Province: _____
 Telephone : () _____
 Postal Code: _____
 Fax: _____
 Email: _____
 Guest's Name: _____
 **For reservations call Regal Constellation Hotel in Toronto at 1-800-222-8888, fax (416) 675-1737 or visit their website at regal-info@regal-hotels.com.

❖ SATURDAY, OCTOBER 16, 1999 ❖

- 3:00 p.m. - 3:15 p.m. Coffee Break
- 3:15 p.m. - 3:45 p.m. Session #10
"On the Question of Metal Halide or High Pressure Sodium in Roadway Lighting"
 Dr. Werner Adrian,
 Professor Emeritus of Optometry, University of Waterloo
- 3:45 p.m. - 4:15 p.m. Session #11
"The Quantification of Discomfort Glare in Roadway Lighting: Results of Recent Investigations on a Long-neglected Quality Criterion"
 Dr. Werner Adrian,
 F. Karmali &
 P. Parahuz,
 University of Waterloo
- 4:15 p.m. - 4:45 p.m. Session #12
"Across-the-Board Application of Visual-System Sensitivities"
 Dr. William A. Thornton,
 Prime-Color Inc. and
 Mr. William N. Hale,
 Hale Color Consultants
- 6:00 p.m. - 9:00 p.m. Dinner Hosted by CNC
 in the Regal
 Constellation Hotel

❖ SUNDAY, OCTOBER 17, 1999 ❖

- 9:00 am - Departure



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



CNC/USNC/CIE Joint Annual Meeting

Proposed Agenda

DATE: 1999-October-15 - Friday

TIME: 9:00 am to 12:00 pm

LOCATION: Regal Constellation Hotel
900 Dixon Road, Etobicoke, Ontario, Canada

PROPOSED AGENDA:

1. Discussion of the CIE 24th Session in Warsaw, June 1999.
Chairmen: Jacques Roberge (CNC) and Alan Lewis (USNC)
2. Joint CNC and USNC Division Members' reports.
Chairmen: James Love (CNC) and Terry McGowan (USNC)

CIE Division	Division Member	
	Canada	United States
Division 1: Vision and Colour	Sharon McFadden	Paula Alessi
Division 2: Physical Measurement of Light and Radiation	Joanne Zwinkels	Norbert Johnson
Division 3: Interior Environment and Lighting Design	Ivan Pasini	Craig Bernecker
Division 4: Lighting and Signalling for Transport	Werner Adrian	Richard Stark
Division 5: Exterior and Other Lighting Applications	Jacques Roberge	Thomas Lemons
Division 6: Photobiology and Photochemistry	Jennifer Veitch	George Brainard
Division 7: General Aspects of Lighting	Robert White	Richard Vincent
Division 8: Image Technology	Réjean Baribeau	Michael Stokes

APPENDIX C

Attendees to the 44th Annual Meeting of the CNC/CIE

1999-October-15

Werner K. Adrian	Professor Emeritus, University of Waterloo
Réjean Baribeau	National Research Council (INMS)
Joe Bastianpillai	Lumentech Engineers
Mario Bucci	guest, SNC•LAVALIN Engineers & Constructors Inc.
Yvon Deslauriers	guest, Health Canada (RPB)
Arnold Gaertner	National Research Council (INMS)
Byron Jordan	PAPRICAN
A. Ketvirtis	SNC•LAVALIN Engineers & Constructors Inc.
Barbara Kolesnik	UMA Engineering Ltd.
André Laperrière	guest, Hydro Québec (LTEE)
K. Frank Lin	Lighting Sciences Canada Ltd.
James Love	University of Calgary
Sharon McFadden	DCIEM
Ivan Pasini	Public Works and Government Services Canada (A&ES)
Jacques Roberge	President, CNC/CIE
Andrew Silbiger	guest, Consultant - Toronto
Ralph Smith	Ralph Smith Engineering Inc.
Rados Topalova	University of Waterloo
Jennifer Veitch	National Research Council (IRC)
Lorne Whitehead	University of British Columbia
Ernest Wotton	Consultant - Toronto
Joanne Zwinkels	National Research Council (INMS)

Regrets

Alan R. Robertson	National Research Council (INMS)
R.W. White	Duschenes & Fish Architectes



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



CNC/CIE 44th Annual Meeting

Proposed Agenda

DATE: 1999-October-15 - Friday

TIME: 13:30 am to 17:00 pm

LOCATION: Regal Constellation Hotel
900 Dixon Road, Etobicoke, Ontario

PROPOSED AGENDA:

1. Call to Order and Approval of Agenda J. Roberge
2. Minutes of the 43rd Annual CNC/CIE Meeting (Matters arising?)
3. Election of reporter for lighting press
4. President's Report J. Roberge
5. Secretary/Treasurer's Report A.A. Gaertner
6. Publications Report A.R. Robertson
7. Nominations and Appointments
8. CIE 24th Session, Warsaw, June 1999
9. Other Business
 - 9.1 Correspondence J. Roberge
 - 9.2 Date and Place for next year's meeting
 - 9.3 Other business
10. Adjournment



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



PRESIDENT'S REPORT TO THE 44th ANNUAL MEETING

October 15, 1999

Jacques Roberge

600, de la Promenade,
Saint-Hyacinthe, Québec J2S 6R6

Telephone : (450) 774-0688

FAX : (450) 223-1731

e-mail : jroberge@login.net

1999 being a Quadrennium year, the major part of this report is related to the most significant activities of the 24th Session of the CIE held in Warsaw, between June 24th and 30th.

The Division and Technical Committee (TC) meetings that took place on the last three days of the Session are reported upon separately and in detail by each Division Member and present particular interest this year for three reasons :

- 1- Five of our Division Members were present :
(D1, S. McFadden; D3, I. Pasini; D4, W. Adrian; D5, J. Roberge; D6, J. Veicht). In addition A. Robinson covered the bases for D2, and D8 which he helped establish. (D7 had no activity to my knowledge, its dissolution having been decided in 1997 and confirmed in Warsaw.)
- 2- Three of our Advisory Members were also present :
(B.Kolesnik, B.McArthur and R. Topalova), whom I would invite to participate in the reporting of Division activity for any item of interest that they may be aware of as a result of their presence in Warsaw.
- 3- Many Division Members of the USNC, who were present at the 24th Session are also participating in the Division reporting at this joint meeting with the USNC.

In addition, the full day of Technical Presentations on the program should satisfy anyone of you who expressed a wish for a higher technical contents at our annual meeting, a wish difficult to satisfy with our usual one-day format.

Next is a résumé of our participation to the « Conference » part (first 3 days) of the 24th Session :

- 1- Finance Committee meeting : as a result of a missed connection in Frankfurt, my plane landed in Warsaw at the time the meeting was ending. However, most of the important budgeting had been done in previous meetings, and no new major decisions seem to have been taken on that occasion. Worthy of note : the deficit incurred in the establishment of the Central Bureau 11 years ago has now been offset and the financial situation is sound , if CB services and costs are to remain at the current levels. If those services are significantly enhanced, as considered in the current business plan, then new sources of revenue will need to be added, mainly by the establishment of new classes of CIE membership that were voted upon and accepted at the General Assembly meeting.
- 2- Board of Administration meeting : although I am not a member of the Board, I attended the meeting preceding the General Assembly, as an observer. I found it very informative and a usefull preparation for the General Assembly meeting. The fact that Alan Robertson will no longer be a member of the Board will make such attendance by the next CNC/CIE president even more desirable, since it gives a good perspective for better understanding of the underlying rationale of certain Board proposals being voted on by each country's representative at the G.A.
- 3- General Assembly meeting. : 21 member countries were represented at the opening of the meeting, which constitutes the required quorum for the 40 countries : 4 more representatives arrived later in the day. As you may know, I had been appointed by CNRC as Canada's voting member, with S. McFadden as alternate voting member, and W. Adrian as non-voting advisor. Werner was not present but Alan Robertson registered as observer, and helped at times of confusion.

You will find attached an Executive Summary of the Minutes of the General Assembly. Full Minutes are available from our secretary on request, as well as copies of the complete officer's reports. Highlights of those reports follow :

-Implementation of the CIE Business Plan adopted in 1997 continues under the supervision of V.P. van Bommel.

-In addition to closer cooperation with ISO and IEC, the CIE signed a technical agreement with CEN (European Committee for Standardization), to formalize collaboration of the two bodies

-Division 8, « Image Technology » has been launched successfully and already has a number of TC's. Alan Robertson was very instrumental in that success.

-Amendments to the Bylaws were made to clarify voting procedures and to add new classes of membership :

Associate National Committee; reduced fee, no voting rights.

Associate Members, individuals or organizations, further reduced fees, no voting rights.

Supportive Members, large organizations prepared to make larger contributions related to their revenues, no voting rights.

-Future meetings : In accordance with our established gameplan, a request was made to interchange the order in which the CIE Session 2003 and the Mid-term 2001 meetings would be discussed by the Assembly. After a presentation for the advantages of San Diego for 2003, the proposal was accepted without opposition. When 2001 came, we withdrew our invitation, and Turkey got it without opposition. That made everybody very happy, including ourselves.

- Merging Divisions 4 & 5 : Nigel Pollard of the UK, who is actively involved with both divisions, suggested that they both be merged : the Board will ponder the idea. (Nigel is Secretary of Div5 and chairs a few of its TC's)

This concludes the comments on the General Assembly meeting.

Routine activities of CNC/CIE in 1999 will be covered in the Secretary-Treasurer's and Publication reports. Planned concurrent meetings of Divisions 4 and 5 to be held in Toronto on Sept. 1st to 6th, 2000, will be discussed as a separate agenda item.

One unusual CNC/CIE activity for 1999 was ,of course, the organization of the joint USNC-CNC annual meeting. I am confident that it will be a success and wish to thank the members of the « ad hoc » committee that we created last year, who have all worked very hard : Ralph Smith, Werner Adrian, Jim Love Martyn Timmings, and our Secretary, Arnold Gaertner and crew.

It has been a privilege and an honour for me to serve for as many years as President of CNC/CIE, with such a distinguished and cooperative group of people. I am looking forward to a continued association with the Committee, eventually as an Advisory Member, and wish my successor as much pleasure in the function as I have enjoyed over the years. Thank you.

Respectfully submitted this fifteenth day of October 1999.

Jacques Roberge
President,CNC/CIE

Executive Summary of the MINUTES of the GENERAL ASSEMBLY MEETING

at the University of Technology
Warsaw, Poland
23 June 1999

1. Opening of the meeting

The President opened the meeting at 9:15.

The Deputy Rector of the Warsaw University of Technology, Mr. Stanislaw Bolkowski, gave a short welcome address.

The roll-count showed 21 National Committees present, sufficient for a quorum.

The President asked for a minute of silence to commemorate the colleagues who had passed away since the Midterm Meeting in 1997.

2. Approval of the Minutes of the GA Meeting, 2nd September 1997, ICC, Durban, South Africa

The Minutes were approved.

3.-8. Report of Officers

The President, Secretary, Vice-President Technical, Vice-President Publications, Vice-Presidents van Bommel, Robertson and Narisada, and the General Secretary gave their reports (see NCCL9902 and Vol. 2 of the Session Proceedings).

The Vice-President Publications reminded NCs on the present translation policy. A CIE Policy on Intellectual Property on Patent Rights was drafted by T. Newman and will be included in the CIE Code of Procedure.

16.3 Registration fees for CIE Sessions

H. Terstiege thought that for the Warsaw Session, the full registration fee was too high, and no basic fee was offered as alternative. He also questioned whether CIE should accept that fees are charged for attending Divisional and TC meetings. The President answered that this has to be considered for 2001 and 2003. W. Julian pointed out that the fee has to cover the costs for providing facilities for the Divisions to meet.

9. Discussion on the reports

The NC of Japan aired their concern that with the dissolution of Division 7, the work on light sources should not be discontinued.

10. Finances of the CIE

10.1 Report by the Treasurer

The Treasurer presented his report (see Annex 5 to NCCL9902 and Vol. 2 of the Proceedings).

10.2 Review of membership of countries in arrears or not responding

The Treasurer reported that the BA had decided:

- to suspend the NCs of Argentina, Bulgaria and Pakistan, which are in arrears for 3 years, taking effect on 1 January 2000, unless payment is received by that date;
- to suspend the NC of the Czech Republic which is in arrears for 4 years, taking effect on 1 September 1999, unless payment is received by that date;
- to lift the suspension of the NC of Croatia that has paid most of its arrears.

Then the Treasurer presented the recommendation of the Board that the GA should consider the expulsion of the suspended NCs of Estonia and Moldova for not paying their dues since 1995, taking effect on 1 September 1999, unless payment is received by that date. The GA voted in favour of the expulsion of both NCs (with 1 abstention in the case of Moldova, and 2 in the case of Estonia).

It was also decided to offer them one of the new categories of membership, when informing them on the termination of their present membership.

10.3 Audit 1997

No further comments to the Audit 1997 and Year End Report Tables (as circulated with NCCL9902).

10.4 Report on the 1998 fiscal year

The Treasurer reported that the positive result in 1998 was mainly due to deferred expenses and will not be repeated in 1999. Tables summarizing the financial performance in 1998 are attached (Annex 6).

10.5 Report on the 1999 first six months

Expenses are within budget, but at the present time of the year it is too early to predict the year end result.

10.6 CIE Budget for 2000 and 2001, vote on the budget

The draft budgets were circulated to NCs with NCCL9901.

H. Terstiege questioned the distribution of dues payment among NCs and aired his concerns that the present system, with a ceiling of 15 % (which USA and Japan have achieved) and UN coefficients going steadily down for some countries, turns out to be unfair to some other countries: Germany, France, Italy, UK are the next biggest contributors after USA and Japan. H. Terstiege requested the Treasurer to review the CIE assessment system to achieve a fair distribution.

The Treasurer pointed out that the GA cannot decide on dues distribution at this meeting and asked for the GA's vote on the budget proposal for 2000 and 2001: The proposed budgets for 2000 and 2001 were approved, with none against and 2 abstentions.

H. Terstiege was assured that the GA understood his concerns and that the FC will deal with it and come up with a proposal.

11. Matters arising from the Board meeting

The BA had appointed the following new Division Directors for the coming quadrennium:

- Division 1: K. Sagawa, JP (re-appointed)
- Division 2: T. Goodman, GB
- Division 3: M. Fontoynt, FR
- Division 4: P. Hautala, FI
- Division 5: J. Horváth, HU (re-appointed)
- Division 6: D. Sliney, US (re-appointed)
- Division 8: T. Newman, US

Twelve member countries are represented in the new Board.

12. Revision of CIE Statutes and By-Laws

J. Bastie presented his proposal for new membership categories that had been circulated to NCs with NCCL9902.

P.K. Bandyopadhyay asked what would be the fees to be paid by these new membership categories. The Treasurer presented the proposal from the FC:

- Associate Nat. Com.: fee only
- Associate Member: 15 % of the fee
- Supportive Member: minimum: fee
for companies: fee plus subscription

(A formula has still to be developed by the FC and agreed by the BA. If supportive members get free publications, the minimum fee must be higher.)

S. Hayman presented a proposal for amendment on behalf of the Australian NC:

"The organisation must already be a supporter of the NC of the country where they have their headquarters, and not reduce support in other countries where they presently give support." This sentence should replace the second sentence in par. 5.4.2 of the original proposal by Bastie.

In the vote on this amendment, 14 delegates were in favour, 1 against and 3 abstentions.

Vote on introducing *Supportive Members*: 21 in favour, 1 against, 2 abstentions.

Vote on introducing *Associate National Committees*: 22 in favour, 0 against, 2 abstentions.

Vote on introducing *Associate Members*: 24 in favour, 0 against, 0 abstentions.

Thus the GA approved to introduce these new membership categories.

Amendment of the By-Laws will be decided by the Board.

13. Education

This agenda item had been proposed by the NC of UK. T. Goodman asked how CIE will make sure that the subject "education" is not lost after the dissolution of Division 7. J. Hsia replied that it will be handled by the Board. It will be the task of one of the Vice-Presidents.

14. Liaison Division 4 - Division 5

This agenda item had been proposed by the NC of UK as well. N. Pollard stated that the work of Divisions 4 and 5 is intertwined and suggested to the BA to consider whether these Divisions might be merged into one.

Then the GA came back to item

16.3 Registration fees

It was proposed to have for future Sessions reduced fees for students and retired persons. W. Julian recommended to leave it to the OC to decide. M. Seidl proposed to charge only a small fee for Divisional and TC meetings, covering the expenses for providing a room. The President said that the BA will think about it and take these proposals into consideration.

16. Time and Place of the next CIE Session 2003

T. McGowan presented the invitation of the US NC for hosting the next CIE Session 2003 in San Diego, California. In the following vote, the GA approved unanimously to hold the next CIE Session in San Diego.

(Hong Kong, which had previously shown some interest in hosting the Session, did not provide a concrete invitation.)

15. Time and Place of the next General Assembly Meeting 2001

The delegates from Turkey presented their invitation to host the next Midterm Meeting 2001 in Istanbul. The GA approved unanimously to hold the next Midterm Meeting 2001 in Istanbul. Scheduled date: first half of September.

16.2 Order of Session

The President informed on the written proposal from P. Soardo, Italy, that the GA meeting should be moved to directly preceding the Divisional meetings (i.e. after the conference part). After some discussion the GA preferred to retain the order of Session as it is now (GA - Conference - Division meetings).

17. Any other business

S. Hayman requested that NCs should be informed on the list of TC members as well. The GS will include in the future that information (provided that she gets this data from the Division) in the NC circular informing on the establishment of a new TC. J. Schanda recommended to consult the Divisional websites, as there the most up-to-date information should be available.

J. Roberge asked when the new Roster will be printed. The GS had circulated to NCs a current print-out of the Roster database at the CB, asking NCs to send back their corrections. J. Schanda suggested to have the Roster available on an FTP site for downloading.

18. Closing of the Meeting

The President thanked the participants and closed the meeting.



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



CNC/CIE SECRETARY'S REPORT TO THE 44th ANNUAL MEETING

1999-OCTOBER-15

The following acronyms are used in this report:

CIE-CB: CIE Central Bureau in Vienna, Austria

CIE-BA: CIE Board of Administration

CNC/CIE: Canadian National Committee of CIE

This report covers the period from 1998-November-06 to 1999-October-14.

CIE MATTERS:

1. Annual Membership Fee:

The annual membership fee of the CNC/CIE as a member of the CIE for 1999 is 6,736 EUROS. This was \$11,292.97 Cdn. The NRC Public and International Relations branch is responsible for making this payment, and has continued to do so.

2. CIE 24th Session:

The 24th Session of the CIE was held in Warsaw, Poland from June 24 to 30, 1999. Nine of our Canadian members were in attendance:

Jacques Roberge	- Canadian delegate to the CIE General Assembly
Sharon M. McFadden	- Canadian alternate delegate to the CIE General Assembly
Werner K. Adrian	- Canadian non-voting advisor to the CIE General Assembly
Barbara Kolesnik	Alan R. Robertson
J. Bruce McArthur	Radosveta Topalova
Ivan C. Pasini	Jennifer A. Veitch

A Poster at the Stand was presented by:

Jennifer A. Veitch and Guy R. Newsham, "Preferred Luminous Conditions in Open-Plan Offices: Implications for Lighting Quality Recommendations".

Jennifer Veitch also chaired a workshop in Division 3: "Integrated Photometric Descriptors for Lighting Quality Research & Recommendations" which led to the creation of the new TC 3-34 "Protocols for Describing Lighting", presently chaired by Jennifer.

3. CIE Divisions:

3.1. A new CIE Division on Image Technology (CIE Division 8) has been established. The terms of reference for this division are:

"To study procedures and prepare guides and standards for the optical, visual and metrological aspects of the communication, processing, and reproduction of images, using all types of analogue and digital imaging devices, storage media and imaging media."

3.2. Closing down of CIE Division 7 "General Aspects of Lighting":

The Canadian and international vote was in favour of closing down of Division 7. This took effect at the end of the quadrennium, June 1999.

4. Mailings:

Amongst others, the following CIE materials have been received and mailed to the membership as appropriate:

CIE NEWS #48, December 1998

CIE NEWS #49, March 1999

CIE NEWS #50, June 1999

CIE NEWS #51, September 1999

CIE Press Releases:

CIE Special Publication x015 (1998) *Proceedings of the First CIE Symposium on Lighting Quality* 9-10 May 1998 at the National Research Council Ottawa, Ontario, Canada.

CNC/CIE MATTERS:

1. Joint CNC/USNC meeting:

This year's annual meeting is a joint meeting with the USNC. We are grateful to Ralph A. Smith and his committee for the many skilful hours they have given to ensure that this meeting is a success. The committee members are: Ralph A. Smith, Werner K. Adrian, James A. Love, and Martyn K. Timmings. We also thank Heather Matchett of NRC for her careful handling of the pre-registrations.

2. Mailing Lists:

At present I maintain 3 mailing lists: Members(13), Advisory Members(38), General Interest(30). In general, the difference between the first two and the third is that the third list tends to receive only CIE material (press releases of CIE publications, *CIE NEWS*) and notices of international conferences. Members and Advisory Members receive more CNC information such as various ballots, and the Minutes of the annual meeting and related information.

3. Membership:

A list of our Members and Advisory Members is available and will be discussed during the annual meeting for the purposes of making any changes.

3.1. Members:

At last year's annual meeting (43rd), six Member appointments were recommended by the CNC/CIE, and letters of appointment were sent to these people by A.L. VanKoughnett, Director-General of INMS. All have accepted. They are:

Werner K. Adrian

Sharon M. McFadden

Réjean Baribeau

Ivan C. Pasini

James A. Love

Joanne C. Zwinkels

3.2. Advisory Members:

I have received a request from Mankajee K. Shrestha to join the CNC/CIE. He has recently moved to Canada from Nepal, where he was involved with the Nepal Illumination Society.

Respectfully submitted,



A.A. Gaertner

Secretary, CNC/CIE

Institute for National Measurement Standards

Building M-36

National Research Council of Canada

Ottawa, Ontario K1A 0R6

Tel: (613) 993-9344

Fax: (613) 952-1394

Email: arnold.gaertner@nrc.ca

APPENDIX G



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



CNC/CIE Publications Report, October 1999 (Revised) A.R. Robertson

The following table summarizes activities for the past year. Details are on the attached spreadsheets.

Bank balance, 1998-10-31	5347.91
Held by NRC, 1998-10-31	503.00
Debt to Central Bureau, 1998-10-31	(6.76)
Sales, 1998-99	2337.00
Purchases, 1998-99 (Euro 645.66)	(1013.50)
Bank Charges	(12.80)
1999 meeting expenses	(1119.03)
Exchange rate adjustment	<u>1.05</u>
	6036.87
Bank balance, 1999-10-05	6078.08
Cheques in hand, 1999-10-05	978.00
Debt to Central Bureau, 1999-10-05 (Euro 649.30)	<u>(1019.21)</u>
	6036.87

This is my last report as I have transferred responsibility to **Frank Lin**. From now on CIE publications should be ordered from him at:

Dr. K. Frank Lin
General Manager
Lighting Sciences Canada Ltd.
440 Phillip St., Unit 19
Waterloo, Ontario
N2L 5R9

Tel: (519) 746-3140
Fax: (519) 746-3156
Email: kflsc@ionline.net

CIE publication sales 1997-98								
Date	Purchaser	No.	Title	Price	Cheques received	Held by NRC	Deposits	Cheques in hand
Forward						\$503.00		\$0.00
98-12-15	Ecolux	2.2	Colours of light signals	\$147.00	\$147.00			\$147.00
99-02-10	Trojan Technologies	53	Radiometers & photometers	\$99.00				\$147.00
		63	Spectroradiometry	\$118.00				\$147.00
		64	Spectral responsivity	\$131.00				\$147.00
		105	Spectroradiometry of pulsed so	\$90.00	\$438.00			\$585.00
98-02-10	Repayment from NRC					-\$282.00		\$867.00
98-02-12	Repayment from NRC					-\$131.00		\$998.00
98-03-18	Monterey Textiles	15.2	Colorimetry	\$138.00	\$138.00			\$1,136.00
99-03-30	Ecolux	54	Retrorelection	\$99.00				\$1,136.00
		121	Photometry & radiometry	\$115.00				\$1,136.00
		127	Measurement of LEDs	\$90.00	\$305.00			\$1,441.00
99-04-23	Repayment from NRC					-\$90.00		\$1,531.00
99-05-13	Epcor	115	Lighting of roads	\$94.00				\$1,531.00
		30.2	Luminance & illuminance	\$237.00	\$331.00			\$1,862.00
99-05-19	Deposit to bank						\$1,862.00	\$0.00
99-07-12	Transport Canada	127	Measurement of LEDs	\$94.00	\$94.00			\$94.00
99-07-13	Transport Canada	x013	LED symposium	\$155.00	\$155.00			\$249.00
99-07-16	Elcan	15.2	Colorimetry	\$138.00	\$313.00			\$562.00
		18.2	Physical photometry	\$114.00				\$562.00
		x004	Symp. Light radiation	\$61.00				\$562.00
98-09-17	Imexcom	13.3	Colour rendering	\$155.00	\$278.00			\$840.00
		84	Measurement of luminous flux	\$123.00				\$840.00
99-09-21	Transport Canada	15.2	Colorimetry	\$138.00	\$138.00			\$978.00
	Total			\$2,336.00	\$2,337.00	\$0.00	\$1,862.00	

Publication purchases from CB, 1997-98									
Date	Invoice	No.	Title	Quantity	Unit cost (ATS)	Cost (ATS)	Royalties (ATS)	Payments (ATS)	Running total
	Forward								50.00
98-11-02	358	112	Glare evaluation	2	312.00	624.00			674.00
98-11-13	378	130	Measurement of reflectance and tr	2	481.00	962.00			1636.00
			Total			1586.00	0.00	0.00	
99-01-01			Convert to Euros @ 13.76			115.26			118.90
					(EURO)	(EURO)	(EURO)	(EURO)	(EURO)
	Forward					115.26			118.90
99-03-31	073	121	Photometry & goniophotometry	2	36.40	72.80			191.70
		127	Measurement of LEDs	2	27.95	55.90			247.60
99-03-31	078	132	Design methods for lighting	2	36.40	72.80			320.40
99-06-18	148	134	CIE Collection in photobiology	2	36.40	72.80			393.20
99-06-18	176	127	Measurement of LEDs	1	27.95	27.95			421.15
		x013	Proc. LED Symposium	1	46.15	46.15			467.30
99-07-09	198	x004	Symp. light & radiation measurem	1	18.20	18.20			485.50
99-07-23	209	15.2	Colorimetry	4	40.95	163.80			649.30
			Total			645.66	0.00	0.00	

CIE Publications Bank Account						
Date		Sales	Other income	Payments to CB	Other expenses	Balance
98-11-04	Forward					\$5,347.91
99-04-07	1999 Meeting - hotel deposit				\$1,000.00	\$4,347.91
99-04-30	Bank charges				\$12.80	\$4,335.11
99-05-19	Deposit	\$1,862.00				\$6,197.11
99-07-28	1999 Meeting - R. Smith				\$119.03	\$6,078.08
Total	Total	\$1,862.00	\$0.00	\$0.00	\$1,131.83	\$6,078.08

CIE Publications							
Stock list							
99-10-05							
No.	Title	Year	Price Code	Sales 1996-97	Sales 1997-98	Sales 1998-99	Current stock
1	Urban sky glow	1980	C				4
2.2	Signal colours	1975	I			1	2
12.2	Road Lighting	1977	n/a				4
13.3	Colour rendering	1995	I	2		1	1
15.2	Colorimetry	1986	H	2	1	3	3
16	Daylight	1972	I				5
17.4	Vocabulary	1987	X				1
18.2	Physical photometry	1983	E		1	1	1
19.21	Visual performance - 1	1981	K				4
19.22	Visual performance - 2	1981	I				4
23	Motorway lighting	1973	C				5
24	Luminaire phot. (indoo	1973	n/a				3
27	Luminaire phot. (street	1973	n/a				4
29.2	Interior lighting	1986	J				1
30.2	Calc.&meas. (road ltg)	1982	L	1	1	1	0
31	Glare (road lighting)	1976	C				0
32A	Special road ltg (Frenc	1977	D				4
32B	Special road ltg (Engli	1977	D				5
33A	Road ltg depn (French	1977	C				4
33B	Road ltg depn (English	1977	C				5
34	Road ltg installn data	1977	E				3
38	Char. of materials	1977	L				4
39.2	Surf.colours for signals	1983	I		1		3
40	Interior lighting calcs	1978	G				4
41	Light as true vis.quanti	1978	E				4
42	Lighting for tennis	1978	C				6
43	Phot. of floodlights	1979	F				4
44	Absolute reflection	1979	H				2
45	Lighting for ice sports	1979	C				5
46	Material refl. stds.	1979	J				4
47	Lighting for wet roads	1979	I				4
48	Road traffic signals	1980	E				1
49	Emergency lighting	1981	B				3
51	Daylight simulators	1981	D				2
52	Interior lighting calcs	1982	L				4
53	Radiometers & photo	1982	D		1	1	1
54	Retroreflection	1982	D			1	1
55	Discomfort glare	1983	F				3
56	Proceedings 1983	1983	L				5
57	Lighting for football	1983	B				4
58	Lighting for sports hall	1983	A				4
59	Polarization	1984	D				4

60	Vision & the vdu	1984	D				1
61	Tunnel entrance lightin	1984	I				3
62	Lighting for swimming	1984	C				2
63	Spectroradiometry	1984	G			1	1
64	Spectral responsivity	1984	H			1	2
65	Absolute radiometers	1985	D				3
66	Road surfaces	1984	H				2
67	Photometry of sports li	1986	A				2
68	Exterior lighting	1986	H				4
69	Illuminance meters	1987	E		1		1
70	Meas. of luminous inte	1987	F				2
71	Proceedings 1987	1987	n/a				1
72	Retroreflectors	1987	G				2
73	Road markings	1988	G				1
74	Road signs	1988	K				3
75	Spec. luminous efficie	1988	C				2
76	Meas. of luminescenc	1988	H				2
77	Electric light sources	1988	K	1			0
78	Brightness-luminance	1988	M				2
79	Road traffic lights	1988	C				1
80	Observer metamerism	1989	C				2
81	Mesopic photometry	1989	D				3
82	CIE history	1989	M				1
83	Lighting for tv sports	1989	C	1			1
84	Luminous flux	1989	F			1	0
85	Solar spec. irradiance	1989	F	2			0
86	1988 spec.lum.eff.func	1990	B				2
87	Self-luminous displays	1990	E				1
88	Lighting for road tunne	1990	F	1	1		1
89	Collection 1990	1991	F				2
90	Sunscreen testing	1991	B				2
91	Proceedings 1991	1992	n/a				2
92	Lighting of urban area	1992	D				1
93	Road lighting / acciden	1992	J		1		3
94	Floodlighting	1993	H				1
95	Contrast & visibility	1992	F				1
96	Electric light sources	1993	C	1			0
97	Maintenance/indoor	1992	C				2
98	Personal uv dosimetry	1992	C				1
99	Lighting education	1992	B				1
100	Night driving	1992	G				2
101	Parameters/colour diff	1993	B	1			0
102	File format-photometri	1993	C	1			1
103	CIE Collection 1993	1993	G	1			0
104	Daytime running lights	1993	B				1
105	Spectroradiometry	1993	C		1	1	1
106	CIE Collection/Photobi	1993	F	1			1
107	Signal colours	1994	E	1			1
108	Daylight measurement	1994	F				1

109	Corresponding colours	1994	B				2	
110	Spatial dist. daylight	1994	D		1		0	
111	Variable message sign	1994	F				2	
112	Glare evaluation	1994	B	1		1	1	
113	Retroreflective signs	1995	G				1	
114	Collection - photometr	1994	E				2	
115	Lighting of roads	1995	C			1	1	
116	Colour difference eval.	1995	B	2			2	
117	Discomfort glare	1995	D		1		1	
118	Collection - colour & vi	1995	G				2	
119	Proc. New Delhi Vol.1	1995	X				0	
120	Proc. New Delhi Vol.2	1996	K				0	
121	Goniophot. of luminair	1996	F	1		1	1	
122	Colorim. of CRTs	1996	C	1			1	
123	Low Vision	1997	L				2	
123CD	Low Vision	1997	50% of L		1		0	
124	Collection - colour & vi	1997	E				2	
125	Standard erythema do	1997	A				2	
126	Minimizing sky glow	1997	B				2	
127	Measurement of LEDs	1997	C		1	2	1	
128	Lighting of open cast	1998	C				2	
129	Lighting exterior areas	1998	B				2	
130	Measurement of reflec	1998	G				2	
131	CIECAMs colour appe	1998	B				2	
132	Design methods for lig	1999	F				2	
134	CIE Collection in photo	1999	F				2	
D001	Phot. & colorim. data	1988	C	1	1		0	
D002	Colour rend. data	1991	J				0	
D003	CIE Roster		n/a				0	
D004	CIE Publications	1993	J				0	
D005	Daylight simulators	1994	A	1			0	
D006	Daylight AQC	1994	n/a				1	
D007	Corresponding colours	1994	F				0	
D008	Colour rendering	1995	X				0	
ISO10526	Standard illuminants	1991	B				2	
ISO10527	Standard observers	1991	G				3	
S003	Daylight	1996	A		1		0	
S005	Illuminants for colorim	1998	B				2	
S006	Road traffic light	1998	A		1		1	
S007	Erythema action spect	1998	A				2	
DS004.2	Signal colours	1996	X				0	
DS007.4	Erythema action spect	1998	\$13		1		n/a	Note 1
x001	SLG-Div.5 Symposium	1989	B				0	
x002	SLG-Div.4 Symposium	1989	n/a				0	
x003	CIE-WMO Symposium	1989	J				1	
x004	Symp. Light & radiatio	1981	X			1	0	
x005	Proc.sem.computer pg	1992	J				0	
x006	Japan CIE / Prakash9	1991	B				0	
x007	Proc.Symp.Colorimetr	1993	X		1		0	

x008	Urban Sky Glow	1994	E				1	
x009	Proc.Symp.Photometr	1995	L				2	
x010	Proc.Symp.Image Tec	1995	L				0	
x011	Proc.95 late papers	1995	F				0	
x013	Proc. LED Symp. '97	1997	I		1	1	1	
x015	Proc. Symp. Lighting	1998	X				0	
AIC1AB	AIC Proc 93 A+B	1993	n/a				0	
AIC1AC	AIC Proc 93 A+C	1993	n/a				0	
AIC1ABC	AIC Proc 93 A+B+C	1993	n/a				0	
	Total			23	19	20	260	
Notes								
1. Printed at NRC from master								

APPENDIX H



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



CNC/CIE MEMBERS

<u>CNC/CIE</u>			<u>TERM (expiry)</u>	<u>CIE</u>
President	J.B. Roberge	Québec	1999-12-31	Division 5, Finance Com.
Vice President	W.K. Adrian	Ontario	2002-12-31	Division 4
Secretary/Treasurer	A.A. Gaertner	Ontario	2001-12-31	
	R. Baribeau	Ontario	2002-12-31	Division 8
	K.F. Lin	Ontario	2000-12-31	
	J.A. Love	Alberta	2002-12-31	
	S.M. McFadden	Ontario	2002-12-31	Division 1
	I.C. Pasini	Ontario	2002-12-31	Division 3
	J.A. Veitch	Ontario	1999-12-31	Division 6
	R.W. White	Québec	2000-12-31	Division 7
	Ralph A. Smith	New Brunswick	2001-12-31	
	J.C. Zwinkels	Ontario	2002-12-31	Division 2
<i>ex officio</i>	A.R. Robertson	Ontario		NRC/INMS Member

CNC/CIE ADVISORY MEMBERS

Eduard Alf	Ontario	Brian Liddy	Ontario
Ian Ashdown	British Columbia	P. Manning	Nova Scotia
M.G. Bassett	Ontario	J. Bruce McArthur	Ontario
J.(Joe) Bastianpillai	Ontario	Donald B. McIntyre	Ontario
J. Allyson Chrysler	Ontario	S.W. McKnight	Ontario
Vince Cimino	Ontario	Arthur H. Mendel	Québec
W.B. Cowan	Ontario	H. H. Mikaelian	New Brunswick
Biman Das	Nova Scotia	T. Nilsson	P.E.I.
R.V. Day	Ontario	Tim M. Richardson	Ontario
(Joseph Diwan)	Ontario	(Mankajee K. Shrestha)	Ontario
R.B. Gibbons	Ontario	Nikolay Stoev	Ontario
C.M. Henville	Ontario	Eli Szamosi	Ontario
Byron Jordan	Québec	B.W. Tansley	Ontario
Roy Kaufmann	British Columbia	D.K. Tiller	Ontario
S.M. Kaye	Manitoba	M.K. Timmings	Ontario
A. Ketvirtis	Ontario	R. Topalova	Ontario
Barbara Kolesnik	Ontario	James G. White	Ontario
Jacques Lacasse	Québec	Lorne A. Whitehead	British Columbia
R. Lakowski	British Columbia	Ernest Wotton	Ontario

October 6, 1999





COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



DIVISION MEMBERS'
REPORTS
for the
joint CNC/USNC/CIE Meeting
1999-October-15

Further information concerning the work of the CIE Divisions may be obtained from the CNC/CIE Division Members:

Division 1 Vision and Colour

Mrs. Sharon M. McFadden
Defence and Civil Institute of Environmental Medicine
1133 Sheppard Avenue West
P.O. Box 2000
North York, Ontario
M3M 3B9

Tel: (416) 635-2189
Fax: (416) 635-2104
Email: sharon.mcfadden@dcim.dnd.ca

Division 2 Physical Measurement of Light and Radiation

Dr. Joanne C. Zwinkels
Institute for National Measurement Standards
Bldg. M-36, Room 1401C
National Research Council of Canada
Ottawa, Ontario
K1A 0R6

Tel: (613) 993-9363
Fax: (613) 952-1394
Email: joanne.zwinkels@nrc.ca

Division 3 Interior Environment and Lighting Design

Mr. Ivan C. Pasini
Public Works and Government Services Canada
A&ES, Technology Directorate
Place du Portage 3, Level 8A2
Hull, Québec
K1A 0M3

Tel: (819) 956-3410
Fax: (819) 956-3400
Email: pasinii@pwgsc.gc.ca

Division 4 Lighting and Signalling for Transport

Prof. Dr. Ing. Werner K. Adrian
48-1 Allen St. West
Waterloo, Ontario
N2L 6H2

Tel: (519) 579-7575
Fax: (519) 579-6292
Email: werner_adrian@hotmail.com

Division 5 Exterior and Other Lighting Applications

Mr. Jacques Roberge, P.Eng
600 de la Promenade
Saint-Hyacinthe, Québec
J2S 6R6

Tel: (450) 774-0688
Fax: (450) 223-1731
Email: jroberge@login.net

Division 6 Photobiology and Photochemistry

Dr. J.D. Yvon Deslauriers
Radiation Protection Bureau
Health Canada
6301B, 775 Brookfield Road
Ottawa, Ontario
K1A 1C1

Tel: (613) 954-0303
Fax: (613) 941-1734
Email: yvon_deslauriers@hc-sc.gc.ca

Division 7 General Aspects of Lighting

This Division has been dissolved.

Division 8 Image Technology

Dr. Réjean Baribeau
Institute for National Measurement Standards
Bldg. M-36, Room 1116
National Research Council of Canada
Ottawa, Ontario
K1A 0R6

Tel: (613) 993-9351
Fax: (613) 952-1394
Email: rejean.baribeau@nrc.ca

Division 1: Vision and Colour
Report to Joint CNC/USNC CIE Meeting

Paula J. Alessi
Eastman Kodak Company
1700 Dewey Ave.
Rochester, New York 14650-1907
Tel : (716) 477-7673
Fax: (716) 722-1116
Email: pjalessi@kodak.com

Sharon M. McFadden
Defence and Civil Institute of Environmental Medicine
1133 Sheppard Ave. West
Toronto, Ontario M3M 3B9
Tel: (416) 635-2189
Fax: (416) 635-2013
email: sharon.mcfadden@dciem.dnd.ca

Activities of Division 1

Division 1 continues to be very active. A very successful meeting was held 28-29 June in Warsaw in conjunction with the Quadrennial meeting of the CIE with representatives from 18 countries on the first day and 15 countries on day two. Eight of the technical committees, TC1-27, TC1-37, TC1-38, TC1-42, TC1-47, TC1-48, TC1-52, and TC 1-53, also held meetings in Warsaw. As well, extensive reports were provided on nearly all of the active committees during the main meeting of Division 1. Many of these were presented by representatives of the TCs. Both P. Alessi, the U.S. representative for Division 1, and S. McFadden, the Canadian representative, attended the main meeting and several of the TC meetings.

Dr. Sagawa noted that there was an increasing need for basic research on visual performance, attention, and acuity to support the work of Divisions 3, 4, 5, and 8. Further evidence for this was the workshop held by Division 1 on "Aging Effects on Vision". It was recommended that a study group be set up to look into areas for technical committees in applied ergonomics.

The following summaries of activities in the various Technical Committees of Division 1 are based on the Activity Report for 1999 and notes taken at the annual meeting and the meetings of some of the technical committees. Thus, the information presented below should be treated as unofficial.

Progress in Vision Section

TC1-19: Specification of visibility for real tasks The final report has been completed based on input at the TC meeting held in Baltimore and will be submitted for Divisional Balloting as soon as it is distributed to the committee members. This happened in August.

TC1-21: Testing of supplementary systems of photometry Two sets of photometric systems based on heterochromatic brightness matching (2° and 10°) have been evaluated by this TC. The report states that the evaluation of the systems proposed is based on the relative comparison of the equivalent luminance and not the absolute. Data showing chromatic dependence of equivalent

luminance are included in the report. There was one negative vote on the final report. The concerns of this individual will be included as a supplementary minority report. This should complete the work of this committee.

TC1-26: Individual variation in heterochromatic brightness matching The members of the committee are still in the process of collecting data. There is considerable variation amongst the sets of data that have been collected so far. However, K. Sagawa pointed out that the variability amongst the data sets was similar to the variability within the data sets. It was felt that the time had come to summarize the data. A report by the chairman has been promised by the end of the year.

TC1-30: Luminous efficiency functions The comments from the TC meeting in Baltimore have been incorporated and a new version of this report will be sent to TC members as soon as it is ready. Most of the members agreed with the method of interpolation being used to specify the various luminous efficiency functions, but there was some discussion on whether the range should be 380 to 780. $V_{b,2}(\lambda)$ has a range of 400 to 740.

TC1-36: Fundamental chromaticity diagram with physiologically significant axes It was expected that the work of this committee would be completed by Warsaw. Nearly everyone supported the fundamentals developed by Stockman and published in Vision Research. However, Stockman reported in March of this year that they were working on some improvements. The committee is waiting for the publication of these revisions before producing a final report.

TC1-37: Supplementary system of photometry A supplementary system of photometry has been proposed by the TC. Now they are looking for qualitative evaluation of the proposed system. Their strategy is to try to make a recommendation by combining the best of the systems found in the TC1-21 work.

TC1-41: Extension of $V_m(\lambda)$ beyond 830 nm The work of this committee has been completed and a report will be presented at the 75th Anniversary of the CIE Symposium this fall.

TC1-42 Colour Appearance in Peripheral Vision The secretary of this committee, Dr. Ayama (JP), has replaced Dr. Takase as the chair of this committee. Dr Ayama is in the middle of an extensive study to map out colour appearance in the periphery in terms of colour zone maps. She presented her results to date at the Conference and in the meeting of TC1-42 and integrated them with previous research. While there are extensive data along the horizontal plane and a small amount of data along the vertical plane, there is almost no data in other parts of the periphery. Dr. Ayama hopes to collect these data in the next two years and she invited other member of the committee to collect similar data to evaluate her results. On completion of these studies, a final report will be prepared.

TC1-46: Concepts and application of equivalent luminance The purpose of this TC is to prepare a technical report describing the fundamental concept of equivalent luminance and provide guidelines on how to apply those concepts. A draft report has now been distributed to TC members. A major goal of this TC is to extend $V(\lambda)$ into the mesopic range. The Chairman stated that this was relatively straightforward. The results were seen as having application to areas such as mesopic photometry, environmental assessment of visual performance, and experiments based on individual performance. There is an inconsistency between the way this TC defines equivalent luminance and the way it is currently defined in the International Lighting vocabulary, which only defines equivalent luminance for equivalent brightness. The TC Chair was requested to make note of this discrepancy and to take care in defining terms necessary for this TC to use.

TC1-50: Disability glare formula The technical report has been prepared and accepted by the TC members. There was some interest in making the report a standard. However, it was decided that this was not within the mandate of the TC. It was preferable at this stage to publish the report and to assess the level of acceptance of the proposed formula.

TC1-51 Visual Acuity The purpose of this TC is to write a technical report to provide, on the basis of data collected from the literature, standard functions on visual acuity, defined by the Landolt-ring, as a function of luminance, contrast, presentation time, age, and colour. The committee has a chairman and members and is now beginning its work.

R1-03: Engineering applications of brightness scales There was some discussion over whether this reportship belonged in Division 1 or Division 3 or 4. Since it really involved the development of a brightness scale it was felt that it did belong in Division 1. A draft report is still in progress and there is no definite date as to when it will be ready. If the report does recommend the creation of a TC, it was felt that it should be in Division 4.

R1-06: Transient adaptation No report was received again this year. It was decided that if a report was ready it would be published. Otherwise, the reportship will be terminated.

R1-16: Visual Adaptation to complex luminance distribution A complete report was received in 1998 and an additional summary was included in 1999. Currently, comments from reviewers are being incorporated. The main conclusion was that there are not enough data to set up a TC in this area at the present time.

R1-19: Specification on individual variation in heterochromatic matching The purpose of this reportship is to report on the possibility of developing a simple test of individual characteristics for heterochromatic brightness matching. No report has been received to date.

R1-20 Visual performance in the mesopic range Work is continuing on this reportship, but no visible progress has been made. It is looking for specific questions that a TC might answer.

Progress in Colour Section

TC1-27: Specification of colour appearance for reflective media and self luminous display comparison Data are still being collected for the final set of experiments to resolve the inconsistencies between the previous sets of experiments run in 6 different laboratories.

TC1-33: Colour rendering This TC was formally terminated in Baltimore. However, the chair was asked to write a report on the current state of the art in colour rendering. This report has now been written and will be published after it has been reviewed.

TC1-34: Testing of colour appearance models The chair recommended that this TC now be terminated and that a reportership be established to monitor the use of the method and to indicate when it was time to form a new TC to develop an improved model. All the data used in testing the model are available at a web site at the University of Derby. The committee did investigate more complex models, but it was not possible to achieve consensus on the best approach. A more complex model of colour appearance may be the subject of another TC in the future.

TC1-38: Compatibility of tabular data for computational purposes The committee decided to publish only the procedures for generating the tables rather than the actual tables. The problem in producing a final report has been agreeing on a method of extrapolation and interpolation. Robert Seve and Janos Schanda have been working on this and will come to an agreement so the report can be produced before Y2K.

TC1-43: Rod intrusion in metameric colour matches The committee has not been able to reach agreement on how to calculate the diameter of the pupil and requested either a change of chair or for the committee to be closed. It was suggested by A. Robertson that the committee writes a report including what was agreed upon and where differences exist. However, it is not clear that the chair would be willing to do this.

TC1-44: Practical daylight sources for colorimetry It has been difficult for this TC to achieve the first part of its mandate, to intercompare existing daylight sources for colour measuring instruments and colour matching booths, because of proprietary concerns of manufacturers. However, they have managed to make measurement of several different booths in cooperation with the textile association in the U.S. As a result of this work, they have validated the methodology recommended by the CIE in publication 15.1. There was some discussion over what should be the actual goal of this committee. The chair hoped to have the work of this TC finished by the end of the year.

TC1-45: Revision of CIE Publication No. 51 to include D50 simulators The report has been written and the TC will be closed. It was recommended that a new TC (TC1-53) be formed to revise CIE Publication 51 and issue it as a standard.

TC1-47: Hue and Lightness Correction to Industrial Colour Difference Evaluation The work of this TC is continuing.

TC1-48: Revision of CIE Document 15.2 Colorimetry This TC met in Warsaw. A draft has been prepared and submitted to TC members. Their responses to suggestions for compromises and points of disagreement were requested. The chair wanted responses within a month.

TC1-49: Liaison with ISO/TC35: Paint and Varnishes Colorimetry It has been decided to reduce this TC to a reportership which will be taken on by Klaus Witt (DE) since the new ISO representative for ISO/TC35 is from Germany.

TC1-52 Chromatic Adaptation Transform This new TC, headed up by R. Luo (GB), is reviewing existing chromatic adaptation transforms, using available data sets, with the goal of making a recommendation on the most useful transform. The corresponding color data sets can be found at <http://colour.derby.ac.uk>.

TC1-53: A standard method of assessing the quality of daylight simulators The work of this TC to prepare a CIE Standard for the assessment of daylight simulators is nearing completion.

R1-04: Colour difference evaluation An extensive written report was submitted and will be published in the CIE Collection.

R1-11: Cognitive aspects of colour A report was published. The reporter requested that the final report be published on a CD-ROM so that colour images could be included.

R1-13: Revision of Wyszecki and Stiles This reportership is being disbanded because the problems encountered in pursuing the production of a revision could not be resolved.

R1-14: Visual observation of blood-oxygen levels The spectral reflectance of blood primarily occurs beyond 600 nm. Thus, it is necessary to carry out examinations with a blood source that incorporates these wavelengths. A cyanosis index has been developed and a methodology for assessing the suitability of lamps for diagnoses. The reporter recommended the establishment of a TC. He suggested that a report produced by a TC would have broader acceptance because it would be based on the input of more than one individual. However, it was decided to publish the reporter's report in the CIE Collection and submit it to the entire division for comment on the course of action for the future. There was a vote and approval to disband this reportership since its work was completed.

R1-15: Lighting terminology They have agreement on revision of the current terms so it can be sent to Division 2 for their comments. Now steps must be taken to reach agreement with terms used in 15.3. The next task is to think about new terms. Since the meeting in Warsaw, a final version of the vocabulary has been sent out to the working group for review and to the Central

Bureau for consideration by other Divisions. The Central Bureau has distributed a letter ballot to all members of Division 1 requesting approval of the proposed revisions and new terms.

R1-17: Improved colorimetry Dr. Schanda invited Dr. Thornton to present his concerns about the current colour matching functions, the results of his research, and his recommendations.

R1-18: The use of colour identification under various illuminance levels A report was given in Warsaw. The ultimate goal is to produce a color map. It is anticipated that a TC will grow out of this work.

Proposals for New Reporterships and Technical Committees

Two new TCs were approved. The first, TC1-54, is on age-related changes of visual response. Its mandate is to establish spectral luminous efficiency, visual acuity, and contrast sensitivity as a function of age. The Chair will be K. Sagawa and the current members are H. Brown (NL), J. Werner (US), L. Halonen (FI), A. Monot (FR), and Keusera (HU). The second is, TC1-55, a uniform colour space for industrial colour difference evaluation. Its goal is to devise a new uniform colour space for industrial colour difference evaluation using existing experimental data. J. Knots (GB) will be the Chair.

A third TC on categorical colour identification in photopic and mesopic vision was also recommended. The terms of reference were to prepare a report on categorical colour identification of surface colours in photopic and mesopic vision under a variety of light sources. However, it was not approved. The decision was to continue the reportership, R-18, for another year and for the reporter to prepare a report. A TC to develop improved colour matching functions (CMF) was also recommended. Its goal would be to compare the results based on current CIE CMFs, CMFs proposed by W. Thornton and his collaborators, and the results of CIE TC1-36. The TC would also initiate experiments in different laboratories to gather further data for the comparison. The results of the comparison would be reported to Division 1 along with a recommendation for an improved CMF, if required. No Chair was chosen at the meeting and thus the TC was not approved. Since the meeting, M. Brill (US) has agreed to chair the TC which now becomes TC1-56.

Four Reporterships were established. E. Martinez-Ureigas (US) is the reporter for R1-22, Contrast Sensitivity Functions for Detection and Discrimination. His task is to survey the literature in order to provide a specification for a human contrast sensitivity function under defined viewing conditions (luminance level, surround, adaptation state, geometry, etc). P. Trezona (GB) will be the reporter for R1-23, Guidelines on Planning a Mesopic Photometry Investigation. Her task will be to report the impact of theory and other considerations on mesopic photometry. R1-24 under M. Fairchild (US) will monitor the progress and development of colour appearance models. R1-25, Liaison with ISO/TC35: Paint and Varnishes Colorimetry, with Klaus Witt (DE) as the reporter, replaces TC1-49. Finally, P. Walraven (NL) undertook a reportership, R1-26, to investigate the feasibility of producing a CIE Colour Encyclopedia.

Next meeting

The 2000 meeting of Division 1 will be held in the U.K. in April in conjunction with Colour 2000 and the NPL Colour and Visual Scales Symposium. The 2001 meeting will be held in June in Rochester, New York in conjunction with the AIC meeting.

New Officers for Division 1

K. Sagawa (JP) will continue on as the Director of Division 1. M. Pointer (GB) and F. Vienot (FR) will also continue as Associate Directors of the Colour and Vision Sections respectively. Y. Nakano (JP) replaces F. Denner (SA) as secretary and E. Carter (US) takes over from P. Alessi (US) as Editor.

Canadian Participation in Division 1

Based on the latest information available to me, Canada has representatives on 13 Technical Committees in Division 1. The Canadian representatives are TC1-19: W. Adrian, TC1-21: W. Cowan, TC1-27: A. Robertson, TC1-37: W. Cowan, TC1-38: A. Robertson and J. Zwinkels, TC1-42: S. McFadden, TC1-43: A. Robertson, TC1-44: J. Zwinkels, TC1-46: R. Topalova, TC1-47: A. Robertson, TC1-48: A. Robertson, TC1-51: W. Adrian, TC1-53: J. Zwinkels.

United States Participation in Division 1

The U.S. has representatives on 20 Technical Committees in Division 1. The U.S. representatives are TC1-19: P. Boyce, TC1-21: C. Howard and J. A. S. Kinney, TC1-26: A. Nagy, TC1-27: D. Alman, R. S. Berns, M. D. Fairchild, D. Rich, and T. Maier, TC1-33: T. McGowan, TC1-34: M. D. Fairchild and P. J. Alessi, TC1-36: P. Lennie, A. Stockman, D. MacLeod, J. Pokorny, and V. Smith, TC1-37: J. A. S. Kinney and C. M. Howard, TC1-38: C. McCamy, F. Billmeyer, D. Rich, and H. Fairman, TC1-39: E. Noell, TC1-41: D. Sliney, TC1-42: I. Abramov, J. Gordan, and H. Chan, TC1-43: R. S. Berns, H. Fairman, and V. Smith, TC1-44: H. Fairman, Y. Ohno, C. McCamy, R. S. Berns, H. Lara, A. Rodrigues, P. Chong, and R. Young, TC1-45: C. McCamy and D. Alman, TC1-47: D. Alman, R. S. Berns, and D. Rich, TC1-48: Y. Ohno, D. Rich, and P. Alessi, TC1-50: J. Rennilson, TC1-52: M. D. Fairchild, TC1-53: C. McCamy.

CIE DIVISION 2:
PHYSICAL MEASUREMENT OF LIGHT AND RADIATION

Report to CNC/USNC/CIE Joint Annual Meeting

October 15, 1999

J.C. Zwinkels
Institute for National Measurement Standards
National Research Council of Canada
Ottawa, Ontario K1A 0R6

Phone: (613) 993-9363
FAX: (613) 952-1394
e-mail: JOANNE.ZWINKELS@NRC.CA

The most recent CIE Division 2 meetings were held 28-30 June 1999 in Warsaw, Poland in conjunction with CIE 24th Session, 24-25 June 1999. I did not attend these meetings, but gave Dr. Alan Robertson of NRC my proxy to represent Canada at these meetings. The following report is a summary of the meeting highlights. A complete set of minutes, prepared by the D2 Secretary, is also attached.

Administrative Matters

The new Division 2 officers for the 1999-2003 term are:
Division Director – T. Goodman (UK) ; Associate Directors: N. Johnson (USA), T. G. Sauter (Germany); G. Vandermeersch (Belgium); Division Editor - J. Moore.
Secretary: Y. Ohno (USA).

Division 2 currently has 34 member countries. Canadian member: J. Zwinkels (re-appointed for a term ending 31 December 2002).

The Division has a website at: <http://nml.csir.co.za/~cie2/>, which was most recently updated September 1, 1999.

Editor's Report

CIE S005 to ISO/CIE standard

The document from TC 2-33, "CIE Standard Illuminants for Colorimetry", published as CIE S005 has now been published as a joint standard ISO 10526/ CIE S005.

TC 2-22 Luminous Flux of High-Pressure Sodium Lamps

The Editor prepared a short summary of this intercomparison from material provided by the chairman. This report will appear in the next edition of the CIE Collection.

TC 2-35 CIE Standard for $V(\lambda)$ and $V'(\lambda)$

The document "Photometry – The CIE System of Physical Photometry" from this TC has been edited, and is ready for Division ballot.

TC 2-36 Retroreflection: Definition and Measurement (Rev. of CIE Publication 54)

This document has gone for Division ballot

TC 2-14 Practical Methods for the Measurement of Reflectance and Transmittance

This document has been published as CIE 130 (1998) after the Boulder meeting and this TC has been closed.

Technical Committee Work in Progress

TC 2-04	Secondary light sources (Moore, UK)	The draft report has gone for TC ballot.
TC 2-14	Measurement of reflectance and trans- mittance, including turbid media (P. Polato, Italy)	The document has been published as CIE 130 and this TC has been closed.
TC 2-16	Characterization of the Performance of tristimu- lus colorimeters (Rastello, Italy)	The Chair is to circulate the draft to TC members and get comments by September.
TC 2-17	Simulated solar radiation (D. Kockot, Germany)	A draft document was sent to the whole Division about 18 months ago, but received few responses. Document is to be posted at a hidden webpage for wider distribution.
TC 2-19	Measurement of spectral coefficient of retroreflection (N. Johnson, USA)	Document has been delayed due to strong request to include more data.
TC 2-23	Photometry of street- lighting luminaires (G. Vandermeersch, Belg.)	This TC has not started work yet because it waited for the results of the EEC comparison (1996-99) to be completed

TC 2-24	Users guide for the selection of illuminance and luminance meters (K. Ganesha, India)	Trouble with communication in past; this should improve that Chairman now has e-mail address. Chairman sent out a proposed table of contents and questionnaire.
TC 2-25	Calibration methods and photoluminescent standards total radiance factor measurements (J. Zwinkels, Canada)	TC met in Vancouver in May in conjunction with ISCC meeting. Five members were present and the 8 th draft of the report was discussed. Remaining action items are minor revisions to text and re-grouping references at the end of the document. The revised document will be circulated for TC ballot.
TC 2-28	Methods of characterizing spectrophotometers (J. Verrill, UK)	Document has 8 authors (2 Canadian). Progress has been delayed due to poor health of Chairman. He has appointed a TC Secretary, Peter Clarke (NPL, UK) to assist in preparing 4 th draft of document.
TC 2-29	Measurement of detector linearity (T. Goodman, UK)	Progress has been slow due to Chairman's changing responsibilities. This has been resolved and 3 rd draft is well underway.
TC 2-30	Diode array radiometry (J. Palmer, USA)	New Chairman has recently received documents and materials from past Chairman (P. Wychorski). The new Chair will finish the document and publish it in a CIE Collection.
TC 2-32	Measuring retroreflectance of wet horizontal road markings (Hodson, USA)	The TC met in Warsaw and prepared a draft outline of the chapters and sections. TC plans to do actual measurements later this year or Spring 2000.
TC 2-35	CIE Standard for $V(\lambda)$ (Mielenz, USA)	
TC 2-36	Revision of CIE Publ. 54: Retroreflection (J. Rennilson, USA)	See Editor's report above.

TC 2-37	Photometry using $V(\lambda)$ -corrected detectors as transfer standards (Ohno, USA)	Final draft is close to completion and will be circulated for TC ballot within next few months.
TC 2-39	Geometric tolerances for colorimetry (D. Rich, USA)	TC met in Warsaw. Five committee members were present and reviewed draft final report. The next draft will be distributed by Dec. 1999 and the next TC meeting will be in conjunction with ASTM B-12 meeting in Toronto in June 2000.
TC 2-40	CIE standard: Characterizing the performance of luminance illuminance meters (Rattunde, Germany)	TC met in Warsaw. Nine members were present and discussed 3 rd draft of report. Chairman will submit a ballot to TC members; draft to be posted at hidden website. Next meeting will be with D2 in Spring 2000 at NPL.
TC 2-41	Industrial photometry in developing countries (B. Bhattacharya, India)	No report has been received from Chairman for past 2 years. This TC has been closed.
TC 2-42	Colorimetry of visual displays (A. Hanson, U.K.)	Progress has been slow due to Chairman's changing responsibilities. A draft document should be available for TC comment shortly.
TC 2-43	Determination of measurement uncertainties in photometry (Sauter, Germany)	TC met in Warsaw with 23 attendees. and discussed structure of report. The document now consists of 2 main parts: 1 st part is a summary of all equations; 2 nd part consists of several examples, including explanations and definitions.
TC 2-44	Vocabulary Matters (Moore, UK)	This TC is responsible for D2 terms in the revision of the ILV. Chairman has circulated about 300 new terms to members. Comments have been collected/ compiled for revision; a second mailing is being prepared.

TC 2-45	Measurement of LEDs- Revision of CIE 127 (Muray, USA)	TC meetings were held in Gaithersburg in in conjunction with CORM'99 and in Warsaw. The measurement quantities for partial flux have been defined. Next draft will be circulated within a few months. Next meeting is planned for April 2000 in UK.
TC 2-46	CIE/ISO standards on LED intensity measure- ments (Scarangelo, USA)	TC meetings were held in Gaithersburg in May'99 and in Warsaw. The scope of the document has been clarified. The first draft was put on the hidden website as a trial; this has worked well.
TC 2-47	Characterization and Calibration Methods of UV Radiometers (G. Xu, Singapore)	TC met for the 1 st time in Warsaw with 30 attendees. A revised version of the table of contents was discussed. Representatives of UVNET WG1 and from the WMO attended the meeting. UVNET expresses their wish to collaborate with CIE.
TC 2-48	Spectral responsivity measurement of detectors, radiometers, and photometers (Eppeldauer, USA)	TC met for the 1 st time in Warsaw with 25 attendees and discussed an outline of the document. The TC agreed on the table of contents and a modified structure of the report. Next meeting is planned for April 2000 in UK.
TC 2-49	Photometry of Flashing Lights (Y. Ohno, USA)	TC met for the 1 st time in Warsaw with 25 attendees, including 8 initial members, and discussed the scope and table of contents of the report. The TC requested that D1 develop a document addressing the vision aspects of flashing lights.

Reporterships in Progress:

R 2-05	Visual gloss (J. Taylor, UK)	No need for a TC at this time; continue to monitor situation.
R 2-06	Standardization of measuring geometry for the colorimetry of metallic paints (C. McCamy, USA)	A 3 rd draft of ASTM geometry standard is in preparation and will be sent to ballot. Reporter, who chairs this subcommittee, is maintaining close liaison with ASTM

		subcommittee of metallic and pearlescent colors, who has begun writing a standard.
R 2-09	Absolute cryogenic radiometers (Parr, USA)	Reporter stated that applications of cryogenic radiometers at the industry level are not imminent and proposed closing this reportership. D2 agreed.
R 2-17	Aviation photometry (Ohno, USA)	Efforts to contact ICAO regarding the need for CIE collaboration have been unsuccessful. It was proposed to close this reportership. D2 agreed.
R 2-18	OIML Matters (Sauter, Germany)	No new issues at this time. It was recommended to hold this reportership open for the future.
R 2-21	Use of detectors as absolute transfer standards for spectroradiometry (N. Fox, UK)	No need for a TC at this time; situation will continue to be monitored.
R-22	Implementation of Photometric Units (Kohler, BIPM)	No new inputs received since last year. Reportership is to be kept open to obtain inputs from CIE Symposium in Budapest.

*** Reports of Liaisons:**

CCPR (Kohler) Kohler reported. CIPM is preparing a MRA to be signed by national laboratories in October based on the outcome of Key comparisons. CCPR quadrennial meeting took place March 24-26 this year. Phil Boivin of NRC represented Canada at this meeting. Six intercomparisons have been established as Key comparisons. K1 (spectral irradiance), K2 (spectral responsivity), K3 (luminous intensity/ luminous responsivity), K4 (luminous flux), K5 (spectral diffuse reflectance), and K6 (spectral regular transmittance). The NRC PAR Group is participating in all six of these comparisons, and is on the working group for K5. CCPR also have supplemental comparisons: S3 (cryogenic radiometers), aperture area, and spectral radiance of lamps. NRC is participating in all three of these supplemental comparisons and is on the working group for S3. The NRC Dimensional Metrology Group is participating in the aperture area comparison. All the results of the CCPr comparisons will be posted at the BIPM website.

ISO/ TC6 (J.Zwinkels, Canada) The most recent meeting of the working group (WG3) was on May 31, 1999 in Helsinki, Finland. The major issues discussed were: the

ISO/TC6 calibration system, the results of a recent round-robin comparison of the ISO authorized laboratories, the procedure of adjusting fluorescent reference standard data for 45/0 geometry to conform with ISO 2469 (d/0) measurement conditions, and the DIN proposal for a 45° gloss measurement standard.

The following ISO draft standards were reviewed and comments given to CIE CB:

- (1) ISO/DIS 5631 “Paper, board and pulps – Determination of colour – (C/2°) Diffuse Reflectance Method”
- (2) ISO/DIS 11476 “Papers and boards – Determination of CIE whiteness, C/2° (indoor illumination conditions)
- (3) ISO/FDIS 8254-1 “Paper and board – Measurement of specular gloss Part 1: 75 degree gloss with a converging beam, TAPPI method”
- (4) ISO/FDIS 2470 “Paper and board – Measurement of diffuse blue reflectance factor (ISO brightness)” (revision)

*** Proposals for 2 New Technical Committees:**

(1) Measurement of the optical properties of LED clusters and arrays.

Georg Sauter (Germany) as the Chairman.

TR: To produce a technical report for the measurement of optical properties of visible LED arrays and clusters, to derive optical quantities for large LED arrays and recommendations for measurement methods and conditions.

(2) Calibration of diode-array spectrometers.

R. Austin (USA) as the Chairman.

TR: To produce a technical report which sets out guidelines for the recommended procedures, methods and transfer standards for the calibration of diode array spectrometers.

*** Proposals for 5 New Reporterships:**

(1) Emergency Lighting Luminaires – Reporter: Lou Bedocs (UK)

(2) ISO/CIE Standards for the Measurement of Reflectance and Transmittance – Reporter: Danny Rich (USA)

(3) Classification of Color Measuring Instruments – Reporter: Yoshi Ohno (USA)

(4) Liaison with IALA (International Association of Lighthouse Authorities) – Reporter: Ian Tutt (UK)

(5) Liaison with Division 8 – Reporter: Yoshi Ohno (USA)

Other CIE Division 2 Business:

There were general discussions in Warsaw on the following issues, which are to be discussed again at the next CIE Division 2 meeting in London:

- (1) How the Division 2 meeting should be structured.
- (2) New form of CIE publications
- (3) Handling of TC draft documents on the website
- (4) How to take CIE into year 2000.

Upcoming Meetings:

CIE Symposium'99: 75 Years of CIE Photometry, Budapest, Sept. 30-Oct. 2, 1999.

NEWRAD'99, Madrid, Spain, Oct. 25-27, 1999.

CIE Division 8 meetings, April 10-13, in conjunction with Colour Image Science Conference at University of Derby, UK, April 10-12, 2000.

Future CIE Division 2 Meetings:

- | | |
|--------------|--|
| 2000: | 6-8 April at NPL, UK in conjunction with NPL Colour and Visual Scales 2000 and NPL centennial celebrations. D1 also meets on the same dates. |
| 2001: | 16-18 May at NIST, USA, in conjunction with CORM'2001, May 14-15 and NIST centennial celebrations. |
| 2002: | Open |
| 2003: | July at San Diego, California in conjunction with CIE 25 th Session. |

In Memorium:

Mr. John Verrill of NPL (UK) passed away on June 29th, 1999 after a long illness. He was an active and a highly respected member of the CIE. He has served as past Secretary of Division 1, Chairman of TC 2-28 and a member of TCs 2-25 and 2-39. John will be sadly missed by his colleagues for his friendship, his guidance, and his significant contributions in the fields of spectrophotometry and colorimetry.

Other CIE Division 2 Notes:

Canadian participation in the work of the Division continues at a high level with the following members of Technical Committees or Liaisons:

TC 2-16	A.R. Robertson (NRC)
TC 2-25, Chairman	J.C. Zwinkels (NRC)
TC 2-28	A.R. Robertson, J.C. Zwinkels
TC 2-39	J.C. Zwinkels, B. Jordan (PAPRICAN)
TC 2-42	S. McFadden (DCIEM), R. Baribeau (NRC)
TC 2-43	A. Gaertner (NRC)
TC 2-44	G. Woo
TC 2-47	L.P. Boivin (NRC), B. McArthur (AES)
TC 2-48	B. McArthur (AES)
ISO/TC6, Liaison	J.C. Zwinkels (NRC)



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

DIVISION 2 : PHYSICAL MEASUREMENT OF LIGHT AND RADIATION

Home Page: <http://nml.csir.co.za/~cie2>

Yoshi Ohno, Secretary of CIE Division 2
National Institute of Standards and Technology
100 Bureau Dr, Gaithersburg, MD 20899-8442 USA
Phone: +1-301-975-2321 Fax: +1-301-840-8551
Email: ohno@nist.gov

August 31, 1999

Minutes of CIE Division 2 Meeting
Wednesday, June 30, 1999
Warsaw, Poland

Abbreviations:

AD:	Associate Director	ML:	Member List
Brep.	Board of Administration Report	NC:	National Committee
CIECB:	CIE Central Bureau	TC:	Technical Committee
CIEBA:	CIE Board of Administration	TR:	Terms of Reference
CM:	Country Member	ST:	Status
D2:	Division 2 (D1, D4, D8, likewise)	WG:	Working Group

Attendees:

Gorow Baba	(Japan)
Jean Bastie	(France, CIE Vice President)
Lou Bedocs	(UK)
Peter Blaser	(<u>Switzerland</u>)
Anton Bouman	(<u>Netherlands</u>)
Margaret Budzinski	(South Africa)
Joaquin Campos	(Spain)
John Clare	(<u>New Zealand</u>)
Jeanne-Marie Coutin	(France)
Dennis Couzin	(USA)
Jonathan David	(UK)
Edward Early	(USA)
George Eppeldauer	(USA, TC2-48 chair)
Teresa Goodman	(<u>UK</u> , D2 Assoc. Director, TC2-29 chair)
Dider Halkin	(Belgium)

Franz Hengstberger	(<u>South Africa</u> , D2 Director, CIE Vice President Elect)
Christine Hermann	(CIECB General Secretary)
Neil Hodson	(USA, TC2-32 chair)
Jack J. Hsia	(USA, Past CIE President)
Yasuhiro Ikai	(<u>Japan</u>)
Norbert Johnson	(<u>USA</u> , D2 Assoc. Director, TC2-19 Chair)
Carolyn Jones	(USA)
Rainer Köhler	(France, BIPM)
Peter Kohns	(Germany)
Hideki Kondo	(<u>Japan</u>)
Thomas Larason	(USA)
Ian Lewin	(USA)
Hans Allan Lofberg	(Sweden, CIE President)
Janos Makai	(CIECB Technical Manager)
Bruce McArthur	(Canada)
David McDowell	(USA)
John Moore	(UK, D2 Editor, TC2-04 chair, TC2-44 chair)
Osamu Myodo	(Japan)
Yoshi Ohno	(USA, D2 Secretary, TC2-37 chair, TC2-49 chair)
Pasi Orrevelainen	(Finland)
Allan Ottoson	(<u>Sweden</u>)
Leyla Dokuzer Ozturk	(<u>Turkey</u>)
Jeizy Pietrzykowski	(<u>Poland</u>)
Mark R. Pointer	(UK, D1, D8 Assoc. Director)
M. Luisa Rastello	(<u>Italy</u> , TC2-16 chair)
Reiner Rattunde	(Germany, TC2-40 chair)
J. Rennilson	(USA, TC2-36 chair)
Alan Robertson	(<u>Canada</u> , Past CIE Vice President)
Givseppe Rossi	(Italy)
Georg Sauter	(<u>Germany</u> , TC2-43 chair)
John Scarangelo	(USA, TC2-46 chair)
Duco Schreuder	(Netherlands)
Raissa Stolyarevskaya	(<u>Russia</u>)
Guy Vandermeersch	(<u>Belgium</u> , D2 Assoc. Director, TC2-23 chair)
Pierce Webb	(USA)
Gan Xu	(Singapore, TC2-47 chair)
Guanrong Ye	(<u>China</u>)

Total 52 persons from 22 countries, including 16 country representatives attended. Underlines of the countries indicate country representatives. H. Kondo represented Japan for M. Nishi, and A. Robertson represented Canada for J. Zwinkels.

The Division 2 officers mentioned above (and also in the minute below) are still for the 1995 – 1999 term as the new officers had not been appointed at the start of this Division meeting. The CIE Board Officers stated above are for the new term as they had already assumed the positions on June 26, 1999.

Regrets received by Secretary

Gyorgy Czibula (Germany)
Gyula Deszi (Hungary)
Dave Ellis (USA)
Stanko Erste (Slovenia)
Arnold Gaertner (Canada)
Jim Gardner (Australia)
Ganesha (India) TC2-24 chair
Hiroaki Ikeda (Japan), IEC TC100 PT61966
Connie Jonker (South Africa)

Michael Matus (Austria)
Klaus Mielenz (USA), TC2-35 chair
M. Nishi (Japan)
Jim Palmer (USA), TC2-30 chair
Albert Parr (USA), R2-09 reporter
Miklos Racz (Hungary)
John Verrill (UK), TC2-28 chair
Phil Wychorski (USA)
Joanne Zwinkels (Canada), TC2-25 chair

John Verrill sent an apology due to his ill health. He mentioned that would take early retirement from NPL with immediate effect, but he would continue to chair TC 2-28 with a TC secretary appointed and keep his membership in TC 2-25 and 2-39. (See TC2-28 report below for further information.)

Handouts

- 1) Agenda of the 1999 Division Meeting
- 2) Quadrennial Report 1995-1999
- 3) List of TCs, Reporterships, and Liaisons

Call to order

The Division Director, F. Hengstberger, opened the meeting at 8:30, and welcomed all present. The Director introduced Division 2 Officers who were sitting in front: Division Associate Directors, Teresa Goodman (NPL, UK), Guy Vandermeersch (LABORELEC, Belgium), and Norbert Johnson (3M, USA); Division Secretary, Yoshi Ohno (NIST, USA), and Division Editor, John Moore (retired, UK). The Director expressed his special thanks to Yoshi Ohno for his hard work for the last few years to keep Division 2 running actively, and to John Moore for his continuing precise work as the Editor. He also summarized the voting and Board discussions relating to the appointment of a new Division 2 Director for the next quadrennium, as a result of which Teresa Goodman would formally take over as Director at the end of the meeting. The meeting was chaired by the present Director for the agenda items up to 7, at which point the new Director took the chair.

1. Approval of agenda

Agenda of this 1999 Division 2 meeting (Attachment 1) was approved with no changes.

2. Approval of the minutes of the 1998 Division meeting

The minutes of the last Division meeting in Boulder (distributed by e-mail and mail in August 1998) was approved with no corrections.

3. Quadrennial Report

The Director presented the report. The terms of reference were first reviewed. During the

last quadrennium, Div. 2 had 9 new TCs commenced and 8 TCs closed. Three TCs had chairmanship changed. Five reporterships were created and four closed. We held annual Division meetings, in 1995 in New Delhi, 1996 in Vienna, and 1997 in Durban where we had a joint meeting with Division 4. We had our last meeting in Boulder, USA in 1998. Division 2 produced four technical reports and one standard. TC2-22 finished their work, and the report is to be published in the next CIE Collection. We maintain a number of liaisons with IEC, ISO, and also with CCPR. We now have 25 active TCs and five reporterships.

Our website has become the center for dissemination of information of the Division. Our website is the model for all other divisions in terms of structure and contents, as recommended by the Secretaries' meeting. The appearance of Divisions' page should have flavor of each division, and should not be standardized. The websites of the divisions are now hosted by various laboratories. Our web server is provided by CSIR, and remotely maintained by our Secretary in the U.S. with no problem. This saves cost for the Central Bureau and the arrangement is to continue in the next quadrennium. We will further develop the contents of our website to further facilitate Division's activities. (The full copy of the Quadrennial Report is in Attachment 6.)

4. Secretary's report (Y. Ohno)

(1) Arrangement for meetings in Warsaw

The Secretary arranged schedules of the TC meetings for Div. 2, trying his best to avoid conflicts with other Division meetings. Some adjustments were made with Divisions 4 and 1, but there still were some overlaps with Division 1 and Division 8, which were unavoidable due to the three-day schedules for all Division meetings. Nevertheless, Div. 2 had 10 TC meetings spread over two days, which was more than any other Division, and enabled much progress to be made this time.

(2) Country members

Div. 2 now has 34 country members, the same as last year. There have been no changes of the country representatives. (After this D2 meeting, the representative of Russia was changed to Raissa Stolyarevskaya.)

(3) The 1998 Activity Report

The 1998 Activity Report, containing the minutes of the 1998 Boulder meeting, was produced and issued in August 1998. This Activity Report, together with the updated D2 Mailing List, was distributed to the mailing list by e-mail, and additionally by mail to all the country members. Before issuing the Report, a draft was posted on a hidden website for comments. This way, the information is made available earlier and also some useful comments can be received. Other than the Activity Report, about ten e-mail circulars were distributed after the Boulder meeting.

(4) Division 2 Mailing List

The D2 mailing list now contains 129 persons (98 last year – 30 % increase), including 34 country members, 25 TC chairpersons, and 70 associates. Associates are those who are not CMs nor TC chairpersons but show interest in D2 activities. Among the 129 entries, 120 have

e-mail addresses, which is 93 % of all, a notable progress from last year's 82 %. The rest, 9 persons, are accessed by fax or mail. Email circulars only in text are sent also to fax recipients by using a fax modem without extra effort. Since most circulars are distributed by e-mail now, adding more associates does not increase Secretary's workload. Anybody who would like to be added to the D2 Mailing List is welcome to send a request to the Secretary.

(5) Document format

We started using doc format (MS Word) and PDF format (Adobe Acrobat) as our standard formats last year. CIECB is already using PDF for electronic balloting. As we have not heard of many problems, we will continue using these two formats. While PDF is more reliable in different platforms, the doc format (sometimes liable to problems of version differences) is convenient for sending comments back.

(6) D2 Website

The D2 website has been up and running since 1997. Our server is at CSIR, South Africa, and it has been working very well with no breakdowns. We thank Dr. Hengstberger for his continuing offer to use the CSIR server for CIE D2. The Secretary put much effort to keep the website up-to-date. While maintaining the same structure, much information has been added since last year.

A new use of the website is to use it as a download site. Rather than sending documents as e-mail attachments, the documents are posted on a webpage, and its URL is shown in the email. Attachments often cause problems of taking long connection time for persons traveling or persons using a modem from home. Attachments also sometimes cause receiving troubles. We assume that those who have email access have a website browser also. The Secretary also encourages TC chairpersons to use this method to distribute draft documents. In this case, we can post the document on a hidden URL which is announced only to the TC members, and is accessible only by the TC members (password process is not available at the moment). We tried this for TC2-46 draft, and it worked well. There is a security issue, which we discussed under agenda item 11.

The Secretary also encourages the TC chairpersons to hold virtual meetings on Internet, between physical meetings. If the exchange of information were limited to physical meetings only, the progress would be too slow. A virtual meeting can be announced to TC members by e-mail, with specific agenda, present questions, and try to reach consensus from e-mail responses. To facilitate this, the Secretary will also seek for possibility of setting up e-mail reflectors.

5. Editor's report

(1) CIE S005 to ISO/CIE standard

The document from TC2-33, "CIE Standard Illuminants for Colorimetry", already published as CIE S 005, went through its final stage two months ago, and it has now been published as a joint standard ISO10526/CIE S005. The committee completed the task (The TC was closed in 1998).

(2) TC2-22 Luminous Flux of High-Pressure Sodium Lamps

A short summary of the intercomparison was written by the Editor from material provided by the chairman. The short report will appear in the next edition of CIE Collection. (TC2-22 was closed in 1997).

(3) TC2-35 CIE Standard for $V(\lambda)$ and $V'(\lambda)$

The document "Photometry - The CIE System of Physical Photometry" from the TC has been edited, and is now ready for Division ballot. The reason why it took such a long time was due to some controversial issues raised at final stages, which took a lot of discussions and rewriting, and certainly not due to negligence of the TC chairperson. Agreement is now reached by TC members. Hopefully within the next year, it will be published as a CIE standard, and during the next two years (according to previous example), it is expected to become an ISO/CIE standard. (See 6. TC2-35 on p. 10 for more information.)

(4) TC2-36 Retroreflection: Definition and Measurement (Revision of CIE publication 54)

The document (12th draft) from this TC: "Retroreflection: Definition and Measurement", has been submitted by the chairman, and the Editor has made comments on the draft. The document will shortly go to the Division ballot.

(5) TC2-14 Practical Methods for the Measurement of Reflectance and Transmittance"

This document has been published as CIE 130 (1998) after the Boulder meeting, and the task of the TC is complete.

The Editor raised a concern on the voting procedure for this document. According to the policy of the CIECB and D2, this document was voted with electronic balloting for the first time (for D2). The PDF file was set up at FTP site of CIECB to download the file. The consequence was that there were only 8 votes (8 countries), much less than normally expected. The Editor believes that this poor response of voting was due to electronic balloting. The editor would expect much more responses if the previous procedure (mailing a hardcopy document with a letter) had been taken. He suggests that additional physical mail be sent to confirm receipt of the electronic document and to request voting.

A. Robertson commented that he would more likely to vote with electronic way. N. Johnson commented that the countries interest is at TC level and that comments tend to be made at TC ballot, rather than Division ballot level. F. Hengstberger commented that reminders can be sent by e-mail to get higher response, and also that no response can be considered as affirmative vote.

(6) Div. 2 part of the International Lighting Vocabulary (ILV)

This is also one of the responsibilities of the Editor, but as it is now handled under a TC activity, it will be reported in the section of Reports of TCs.

6. Progress report of Technical Committees

6.1 Technical Committees

Progress reports on the technical committees were given by Associate Directors and Division

Director. Associate Director Goodman reported TCs 2-04, 16, 17, 24, 28, 29, 40, 41, 42, 43. AD Johnson reported TCs 2-14, 19, 25, 30, 32, 35, 36, 37, 39, and AD Vandermeersch reported TC2-23 and 2-44. TCs 2-45, 46, 47, 48, 49 were reported by Director Hengstberger as these new TCs had not been assigned to ADs. The reports of all the TCs are shown below in the numerical order of the TCs.

TC2-04 Secondary standard sources

Chair: J. Moore (UK)

AD: Goodman

ML: Bandyopadhyay (India), Corrons (Spain), Gaertner (Canada), Jiang (China), Low (USA), Metzdorf (Germany), Nishi (Japan), Schanda (Hungary)

TR: Produce a technical report on the selection and operation of stable secondary standard sources.

ST: Report given by the chairperson. The draft has now been done for TC ballot. If there is no objections, it will hopefully go to Division ballot within next few months. The document has a few photographs.

TC2-14 Measurement of Reflectance and Transmittance, Including Turbid Media

Chair: P. Polato (Italy)

AD: Johnson

ML: Bianchini (Italy), Gundlach (Germany), Hsia (USA), Morren (Belgium), Verrill (UK)

TR: Define the standard geometric conditions for the measurement of transmittance and reflectance.

ST: The document "Practical methods for the measurement of reflectance and transmittance" has been published as CIE 130. The task of this TC has been completed and the TC is closed.

TC2-16 Characterization of the performance of tristimulus colorimeters

Chair: M. L. Rastello (Italy)

AD: Goodman

ML: Denner (South Africa), Goodman (UK), Hengstberger (South Africa), Moore (UK), Muray (USA), Ohno (USA), Rattunde (Germany), Robertson (Canada), Sauter (Germany), Schanda (Hungary), Steindl (Austria), Terstiege (Germany)

TR: To produce a report recommending methods for assessing the performance of tristimulus colorimeter heads for measuring chromaticity coordinates.

ST: Report given by the chairperson. The TC had several meetings in the past, but not this time because the chairperson preferred to circulate the draft to TC members only at this stage. However, some useful information has been obtained from the conference and meetings of TC2-40 and TC43 (both TC chairs are the members of TC2-16). Their contribution will be taken into account in the next draft. The chairperson plans to get comments by September, and hopes to have another revision in November, then if members agree, to have TC voting.

TC2-17 Recommendation for integrated irradiance and spectral distribution of simulated solar radiation

Chair: D. Kockott (Germany)

AD: Goodman

ML: Aydinli (Germany), Goodman (UK), Ignatiev (Russia), Justus (USA), Kaase (Germany), Kasten (Germany), Kok (South Africa), Wilkenson (Australia), Zerlaut (USA)

TR: Revise and update CIE Publication No.20 (1972)

ST: Report given by the AD. 18 months or so ago, the chairman sent out the draft document (on solar simulators for testing purposes) to the whole Division. He got some responses but not

very much. The chairman would still like to have more input from TC members or from those with an interest in this subject. AD Goodman requested that anybody who has comments on or interest in the document should contact the chairman by e-mail. Goodman will also contact the chairman to ask him to send his draft to the Secretary so that the document can be posted at a hidden webpage for wider distribution.

TC2-19 Measurement of the Spectral Coefficient of Retroreflection

Chair: N. Johnson (USA)

AD: Johnson

ML: Arens (USA), Brekke (Norway), Fisher (USA), Hsia (USA), Hubert (France), Kurioka (Japan), Price (UK), Rendu (France), Rennilson (USA), Richey (Germany), Schreiber (Germany), Sugiyama (Japan), Terstiege (Germany), Vandermeersch (Belgium)

TR: Identify the critical measurement parameters, tolerances, and requirements for, and conduct an international intercomparison of, the spectral coefficient of retroreflection.

ST: Report given by the chairperson. The completion of the TC document is delayed due to a strong request for one more set of data to be included. The chairman expects to obtain the data shortly and finalize the analysis to prepare the final draft for TC voting this year.

TC2-23 Photometry of Street-Lighting Luminaires.

Chair: G. Vandermeersch (Belgium)

AD: Vandermeersch

ML: Arens (US), Blaser (Switzerland), Blochouse (Belgium), Claassens (NL), Corrons (Spain), Price (UK), Rattunde (Germany), Rossi (Italy), Simons (UK), Sorensen (Denmark)

TR: Prepare a technical report on the photometry of street lighting luminaires.

ST: Report given by the chairman. This TC has not started its work yet because, the TC waited for the results of the intercomparison within Europe, which started in 1996 and finished just at the end of last year.

Soardo (Italy), the Pilot laboratory of the comparison, was requested to give a brief report on the status of the intercomparison. The project for intercomparison of luminaires started three years ago with the support of the European Commission. Two types of luminaires were used, one with 260 W HPS and another with fluorescent tubes. The intercomparison measurements have finished. Provisional results are available. There are no problems in measurement compatibility. There are problems in measurement of street lighting luminaires, due to aiming difficulties. There are large differences in luminous intensity distribution. A meeting was held with the 12 participants. The draft paper is to be distributed by end of the year and then the paper is to be published.

Vandermeersch added that the participants of this intercomparison to be the initial TC members, but it was planned to try to attract members from countries other than Europe as well. Anybody interested in this TC should contact the chairman.

TC2-24 Users guide for the selection of illuminance and luminance meters

Chair: K. Ganesha (India)

AD: Goodman

ML: Andor (Hungary), Arens (USA), Austin (USA), Bastie (France), Chang (Taiwan), Dibbern (Germany), Eppeldauer (USA), Gardner (Australia), Goodman (UK), Hengstberger (S. Africa), Moore (UK), Muray (USA), Ohno (USA), Rennilson (USA), Ritzol (USA), Sauter (Germany), Sojourner (USA)

TR: Prepare a user's guide for the selection and use of illuminance and luminance meters.

ST: Report given by the AD. The chairman had some trouble with communication in the past, but he has now obtained his own e-mail address and hopes to be able to communicate better. He is awaiting responses to his letter of June 1998 sent to TC members. Response so far has been disappointing. AD Goodman encourages the attendees and TC members to contact the TC chairman to provide him with more input, in order to get the committee work in progress and to produce this important document. Contact by email will be the most rapid way forward. The chairman's new mail: research74@mantraonline.com
< Secretary note>

The chairman sent out another letter with proposed table of contents and a questionnaire form at the beginning of June 1999.

TC2-25 Calibration Methods and Photoluminescent Standard for Total Radiance Factor Measurement

Chair: J. Zwinkels (Canada)

AD: Johnson

ML: Bristow (Sweden), Erb (Germany), Leland (USA), McCamy (USA), Nayatani (Japan), Puebla (Germany), Racz (Hungary), Simon (USA), Witt (Germany), Verrill (UK)

TR: Prepare a CIE report on methods for measurement of total radiance factors of photoluminescent materials. Recommendations for realizing and calibrating photoluminescent standards by the one and two-monochromator method will be included.

ST: Written report submitted. The TC met May 6, 1999 in Vancouver, B.C. in conjunction with the Inter-Society Color Council meeting. Five TC members and 2 observers were in attendance. The eighth draft of the TC report was distributed and discussed. Figures have been added and equation, table and figure numbering have been edited to conform with CIE guidelines. Remaining action items are some minor revisions to the text and to re-group the references at the end of the document. The revised document (ninth draft) will be circulated for TC ballot.

TC2-28 Methods of characterizing spectrophotometers

Chair: J. Verrill (UK)

AD: Goodman

ML: Andor (Hungary), Bastie (France), Berns (USA), Distl (Germany), Eckerle (USA), Konstantinova (Bulgaria), McCamy (USA), Robertson (Canada), Sugiyama (Japan), Ulyanov (Russia), Zwinkels (Canada)

TR: Write a CIE report on the characterization of spectrophotometers by means of reference materials and other methods, with particular reference to linearity, wavelength error, stray light, and integrating sphere errors.

ST: Report given by AD. The progress has been delayed slightly due to poor health of the chairman. The 4th draft is nearing completion and will be circulated within the next few

months. If there are no major changes, the 5th draft will be circulated for TC ballot in the autumn this year. The chairman is retiring from NPL in June 1999, and has appointed a TC Secretary, Peter Clarke (NPL, UK) to assist him in incorporating comments from the last draft, and all the figures and references have now been added. Contact to the TC chairman can be made via TC secretary: Dr. Peter Clarke, NPL, UK (email: peter.clarke@npl.co.uk).

<Secretary note>

The chairman, Mr. John Verrill, passed away on June 29th, a day before this Division meeting, as informed several days after the D2 meeting. P. Clarke is expected to take over this committee.

TC2-29 Measurement of detector linearity

Chair: T. Goodman (UK) **AD:** Goodman

ML: Andor (Hungary), Bastie (France), Bittar (New Zealand), Budde (Canada), Distl (Germany), Dezsi (Hungary), Mihailov (Russia), Mostl (Germany), Ohno, Parr (USA)

TR: Prepare a CIE guide on methods for the characterization of the linearity of detectors of optical radiation, including different principles by which the linearity of detectors can be determined and causes of non-linear behavior, to aid users of optical radiation detectors in the selection and use suitable devices for specific applications.

ST: Report given by the chairperson. Progress has been slow during the past year, due to a reorganization of the chairman's responsibilities. However, this is now resolved and work on the third draft is now well underway. The third draft should be sent to TC members within the next few months.

TC2-30 Array Radiometry

Chair: Jim Palmer (USA) **AD:** Johnson

ML: Abasari (Hungary), Andoh (Japan), Goodman (UK), Jones (USA), Mihailov (Russia), Pflieger (Austria), Sauter (Germany)

TR: Prepare an annotated bibliography for the CIE journal on diode array radiometry. Make appropriate recommendations for future work in diode array radiometry.

ST: Report given by the AD. The chairmanship has changed to Jim Palmer (Univ. Arizona, USA) after the Boulder meeting. The previous chairman, P. Wychorski, sent the TC documents and materials to the new chairman just recently. The new chairman is to start the work to finish the document and publish it in a CIE Collection.

TC2-32 Measuring Retroreflectance of Wet Horizontal Road Markings

Chair: N. Hodson (USA) **AD:** Johnson

ML: Austin (USA), Davies (USA), Dibbern (Germany), Hubert (France), Johnson (USA), Lundkvistl (Sweden), Meydan (Australia), Meseberg (Germany), Rennilson (USA), Schmidt-Clausen (Germany), Schnell (USA), Schreuder (Netherlands), Soardo (Italy), Sorenson (Denmark) – revised August, 1999

TR: To prepare a guide for the methods of measuring coefficient of retroreflected luminance (specific luminance) of horizontal road markings under wet weather conditions.

ST: Report given by the chairman. This TC was re-started a year ago in Boulder with the new chairman. The TC had the second meeting on Monday 28th June in Warsaw. The TC agreed on a rough draft with outlines of chapters and sections. There were active discussions on a lot of issues, which have become a good input for the next draft. The TC plans to do annual

testing, later this year or spring next year, to do actual measurements on wet pavement markings. Some TC members volunteered to update several sections of draft.

TC2-35 CIE Standard for $V(\lambda)$ and $V'(\lambda)$

Chair: K. Mielenz (USA) **AD:** Johnson

ML: Bastie (France), Gardner (Australia), Hengstberger (South Africa), Moore (UK), Ohno (USA), Parr (USA), Robertson (Canada), Sauter (Germany), Schanda (Hungary)

TR: To prepare a new CIE Standard on the present $V(\lambda)$ and $V'(\lambda)$ functions.

ST: As covered in the Editor's report, the TC document "Photometry - The CIE System of Physical Photometry" has been edited by the Editor, and is now ready for Division ballot. (See 5. Editor's report above.)

<Discussion>

Sauter, one of the active members of the TC, was requested to give additional information. Comments were made on the document a few years ago regarding the relationship between CIE and CIPM. The problem is now solved with the revised document, and he believes the document is now ready for publication. Ohno mentioned that there have been a few revisions of the document by the chairman and by the Editor, and now it is complete and ready for Division ballot. Division Editor commented that he discussed with the chairman about the need for another TC ballot and they felt that, as a number of people already commented and much time spent on revising the draft, there would be no need for another ballot. The Editor Moore agrees the chairman's proposal to go now directly to Division ballot. Robertson suggested that, since the document went through many changes between a few persons, the document should be sent to TC members for information before ballot. Moore will relay this opinion to the chairman. Hengstberger asked about the change of the title of the document. Moore answered that the title of document does not have to be the same as the title of the TC; it has been decided by the TC to have this title rather than that of the TC; the title is extremely important for standards because a summary (normally comes in three languages for technical reports) does not accompany standards.

TC2-36 Retroreflection: Definition and Measurement (Revision of CIE Publication 54, Liaison with CEN/226)

AD: Johnson

Chair: J. Rennilson (USA)

ML: Arens (USA), Couzin (USA), Dibbern (Germany), Heenan (USA), Hubert (France), Johnson (USA), Kramp (Germany), Nanjo (Japan), Price (UK), Schmidt-Clausen (Germany), Sorensen (Denmark), Terstiege (Germany), Werner (Sweden) – revised, August 1999.

TR: To revise and update publication 54. To standardize test methods and measurement geometry for measuring the photometric and colorimetric properties of all types of retroreflectors under both day and nighttime conditions. To prepare this CIE document in ISO format to be issued as a joint CIE/ISO standard.

ST: Report given by the chairman. The TC has made much progress and is nearing completion. The TC just sent out the 12th draft for TC ballot. Two ballots were received back with comments and one negative vote. The TC met again this time in Warsaw and resolve these comments. New wording is to be added in the draft. The draft has also been edited by the Editor with many comments. A bibliography will be worked on and completed within one

month. Next draft to be sent for Division ballot around August. The TC has agreed in the committee level that this committee is not to produce ISO/CIE standard. It is probable that a new committee will be proposed to produce standards based on this document.

Hengstberger added that this TC is listed on the website as one of the TCs producing CIE standards. This is now not the case, so the website will need to be corrected.

(Communication from the chairman, Aug. 26, 1999: 14th draft has been completed and approved by the TC. The TC Activity report has been submitted to the Secretary as attached to this document – Attachment 5.)

TC2-37 Photometry Using Detectors as Transfer Standards

Chair: Y. Ohno (USA) **AD:** Johnson

ML: Andor (Hungary), Austin (USA), Bastie (France), Bittar (New Zealand), Czibula (Germany), Corrons (Spain), Dezsi (Hungary), Eppeldauer (USA), Gardner (Australia), Goodman (U.K.), Köhler (BIPM), Muray (USA), Pietrzykowski (Poland), Rattunde (Germany), Rastello (Italy), Sauter (Germany), Schanda (Hungary), Sojourner (USA), Wychorski (USA)

TR: To prepare a report on the properties of $V(\lambda)$ -corrected detectors that are suitable for disseminating and maintaining photometric units. This report will include methods for the use of these detectors.

ST: Report given by the chairman. The last meeting was in Boulder, and now the draft is close to completion. Apology was expressed for the little progress on this TC this time, due to the chairman giving priority to the work of his other committee (TC2-49). The draft will only need changes of wording of several terms to give clearer definitions. This will be done in the next few months and the next draft is expected to be circulated for a TC ballot.

Director Hengstberger mentioned the chairman's heavy workload as the Secretary of the Division, chair of two TCs, and also organizer of the workshop on Photometry of Flashing Lights this time.

TC2-39 Geometric Tolerances for Colorimetry

Chair: D. Rich (USA) **AD:** Johnson

ML: Baba (Japan), Bittar (New Zealand), Decarreau (France), Fisch (USA), Hanssen (USA), Jordan (Canada), Johnson (USA), Kravetz (USA), Ladson (USA), Terstiege (Germany), Pietrzykowski (Poland), Verrill (UK), Zwinkels (Canada). Consulting member: Erb (Germany). – revised June 1999.

TR: Compile a technical report and recommendations specifying the geometric tolerances for the various geometries in colorimetry, including 0/45, 0/d and others. Parts of this technical report may be suitable for inclusion in a CIE standard specifying several geometric tolerance levels.

Working Program:

Utilize ISO 5/1 and ASTM E 1767 to develop a system of specifications for the geometry of color measurements. Define the specifications in the following order: Reflectance factor ($t/8$, $d/8$, $d/0$), radiance factor ($45/0$) and transmittance geometries ($0/0$, $d/0$). Specifications will be developed via computer simulation & verified experimentally.

ST: Written report submitted. The Committee met for the fifth time just prior to the CIE Division 2 meeting in Warsaw. Five committee members and six guests were present. In

reviewing the terminology, it was agreed that the final report would have a separate section on terminology. The action items shown in the 1998 Activity Report had not been fulfilled due to the change of the chairman's affiliations and also to no actions by other members. After discussion on the current draft, the TC agreed on changes on five points. During the next few months, the chairman will prepare a second draft of the final report and distribute the draft to committee members for comment. The next draft will be written and distributed by 15 December 1999. The committee desires to hold the next meeting in conjunction with the ASTM B-12 Color and Appearance meeting, to be held in Toronto, Canada in June of 2000. The TC will not be meeting during the Division meetings at NPL in April 2000. For further details, see Attachment 2 (TC2-39 Activity Report, 29 June, 1999).

TC2-40 Characterizing the Performance of Illuminance and Luminance Meters

Chair: R. Rattunde (Germany) **AD:** Goodman

ML: Austin (USA), Bastie (France), Czibula (Germany), Dezsi (Hungary), Goodman (UK), Khandelwal (India), Khanh (Germany), Mahidharia (India), Moore (UK), Ohno (USA), Pietrzykowski (Poland), Saito (Japan), Sauter (Germany), Stolyarevskaya (Russia), Xu (Singapore), Ye (China) – revised July 1999

TR: Convert the present CIE Technical Report No. 69 into an ISO/IEC standard. Prepare a combined CIE/ISO standard describing the definitions of quantities influencing the performance of illuminance and luminance meters, as well as defining measurement procedures for the individual error quantities.

ST: Report given by the chairman. The TC had its 4th meeting on June 28th in Warsaw with 26 attendants. 9 of the 16 members had been present. The chairman presented the 3rd draft of the document which included some of the comments of the last meeting in Boulder 1998. No further written comments had been received by the chairman from the members since then. The TC discussed the general contents of the document and finally made a decision on the further treatment of the document. According to this, the chairman will submit a ballot per e-mail to the members and ask for opinions whether to modify the title, introduction chapter, or scope of the document together with text proposals within the next 2 months. (The draft will be posted at a hidden website by the Secretary.) The chairman will add the modifications according to the majority opinions into the draft and submit it to the Associate Director for further processing by the CIE. Next meeting will be held in conjunction with CIE D2 in spring 2000, at NPL, London, UK if necessary. (The minutes of the TC meeting were later distributed as in Attachment 3.)

<Discussion>

Moore as an Editor asked when the document would be ready for submission to the editor. The chairman plans to produce the next version in three months, which may be ready for TC voting if there are no major problems. Goodman commented that any issues on the guidance as to how to select and use illuminance/luminance meters should be dealt within TC2-24, and requested the attendees to provide such input to Ganesha.

<Secretary note>

CEN standards are being developed on the same subject and are nearing completion. The current TC draft seeks to harmonize with this CEN document. The chairman will keep TC members posted on the status of the CEN activity and is willing to send a copy of the document if requested.

TC2-41 Industrial Photometry in Developing Countries

Chair: B. Bhattacharya (India) **AD:** Goodman

ML: Chanchanchop (Thailand), Goodman (UK), Moscati (Brazil), Ohno (USA), Sastri (India), Sauter (Germany), Ye (China)

TR: To prepare a Technical Report giving guidance on recommended practices for photometric measurement (including sphere photometry and goniophotometry), taking account of the special requirements of industrial laboratories in developing countries.

ST: Report given by the AD. There has been no substantial activity since the establishment of the TC in 1995, and we have no contact from the chairman for the last two years regarding the work of this TC. Thus it is suggested that this TC be resolved unless we have other proposals for solution. Later at the meeting, the Division agreed to close this TC.

TC2-42 Colorimetry of Visual Displays

Chair: A. Hanson (UK) **AD:** Goodman

ML: Andor (Hungary), Berns (USA), Dalton (UK), Fairchild (USA), Ikeda (Japan), Hardis (USA), Leone (USA), Luo (UK), Maelfeyt (Belgium), MacDonald (UK), McFadden (Canada), Munger (Canada), Reid (UK), Schanda (Austria), Stokes (USA), Sakata (Japan), Stienstra (Netherlands), Ohno (USA), Vienot (France)

TR: To produce a Technical Report summarizing recommended practice for the measurement of the colorimetric and spectroradiometric properties of visual displays.

ST: Report given by the AD. Progress has been slow during the past few years, due to changes in the chairman's responsibilities. However, important liaisons with other groups including IEC are being maintained and it is anticipated that a draft document should be available for TC comment shortly.

<Discussion>

Moore asked how this TC relates to the work of Division 8. Director Hengstberger commented that, following discussions with D8 Director, it had been agreed that such matters as published in the earlier document (CIE 122), for example, should go to Division 8, but this TC should stay in Division 2. Ohno commented that he was at the last D8 meeting in Baltimore, and talked about this TC, and that there was good communication with D8. Rennilson suggested that the title of the TC be changed to make clear to the people of D8 that this TC is dealing with measurements. D2 agreed to add the word "measurement" in the title.

TC2-43 Determination of measurement uncertainties in photometry.

Chair: G. Sauter (Germany) **AD:** Goodman

ML: Bastie (France), Corrons (Spain), Goodman (UK), Köhler (BIPM), Moore (UK), Ohno (USA)

TR: To prepare a CIE recommendation as basis for the determination of measurement uncertainties valid for selected quantities used in photometry.

ST: Report given by the chairman. The TC had its second meeting this time in Warsaw with 23 attendees. There was much discussion on the structure. The document now consists of two major parts: the first part is the summary of all the equations used for determination of uncertainties, the second part consists of several examples, from simple ones to difficult ones. The second part should give more explanation to assist technicians as well as

scientists to understand calculation and definitions of the uncertainties. Further written comments are requested in the next two months, and a next version is to be prepared for discussion at the next meeting in UK.

TC2-44 Vocabulary Matters

Chair: J. Moore (UK)

AD: Vandermeersch

ML: Billmeyer (USA), Burghout (Netherlands), Ionescu (Romania), Johnson (USA), Köhler (BIPM), Morren (Belgium), Nishi (Japan), Ohno (USA), Poppe (Hungary), Sauter (Germany), Schanda (Hungary), Woo (Canada)

TR: To provide liaison between Div.2 and TC 7-06 "Lighting Terminology" and support the preparation of the new edition of the Lighting Vocabulary in the field of light and colour measurements.

ST: Report given by the chairman. ILV (International Lighting Vocabulary) is being revised and this TC is responsible for D2 terms. The chairman circulated possible new terms (about 300) to members. Comments have been collected and compiled for revision, and the second mailing is being prepared. Different opinions should reach consensus in the second mailing. As a guiding principle to assess the suitability of terms, the view taken within the TC that ILV is not a scientific dictionary, nor text book. Thus it has been agreed to eliminate technical principles and figures (which should be in technical reports) and decided that ILV should stick to strictly definitions. If other Divisions have different opinions, the policy must be harmonized.

<Discussion>

Hermann (CIECB) commented that D1 has almost finished their final version of their terms. As soon as it is finalized, she will send a copy to Moore for D2 to review. D2 is one of the last ones. Director Hengstberger mentioned that the vocabulary committee would not wait for receiving all the Divisions before submitting to IEC. Submission of the terms, Division by Division, will avoid delaying the whole process. The Director proposes that D2 should have detailed discussions on the way we do this in future, at regular meetings of the Publication Board. Director Hengstberger is now the Vice President for Publications, and intends to form a Publication Board consisting of Division Editors, CIECB, and possibly some other members. The Board will have the first meeting in Budapest, just before the CIE Symposium at the end of September 1999. The vocabulary issue will be one of the issues for discussion there. Vocabulary is a living thing and should be updated much faster than in the past. Editor Moore added a point that doing this Division by Division presents a problem that there are many measurement terms used in other Divisions (particularly D1, D4, D8), and we do not always agree: we may need some new approaches.

The following TCs (2-45 through 2-49) were established last year after the Boulder meeting. Reports were given by Director Hengstberger and the TC chairpersons. The ADs of these TCs have not been assigned at the time of this meeting.

TC2-45 Measurement of LEDs - Revision of CIE 127

Chair: Kathleen Muray (USA)

AD:

ML: Austin (USA), Bando (Japan), Balta (USA), Berkhout (USA), Bouman (Netherlands), Budzinski (South Africa), Bym (USA), Carr (USA), Distl (Germany), Ellis (USA), Fleischer

(USA), Gan (Singapore), Guenther (Germany), Halkin (Belgium), Heidel (Germany), Jones (USA), Kohmoto (Japan), Larsen (Denmark), Marchl (Germany), Moore (UK), Myers (USA), Ohno (USA), Rastello (Italy), Sauter (Germany), Scarangelo (USA), Schanda (Hungary), Solomon (Taiwan), Stolyarevskaya (Russia), Webb (USA), Young (USA) – revised Aug. 99.

TR: Revise CIE Pub. 127 to include improved definitions of quantities and methods of measurement for total flux and partial flux of LEDs and to reevaluate other parts including spectral and color measurements of LEDs.

ST: Report given by C. Jones (USA) on behalf of the chairman. This is a continuation of TC2-34 and deals with additional issues to be resolved. The TC was established last year in Boulder. Two TC meetings have been held, in Gaithersburg at CORM'99 in May, and in Warsaw this time, both chaired by the chairperson K. Murray. The meeting in Warsaw focused on defining the measurement quantities for partial flux, and the TC came to an agreement on this. Next draft will be circulated within next few months for further comments. There are issues still to be addressed, including assessment of $V(\lambda)$ match and spectral measurements of LEDs. Next meeting is planned for April 2000 in UK.

TC2-46 CIE/ISO standards on LED intensity measurements

Chair: John Scarangelo (USA) AD:

ML: Angerstein (Germany), Bando (Japan), Bouman (Netherlands), Bym (USA), Carr (USA), Distl (Germany), Ellis (USA), Goodman (UK), Heidel (Germany), Hwang (Taiwan), Jones (USA), Lester (USA), Moore (UK), Ohno (USA), Rastello (Italy), Sauter (Germany), Scarangelo (USA), Schanda (Austria), Schumacher (Germany), Sojourner (USA).

TR: To prepare a CIE/ISO standard on the measurement of LED intensity measurements based on the CIE Pub. 127.

ST: Report given by the chairman. The TC started with the original members from TC2-34. The TC first met in Gaithersburg on May 3, 1999 with the first draft discussed and some new members added. The TC met again this time in Warsaw with the second draft reviewed, and had good discussions and inputs on several key questions. The scope of the document is clarified, and the TC agreed to use other CIE publications as much as possible on detector issues and to include more information on uncertainty calculations. The TC also reached general consensus that f_l is not good for LEDs, but this issue should be addressed outside this committee, perhaps at some other TC, as it is expected that it will take substantial new work and time. The chairman will prepare the next draft before the next D2 meeting. The first draft was put on the hidden website as a trial, which worked well. Further versions will follow the same way.

<Discussion>

Director Hengstberger commented that this subject of LEDs is important for D2 in the sense that we are making contributions in the area of optoelectronics, which is new for the CIE, i.e. in some ways we are in a similar position as that of D8 in the imaging technology field. D2 published CIE127, which was very timely, and it is good to have two new TCs on LEDs immediately after publication of CIE127. This is a sensible approach i.e. not to wait for ultimate completeness of the document, but to issue what is needed at the right time. Other TCs should consider this approach.

TC2-47 Characterization and Calibration Methods of UV Radiometers

Chair: Gan Xu (Singapore) AD:

ML: Hengstberger (South Africa), Wilkinson (Australia), Lambe (UK), Rattunde (Germany), Saunders (USA), Pietrzykowski (Poland), Corrons (Spain), Larason (USA), Thompson (USA), Kohmoto (Japan), McArthur (Canada), Kravetz (USA)

TR: Prepare a CIE recommendation on methods of characterization and calibration of broadband UV radiometers in the spectral ranges of UVA and UVB for industrial applications.

ST: Report given by the chairman. The TC started last year with the formal invitation sent out to members in November. The TC had 12 members before Warsaw conference. A target of completing the document in 2002 was set. The chairman circulated a draft table of contents in January 1999. The TC met for the first time in Warsaw with 30 attendees, discussed the revised version of the table of contents, and had active feedback from members and guests. More members are expected to join after Warsaw. The TC made decisions on some key issues. The UVNET (a three-year project under EUROMET and the EU) is developing standard documents in the same area, including one on characterization of UV radiometers (first draft produced by WG1 in October 98). The document copy was circulated among TC members with the permission of the UVNET WG1 chairman. The document has taken the identical terminology and technical approach to CIE Pub. 69. There was an initial concern on overlap and duplication of work. The TC invited two representatives from UVNET WG1 to attend the TC meeting in Warsaw, and also had a representative from the World Meteorological Organization (WMO), which also has a WG on UV radiometry for solar UV measurements. The TC has established contacts with these groups and is having friendly discussions. UVNET expressed their wish to collaborate with CIE. Thus, keeping close contact with them, the TC will continue on to develop the technical report. The chairman is still not sure if the liaison with UVNET should be kept in TC level or Division level and requested advice.

<Discussion>

Director Hengstberger reminded attendees that this TC is resumption of the work by J. Krochmann and later by Poppe, which was closed for a while because no chairperson could be found. Hengstberger asked if the UVNET is producing CEN standards. Chairman answered that the final objective of this UVNET is not clear; information varies depending on sources, and this needs to be clarified. Hengstberger commented that this document from UVNET has taken probably 90 % of the content from CIE 69, and there is obviously an issue of copyright. We need to find a policy of CIE how to handle such situations, as this may happen more. This issue should be discussed at Publication Board meeting in Budapest. Goodman noted that she had discussion with the representative from UVNET and had provisionally agreed that their document would not be published as a CEN standard but as a CIE standard. We need to formalize this arrangement and avoid any conflict or duplication of effort.

TC2-48 Spectral responsivity measurement of detectors, radiometers, and photometers

Chair: G. Eppeldauer (USA)

AD:

ML: Austin (USA), Boivin (Canada), Bouman (USA), Corrons (Spain), Coutin (France), Dezs (Hungary), Gardner (Australia), Goodman (UK), Köhler (BIPM), Larason (USA), Larsen (Denmark), McArthur (Canada), Ohkubo (Japan), Palmer (USA), Pietrzykowski (Poland), Rattunde (Germany), Sauter (Germany), Webb (USA), Xu (Singapore),— revised Aug. 99.

TR: To rewrite the technical report CIE 64 (1984) "Determination of the spectral responsivity of optical radiation detectors" to update device and measurement technology, and include the spectral irradiance responsivity measurement for radiometers and photometers from UV to

near IR.

ST: Report given by Chairman. After the Boulder meeting, the chairman wrote an outline of the document, mailed to 16 members of the TC, and had first meeting here in Warsaw with about 25 attendees. The scope of the paper was discussed, and it was agreed to include radiance responsivity, in addition to radiant power responsivity and irradiance responsivity that were originally proposed. The TC agreed on the table of contents and the modified structure of the report. The TC plan to meet for the second time in London. The chairman plans to finish the report in 3 to 4 years.

TC2-49 Photometry of Flashing Light

Chair: Y. Ohno (USA)

AD:

ML: Arens (USA), Austin (USA), Berkhout (USA), Couzin (USA), Ellis (USA), Eppeldauer (USA), Goodman (UK), Hengstberger (South Africa), Köhler (BIPM), Kondo (Japan), Rattunde (Germany), Schmidt-Clausen (Germany), Sauter (Germany), Webb (USA) – revised July 1999.

TR: Produce a technical report for photometric measurements of flashing light, including derivation of the photometric quantities applied to flashing light, measurement of light sources, and calibration of photometers for flashing light.

ST: Report given by the chairman. The TC had its first meeting in Warsaw with about 25 attendees, including 8 initial members. As discussed at the Workshop in the previous week, various new issues have been recently raised in the measurement of flashing lights, especially for signaling applications in roadway, sea, and air traffic. The TC will produce the first CIE document on photometry of flashing lights, but addressing only the physical measurement aspects. The issues on human vision aspects will not be covered in this TC, but should be produced in a document from Division 1. The chairman prepared the scope and the table of contents of the document, which were discussed at the meeting. After active discussions, with several points clarified and some new suggestions made, the TC agreed on the scope and basic structure of the document. The TC added 3 new members after the meeting. The TC came to a consensus that a new document from Division 1 is urgently needed, and requests Division 1 consider this. The chairman plans to develop the first draft by next physical meeting in London, and hopes to finish the document in 3 years.

Hengstberger added that it would be ideal if our document could refer to a D1 publication dealing with vision aspects of flashing lights, but it is clear from discussion at Workshop and TC meeting that it would delay D2 document if we wait for D1 document. It was decided that D2 would prepare this report using what is available in references, since manufacturers and users are already using such instruments. CIE must put something in place to give guidance and to ensure that flashing lights are dealt with in a uniform way with available present knowledge.

Additional Discussions

1) How the Division 2 meeting should be structured

After report by AD Goodman, Director Hengstberger made a comment that the discussion we have today in the Division meeting is limited to overviews and brief summaries of the state of the TCs, and is not for technical discussions. If anybody wants to make any

technical inputs, all the TC chairpersons are always willing to receive them. But, if the TC is nearing completion of the document, care should also be taken not to obstruct the efficiency of the committee.

Editor Moore commented that, in Division 1, they have many discussions on technical issues in their Division meetings. There is an advantage in having discussions on controversial issues with a large audience. D2 should consider having more technical discussions, perhaps with an extended schedule. Pointer (Div.1 AD) commented that D1 have more controversial issues than D2 does, and he enjoys this meeting and feels D2 is doing fine. AD Johnson mentioned that the scheduling of the TC meetings was available in advance this time, which was extremely valuable. This has given some additional opportunities for people to attend these TC meetings and discuss technical contents. Hengstberger added that, before this D2 meeting, we had two days of TC meetings, which were attended by many guests making the room always full. However, he appreciated Editor's comment, and requested more inputs from the audience by e-mail to find the best way. AD Goodman (as the new Director) also requested comments from the attendees by email regarding whether changes should be made to the format of D2 meetings.

2) Collaboration with Division 4 in the area of luminaire measurement

After the report by AD Vandermeersch, he reported that, in accordance with the suggestion of the Division, he has been trying to liaise better with D4 by attending D4 meetings himself, and now added two TC members from D4 in his group.

6.2. Reporterships

R2-05 Visual Gloss (J. Taylor, UK) AD: Goodman

ST: AD Goodman reported. Little change from the previous year. There is work going on in several countries around the world on the measurements of appearance. At the moment, because things are still developing, it is not yet time to set up a TC, but the reporter will keep monitoring to see if there is any change in the situation.

R2-06 Standardization of Measuring Geometry for the Colorimetry of Metallic Coatings (C. McCamy, USA) AD: Johnson

ST: A written report was submitted from the reporter. About a year ago, as chairman of the ASTM subcommittee on geometry, McCamy met with the chairman of the ASTM subcommittee on metallic and pearlescent colors. It was agreed that the geometry subcommittee would prepare a standard method of describing the geometry of multi-angle spectrophotometers, to provide a basis for a specific standard method of measuring metallic and pearlescent colors. The third draft of the geometry standard is in preparation and will be sent to subcommittee ballot in about one month. It will provide the formal basis for describing uniplanar, annular, and circumferential configurations and a configuration in which the specimen is illuminated diffusely and reflected light is measured at a number of elevation angles. This last method is used with interference pigments. The subcommittee on metallic and pearlescent colors is maintaining close liaison with my committee and has begun writing a standard. (See Attachment 4 for the full report from McCamy.)

<Discussion>

Moore asked about the relationship between ASTM, e.g., and CIE, because in many highly specialized areas such as metallic coatings, we do not have sufficient expertise among members of CIE. Expertise is found in small groups of commercially interested companies, and ASTM has more contact with them than CIE does. Moore questions whether CIE committees could do something in such specialized areas.

Director Hengstberger commented that there is already close cooperation between ASTM and DIN on this subject and what they come up with will be close to international consensus. It will still require international standardization body like CIE and that might be the time we should come in. We have an effective mechanism – reportership – to keep our membership informed on what is going on in the area to find such needs and we have full cooperation with ASTM and other bodies.

R2-09 Absolute Cryogenic Radiometers (A. Parr, USA) AD: Johnson

ST: Report given Ohno. At the time of last Boulder meeting, the reporter was still ambitious to see applications of cryogenic radiometers at the industry level, and has been paying attention in this respect. While many cryogenic radiometers have already been installed around the world (nearly 30), all of them are at national or government-related laboratories and not at industry level, and at present observation, they are not likely to spread in industry. Thus, while we still keep watching this area, he proposes to close this reportership for now. If the situation changes, this reportership should be reactivated. D2 agreed.

R2-17 Aviation Photometry (Y. Ohno, USA) AD: Goodman

ML: Bhagat (USA), Hengstberger (South Africa), Verdier (France)

ST: Ohno reported. TC2-49 was proposed from this reportership and established in Boulder. This reportership was kept open to see if there was any need for collaboration with ICAO (International Civil Aviation Organization). However, despite an attempt to contact them, the chairman did not receive active response from them, and thus, it was proposed to close this reportership. D2 agreed.

R2-18 OIML Matters (G. Sauter, Germany) AD: Hengstberger

ST: Sauter reported. There are no new issues this time. Hold this reportership open for the future.

R2-21 Use of detectors as absolute transfer standards for spectroradiometry (N. Fox, UK) AD: Goodman

ST: Goodman reported. Much work is going on in this area at several national laboratories, but is not yet well-enough developed to establish a TC. The situation will continue to be monitored.

R2-22 Implementation of Photometric Units (R. Köhler, BIPM) AD: Vandermeersch

ST: Köhler reported. He has obtained no new inputs since last year. The reportership is kept open to get some inputs from the CIE Symposium in Budapest (75 Years of CIE Photometry).

<Discussions>

Moore commented. When the proposal was made two years ago, his intention was to

indicate how the measurements might be best made, whatever the mesopic model may be, and have joint discussion and report with D1 and D2 to investigate possible means of measurement. Another point was the need to associate the measurement of quantities for mesopic photometry with the SI unit. DE discussed his ideas with a few people, who expressed the general opinion that it is not yet the time because D1 is not proposing a mesopic model yet. Even when we have a mesopic model, substantial measurement problems will still exist because the mesopic observer is not a single function. Moore's paper in Budapest will suggest one method for making measurement and to set standards in mesopic region. There is the possibility that some work may be funded by the EU in this area.

Vandermeersch mentioned a paper by Ian Lewin on problems with street lighting suggesting that high-pressure sodium lamps and low-pressure sodium lamps are not as efficient as photometric measurements suggest by factor of 4 and 20, respectively; and it is urgent that CIE gives advice on such issues. Ian Lewin commented that TC1-37 is considering alternate methods of photometry in the mesopic region, and it is essential that this committee feeds to D2. The TC is basically addressing the subject from the standpoint of brightness matching functions. However, there is completely separate set of researches based on visual performance functions, coming up with different mesopic functions, which must be investigated by the TC.

Director Hengstberger requested Köhler to prepare summary of inputs from the Symposium in Budapest and from the CCPR on how the photometric quantities in mesopic region can be associated with the SI.

6.3. Liaison report

CCPR (Köhler)

Köhler reported. CIPM is preparing MRA (mutual recognition agreement) to be signed by national laboratories in October based on the outcome of Key comparisons. CCPR quadrennial meeting took place in March this year. The work done at national laboratories over the last four years was reviewed. Six intercomparisons have been established as Key Comparisons.

- (1) Spectral irradiance (led by NPL) to be finished by 2000.
- (2) Spectral responsivity, divided into three parts: IR (led by NIST) now in progress, visible (300 – 1000 nm) led by BIPM will start next year, and UV (led by PTB) to be done by 2001.
- (3) Luminous responsivity, led by BIPM: Draft B agreed by CCPR, and final report being prepared.
- (4) Luminous intensity / luminous flux, run by PTB: Draft B agreed by CCPR, and final report being prepared. Much discussion on determination of reference value.
- (5) Spectral diffuse reflectance (led by NIST) planned to start next year.
- (6) Transmittance (led by BNM/INM)

CCPR also have supplemental comparisons – cryogenic radiometers (led by BIPM, the results now being accepted by CCPR), aperture area (led by NIST, to be started shortly), and spectral radiance of lamps (led by VNIIOFI also planned). All the results of CCPR intercomparisons will be posted at the BIPM website. Interactive database will be up in November. WG on Key comparisons will meet at next NEWRAD meeting.

IEC TC34A on Lamps, TC34D on Luminaires (Vandermeersch)

Vandermeersch reported. In TC34 A (standardization on electric, mechanical, and photometric characteristics), IEC fully refers to CIE for photometric characteristics, and there was no specific needs for liaison during the last year. In CENELEC, some photometric methods are included in the specification of mandated labeling of lamps and ballasts related to flux and power consumption. This needs attention by D2. Last year, TC34D (luminaires) produced a new edition of publication IEC 598 2-22 Emergency luminaires. Light distribution and luminous output of emergency luminaires are clearly defined in the specification as safety requirements. This standard is also taken over by CENELEC 34Z. This IEC standard 34D refers to CIE for measurement methods. There are no clear procedures on measurement of light output and maintenance values of luminous flux of emergency luminaires including aging and batteries. Thus Vandermeersch proposes a new reportership (reactivation of R2-19), with help of Lou Bedocs, to prepare for a TC on photometry of emergency luminaires. Lou Bedocs (UK) accepted to undertake this reportership.

IEC TC100/PT61966 -Colour Measurement and Management in Multimedia System (Y. Ohno)

Ohno reported. This committee is very active. Ohno is an official liaison member from CIE D2. The chairman, H. Ikeda, is also on our D2 mailing list, and we are in good communication. They are now developing about ten standard documents. Many of the documents specify the characterization methods and measurement procedures for each type of display – CRT, LCD, plasma, etc. Ohno, Schanda, and Hanson, from CIE, contributed comments to Part 2 (standard RGB), Part 3 (CRT), Part 4 (LCD), and Part 9 (digital cameras) for the past year. These documents are close to being published. Part 7 (color printers) and Part 8 (scanners) follows. Part.5 (plasma display) and Part 6 (projection displays) are at early stages. CIECB also receives these documents for comments and voting. These documents include specifications of color measuring instruments and procedures of measurement of color and other optical properties of displays. As they have few metrology experts, it is important that CIE assists this committee. The documents are being developed at a fast pace, and it is difficult to cover all of these. Anybody in Div.2 active in this area is requested to join Ohno to review the committee documents. All the draft documents and meeting reports of this committee are open to the public and available at their website: <http://www.map.chiba-u.ac.jp>

JTAG2 – ISO/IEC Joint Technical Advisory Group 2 (A. Robertson)

The Secretary reported. Alan Robertson resigned as the CIE representative to JTAG2 due to his increased workload. Dave McDowell (USA), who is the chair of JTAG2, tentatively serves as the CIE representative himself, but he is looking for a person who can serve as an official liaison representative from CIE. One of the recent issues at JTAG2 was the overlap of the digital camera document between ISO TC42 (Photography) and IEC TC100. In reply to the question from H. Kondo, Ohno answered that ISO TC42 made a decision not to overlap the scope of the TC42 document with IEC TC100 61966. This liaison is covered tentatively by the Secretary.

From this point to the end, the meeting was chaired by the new Director Teresa Goodman.

ISO TC6/WG3 (J. Zwinkels)

Report received from Zwinkels and read by AD Johnson. The most recent meeting of TC6/WG3 was held on May 31, 1999 in Helsinki, Finland. The main issues discussed were: the ISO/TC 6 calibration system, the results of a recent round-robin comparison of the ISO authorized laboratories, the procedure of adjusting fluorescent reference standard data for 45/0 geometry to conform with ISO 2469 (d/0) measurement conditions, and the DIN proposal for a 45° gloss measurement standard. The following ISO draft standards were reviewed and comments given to CIE CB and/or to Chair of ISO/TC6 WG3:

- 1) ISO/DIS 5631 "Paper, board and pulps – Determination of colour – (C/2°) Diffuse Reflectance Method"
- 2) ISO/DIS 11476 "Papers and boards – Determination of CIE whiteness, C/2° (indoor illumination conditions)"
- 3) ISO/FDIS 8254-1 "Paper and board - Measurement of specular gloss Part 1: 75 degree gloss with a converging beam, TAPPI method"
- 4) ISO/FDIS 2470 "Paper and board – Measurement of diffuse blue reflectance factor (ISO brightness)" (revision)

<Discussions>

Hengstberger reported that CIE have received an open invitation from ISO TC6 to participate in their revision of ISO standard 4094 Paper Board and Pulps, and asked for opinions on this. In this committee, the issues of calibration of testing apparatus, nomination and acceptance of standardizing and authorized laboratories are addressed.

Robertson added that the committee seems to be concerned that standard laboratories are not continually doing absolute measurements to maintain their reflectance scales. NRC is doing it on regular basis, and PTB and NIST on less regular basis. NPL are in the process of establishing a new, independent, scale. CCPR is organizing an intercomparison, piloted by NIST, which should provide data for the committee.

Hengstberger suggested that these three laboratories should participate in the work of ISO TC6. Hsia suggested that VNIIOFI also should, and Stolyarevskaya agreed to take the message back. The ways and forms of this collaboration will be discussed later. Hengstberger will also contact Zwinkels who is on this committee.

ISO TC160 SC2 WG2 Glass in buildings, Light & energy transfer (J. Hsia)

Hsia (past CIE President) reported. This liaison was set up in early days to provide a contact person when they have technical questions. For several years, no inquiries or technical assistance have been requested, and Hsia suggested this liaison be closed; any issues on this subject can be brought to the ISO/CIE liaison meeting now held once a year. Lofberg (the new CIE President), who is the liaison officer from D3, has the same experience and seconded the proposal. D2 agreed to close this liaison.

ISO TC 180/SC 1: Solar energy/Climate - Measurement and data (Dieter Kockott)

No information received from Kockott. Hengstberger commented that the purpose of this liaison was to make sure that TC2-17 document on the solar simulator is harmonized with this committee. Once the document is published, this liaison can be left to CIECB.

7. Dissolution of TCs and other functions

TC2-14 Measurement of Reflectance and Transmittance, Including Turbid Media

The document has been published as CIE 130 (1998), and the task of the TC is complete. The TC is closed.

TC2-41 Industrial photometry.

There has been no progress for the past 4 years. No new chairpersons nor any other solutions were suggested, and D2 agreed to close this TC.

R2-09 Cryogenic radiometer.

Following the proposal by the reporter, D2 agreed to close this reportership.

R2-17 Aviation Photometry

Following the proposal by the reporter, D2 agreed to close this reportership.

Liaison: ISO TC160 SC2 WG2 Glass in buildings, Light & energy transfer

This liaison is closed per proposal by the liaison officer.

8. Proposal for NEW TCs and Reporterships

New TCs

(1) Measurement of the optical properties of LED clusters and arrays

TR: To produce a technical report for the measurement of optical properties of visible LED arrays and clusters, to derive optical quantities for large LED arrays and recommendations for measurement methods and conditions.

Chairman: Georg Sauter (Germany)

Sauter made this proposal by stating that we now have document on measurement of single LEDs (CIE 127) and two new committees working on measurement of LEDs but still dealing with single LEDs. The same configuration or quantities cannot be used for clusters and arrays of LEDs. The application of LED arrays and clusters is expanding and there now needs to be recommendations on measurements for such groups of LEDs.

Ohno commented that similar issue (measurement of LED traffic signs) has been raised by J. Arens, who is active in D4 and D2, in some other meetings in the past, and suggested that the chairperson contact him. Goodman seconded Sauter's proposal. Answering questions, Sauter added that the spectral range covered in this committee will be the visible, and primarily photometry and colorimetry will be addressed. The proposal was approved with no

objections. Sauter called for new members.

(2) Calibration of diode-array spectrometers

TR: To produce a technical report which sets out guidelines for the recommended procedures, methods and transfer standards for the calibration of diode array spectrometers.

Chairman: Richard Austin (USA)

Goodman made the proposal. There is gradual shift from fixed scanning systems to array systems, and there are a number of problems in the calibration of such systems which are unique and due to the fact that these types of spectrometers use detector arrays. Thus a recommendation in this subject is in demand. The proposal was approved with no objections.

New Reporterships

(1) Emergency Lighting Luminaires - Reporter: Lou Bedocs (UK)

As reported under the liaisons, Vandermeersch proposed this reportership, and Lou Bedocs accepted to be the reporter. D2 agreed.

(2) ISO/CIE Standards for the measurement of reflectance and transmittance

- Reporter: Danny Rich (USA)

Hengstberger pointed out that the original intention of TC2-14 was to establish standards, which was amended to a technical report. He asked if we should set up a new TC to turn the document (CIE130) into CIE standards. Moore commented as Editor that this document is extremely complicated and is covering a complete range of possible geometries and he therefore expects great difficulties in converting it to a standard. The proposal in D1 also dramatically changes some of the definitions, which makes it more difficult. D2 voted to establish a reportership this time rather than a new TC. Rich is suggested for the reporter.

(3) Classification of color measuring instruments - Reporter: Yoshi Ohno (USA)

Proposed by Ohno. At the first D8 meeting in Baltimore in Oct. 98, a reportership on grading color measuring instruments was established, with Ohno assigned as the reporter. D8 would like to have a guide on selection of color measuring instruments (including colorimeters and spectroradiometers) according to the various applications and uncertainties required. Commercial color measuring instruments do not give clear and consistent specifications. We have classification of illuminance/luminance meters in the TC2-40 draft document. Similar guidelines are needed for color measuring instruments. Ohno thinks the work must be done by D2, but does not have clear view yet of the scope of the guide and of the chairperson. The relationship with TC2-16 and the new TC on diode array spectrometers (R. Austin) should also be investigated. D2 agreed to establish a reportership on this subject. Sauter commented that the specification must be on characteristics, not on the uncertainty of instruments because uncertainty can only be stated with measurement conditions.

(4) Liaison with IALA (International Association of Lighthouse Authorities) - Reporter: Ian

Tutt (UK)

Proposed by Ohno. IALA wishes to publish an international standard based on their previous document "Recommendations on the Determination of the Luminous Intensity of a Marine Aid-to-Navigation lights (1977)", and is requesting assistance from D2. There is another standardization effort in Europe by AIDO (Industrial Association of Optics) and this conflict or overlap should also be resolved. (A paper representing AIDO was given by Passi Orreveläinen in this Warsaw Session.) IALA has just established a WG to write a standard on this subject, which, they hope, is to be published as a CIE/ISO standard. We need to clarify the situation and plan for a possible new TC. Hengstberger supported it and commented that D4 encourages CIE involvement in more forms of transportation, and this area (sea navigation) applies to another form of transportation. D2 agreed to establish this reportership. Ian Tutt, a member of IALA, was recommended for the reporter.

New Liaisons – Division 8: Y. Ohno (USA)

Proposed by Ohno who has become the liaison person in D8 for D2. D2 agreed to establish this new liaison as an official channel between the two Divisions.

Other discussions – New form of CIE publications

Director Hengstberger announced a plan by the CIE Board to publish a new type of CIE publication - handbooks or encyclopedia on the subject matter of the Division or a subcategory of the Division – e.g., a handbook of colorimetry from D1. Key features of this publication are that it will contain all the relevant CIE publications that deal with that subject, it will be published by a commercial publisher, not by the CIE, and it will be updated at every quadrennium. If we are to produce such types of publication, the Divisions must have a plan for how to compile the first version and then to continuously update it at every quadrennium. It was felt that such a publication would attract a much greater number of readers than the way CIE publications are sold now. Hengstberger suggested a TC should be formed to investigate the necessary work for this plan.

There were several questions and answers for clarification of the plan. Hengstberger added that this publication is not restricted to each Division. Colorimetry, e.g., can be compiled by D1 and D2. Moore commented that the sales of CIE publications and availability in libraries e.g., are now very limited, and strongly supports this idea of such a new publication, and expects enormous expansion of the field of readers as well as income.

However, D2 did not reach a consensus for the exact form of this new work. Goodman suggested that the management team would consider this and come back with a proposal. At the same time, opinions and suggestions from all D2 members and associates are requested. Emails are welcome at the Division Director or Secretary.

9. New Division Officers for the 1999 - 2003 term

The new Director was elected by the CIE Board during the Board Meeting in Warsaw, taking into consideration the balance of countries and other factors, in addition to the voting result from the Division. Other officers were appointed by the new Director as below and she

expressed her gratitude to the existing officers, that they had all agreed to continue in their previous roles. She also, on behalf of the Division, thanked the outgoing Director for his hard work during the past 2 quadrennia.

Director: Teresa Goodman (UK)

Associate Directors:

Norbert Johnson (USA)

.... For optical properties of materials

Guy Vandermeersch (Belgium)

.... For luminaires

Georg Sauter (Germany)

.... For sources and detectors

Editor: John Moore (UK)

Secretary: Yoshi Ohno (USA)

10. Future meetings

2000: 6-8 April at NPL, UK, in conjunction with NPL Colour and Visual Scales 2000 and NPL centennial celebrations, 3-5 April, at NPL. D1 also meets on the same dates. D8 will meet on 10th and after 13th of April in Derby in conjunction with Colour Image Science Conference, 10-12 April, at Univ. Derby.

2001: 17-18 May at NIST, USA, in conjunction with CORM2001 and NIST centennial celebrations. There will be CIE Midterm Session in Turkey in September, but D2 will not meet in Turkey. NEWRAD2001 will be in late October at NIST, Gaithersburg, USA.

2002: Open (any suggestions are welcome.)

2003: San Diego has been elected for the 25th Session of CIE. The Session is planned for early July. D2 will meet in San Diego.

11. General

(1) Handling of TC documents on the website

Hengstberger and the Secretary raised an issue of handling TC documents on the website. The secretary started posting TC draft documents on a hidden page of the D2 website, when requested by the TC chair, as a means to distribute the documents to the TC members. Since the hidden page is not perfectly secure, a password access will be introduced when a setting is made in the CSIR server. In this case, we have two options: 1) all the TC documents are accessed by one password, allowing any TC members to access other TC documents as well, 2) documents of each TC are accessed by a different password, allowing the TC members to access their own TC documents only. We have to consider between convenience and the level of security. Discussions as below followed.

Lofberg stressed the importance of the security because final draft would be taken by many people instead of buying the documents. Goodman supported the second option because it gives more control over the distribution of TC documents, ensuring, for example, that only

those with a good knowledge of the TC subject are able to see early drafts. Moore favored individual password for each TC because of the risk of hurting publication sales. Sauter raised a possibility of charging for accessing CIE documents (publications) on the website. Hengstberger commented that, as Vice President of Publication, we are considering moving into electronic commerce. IEC already sells their publications that way. Drafts are a different story. Sauter mentioned that, for drafts, it should be made accessible by TC members and non-members also, but with frequent change of password. Köhler pointed out that the documents are distributed freely anyway to anybody sitting at the TC meetings. Makai mentioned that it would be difficult to inform the change of password to all the TC members if one password is used for all the TCs. Vandermeersch suggested to look at how IEC does and said that CIE should form a general policy. Ohno commented that IEC TC100 posts all their draft documents on their website with no password requirement. (Passwords are required on official IEC website.) Larason mentioned that, if a person is on several committees, it would be hard to keep up with changes of many passwords if they are separate for different TCs. Hengstberger suggested that we should go step by step as technology develops, starting with a simpler way. Goodman took informal votes from all attendees on the preference on one password for all TCs or each password for each TC. The results were half by half. Hengstberger concluded that he would put this in the agenda of the publication board, and try to get input from them also. We will come back to this issue at next meeting, and any further comments are welcome by email to the Secretary

(2) TC3-22 Museum lighting

Jonathan David (representing CIBSE, and a member of TC3-22) raised this issue. TC3-22 Museum Lighting is discussing the need for testing UV-cut films at regular intervals, and they need advice from D2 on the measurement of the films. Moore, who is also a member of the committee, commented that he believes it is not appropriate, and he will discuss this with Kit Cuttle (who is the member of the committee suggesting this testing).

(3) John Verrill

Goodman informed the Division that John Verrill was seriously ill and would take early retirement from NPL with immediate effect. An album with messages and signatures of CIE people was being prepared for him. Attendees were requested to sign in the album. (See also the section of TC2-28 in the Report of TCs.)

(4) CIE in the year 2000

Goodman reported that there were a lot of discussions in the Board over recent years how to take CIE into year 2000. It has been suggested that each Division should have brainstorming sessions to trying to generate some ideas about what CIE should do. We will put this in the agenda for the next division meeting, and encourage all to think about it. Contact Goodman by email or bring your ideas at the next meeting. We will have a brainstorming session next time.

12. Adjournment

The Division 2 meeting was adjourned at 3:30 pm.

CIE Division 2 Physical Measurement of Light and Radiation

USNC/CNC
Toronto 1999

CIE Division 2 Officers 1999-2003

Director: Teresa Goodman (UK)
Ass. Dir: Norbert Johnson (USA)
Ass. Dir: Guy Vandermeersch (Belgium)
Ass. Dir: Georg Sauter (Germany)
Editor: John Moore (UK)
Secretary: Yoshi Ohno (USA)

Technical Committees

- 2-04 Secondary standard sources (Moore UK)
- 2-14 Measurement of Reflectance and Transmittance, including Turbid Media (Polato Italy)
- 2-16 Characterization of the performance of tristimulus colorimeters (Rastello Italy)
- 2-17 Recommendation for integrated irradiance and spectral distribution of simulated solar radiation (Kockott Germany)
- 2-19 Measurement of the Spectral Coefficient of Retroreflection (Johnson USA)

Technical Committees

- 2-23 Photometry of Street-lighting Luminaires (Vandermeersch Belgium)
- 2-24 Users guide for the selection of illuminance and luminance meters (Ganesha India)
- 2-25 Calibration Methods and Photoluminescent Standards for Total Radiance Factor Measurements (Zwinkels Canada)
- 2-28 Methods of characterizing spectrophotometers (Verrill UK)

Technical Committees

- 2-29 Measurement of detector linearity (Goodman UK)
- 2-30 Array Radiometry (Palmer USA)
- 2-32 Measuring retroreflectance of wet Horizontal road Markings (Hodson USA)
- 2-35 CIE Standard for $V(\lambda)$ and $V'(\lambda)$ (Mielenz USA)
- 2-36 Retroreflection: Definition and Measurement (Revision of CIE Publication 54, Liaison with CEN/226) (Rennison USA)

Technical Committees

- 2-37 Photometry Using Detectors as Transfer Standards (Ohno USA)
- 2-39 Geometric tolerances for Colorimetry (Rich USA)
- 2-40 Characterizing the Performance of Illuminance and Luminance meters (Rattunde Germany)
- 2-41 Industrial Photometry in Developing Countries (Bhattacharya India)
- 2-42 Colorimetry of Visual Displays (Hanson UK)

Technical Committees

- 2-43 Determination of Measurement uncertainties in photometry (Sauter Germany)
- 2-44 Vocabulary Matters (Moore UK)
- 2-45 Measurement of LEDs - Revision of CIE 127. (Muray USA)
- 2-46 CIE/ISO standards on LED intensity measurements (Scarangelo USA)
- 2-47 Characterization and Calibration Methods of UV Radiometers (Gan Xu Singapore)

Technical Committees

- 2-48 Spectral responsivity measurement of detectors, radiometers, and photometers (Eppeldauer USA)
- 2-49 Photometry of flashing light (Ohno USA)

New Technical Committees

- Measurement of the optical properties of LED clusters and arrays (Sauter Germany)
- Calibration of Diode array spectrometers (Austin USA)

New Reporterships

- Emergency Lighting Luminaires (Bedocs UK)
- ISO/CIE Standards for the measurement of reflectance and transmittance (Rich USA)
- Classification of color measuring instruments (Ohno USA)
- Liaison with IALA (International Association of Lighthouse Authorities) (Tutt UK)

CIE Division 2

<http://nml.csir.co.za/~cie2/>

CIE Division 2 NEXT Meeting

NPL, London, UK, in Spring 2000

April 6 - 8

CIE DIVISION 3 ACTIVITY REPORT

Submitted by I. Pasini, Canadian Delegate to Division 3
for CNC/CIE Annual Meeting, Toronto, October 14-16, 1999

Division 3 met in Warsaw, on the 28th and 29th of June 1999, at the Politechnika University. The Members of Division 3 and the minutes of the Warsaw meeting are attached.

The highlights of Division 3 meeting were:

1. The effective change of the Division top officers, namely
 - the new Director, Marc Fontoynt of ENTPE, Lyon, France,
 - new Division Secretary Geoffry Cook of University of Reading, UK;
 - new Associate Director for Daylighting, Dominique Dumortier of ENTPE, Lyon, France,
 - new Associate Director for Electric Lighting, Sueko Kanaya of the Kanazawa Institute of Technology-Japan
2. New *Lighting Study Group* internet-based, in process of being established and run by Yanos Schanda
3. A new agreement with CEN to aid in the preparation of Standards
4. *Lighting Quality Workshop*, led by Heinrich Kramer. A detailed report will be printed on Volume 3 of the CIE Warsaw Conference Proceedings. The main issues had to do with the definition of important parameters having to do with the understanding and implementation of better lighting quality in our society and on how to best achieve these goals. David Loe of the Bartlett School of Architecture, London, England, suggested that a good start would be to offer education in light matters via the internet and that he was about to embark in such an effort. He was also looking for input from other delegates. I reported that the USA had done a considerable amount of work in this area and that I would have given him the appropriate contacts. To better address this point, I have included in the attachments a copy of the first internet-based lighting education program at the university level available to the general public from PennState University.
5. *Lighting Software Validation Workshop*, led by Marc Fontoynt. The minutes from this workshop will be posted by marc on the Division 3 website <http://ciediv3.entpe.fr>. The main issues here were to provide evidence of lighting software accuracy by means of independent site/mock-up validations, test cases and examples of typical software applications and the provision of luminaires electronic catalogues containing standardized physical and photometric data.
6. ENTPE in France has established a European data base for Daylighting, based on the work of the CIE/IDMY (International Daylighting Measurement Year). The web site is <http://satel-light.entpe.fr/guide/features.htm>. Work is still in progress and input from interested parties to test the beta version is welcome and it can all be done on-line!
7. A controversy on the current work of TC 3-30 "Hollow Light Guides", chaired by Dr. Lorne Whitehead of University of British Columbia was started by Dr. Julian Aizenberg of Russia.

He claimed the TC did not consider and given proper credit to his objections in the preparation of the TC30 Draft Report. Additionally he indicated that the membership of this TC and the way it operates favours specific commercial interests and it should be investigated. Both Marc Fontoynt and Julian Warren reassured Dr. Aizenberg that his concerns would be investigated and properly addressed at the senior level of the CIE. I contacted Dr. Whitehead and requested a formal response to the issues raised by Dr. Aizenberg. The response was provided on August 26, 1999 and submitted to myself, Dr. Arnold Gaertner and J. Roberge.

8. A Divisional Ballot for the Draft Standard TC3-21 "Lighting of Indoor Work Places" was conducted last April. The document is expected to be published very soon.
A Divisional Ballot for the report of TC3-01 "Glare from Small, Large and Complex Sources" is scheduled to be completed by September 1999.

24th Session of CIE Warsaw, Poland

Minutes of Meeting CIE Division 3

Politechnika, Warsaw

28th & 29th June 1999

1 Opening of Meeting

The Retiring Director welcomed the delegates for attending the meeting. The new officials of Division 3 were introduced.

2 Approval of Agenda

The agenda for the meeting was approved. The Retiring Director chaired the meeting through Agenda items 1 to 10. The New Director chaired the remainder of the meeting.

3 Apologies for Absence

Apology for absence was received from Clay Belcher, Division 3 Editor.

Attendees - 28th June 1999

Terry McGowan	VSNC	US Rep
Hayden Willey	CIE	NZ Rep.
Geoffrey Cook	University of Reading, UK	UK Rep, Div. 3 Sec.
Marc Fontoynt	ENTPE, Lyon, France	France Div.3 Director
Dominique Dumortier	ENTPE, Lyon, France	France Div.3 Secretary
Ivan Pasini	CNC/CIE	Canada Rep
Rados Tapolova	CNC/CIE	Reporter R3-06,R3-17
Yasuko Koga	Kyushu Univ	Observer
Peter N Haug	Lyskultur	Observer
Odd Arnesen	ICG/NTNU, Norway	Norway Rep
Piotr Pracki	Warsaw Univ. of Techn.	Observer
Jan Ejhed	Konstfack. Sweden	Sweden Rep
Anders Liefors	Royal Inst. of Techn., Sweden	Observer
Simon Hayman	CIE	Australia Rep
		TC 3-12 Chair
Robert Henderson	SANCI, South Africa	SA Rep, R3-16 Reporter
Pasi Orrevetejainen	Helsinki University of Techn.	Observer
Jari Suuronen	Insinjoitomis Granlundo	Finland Rep Observer
Yaso Oguchi	Kyoto University	Observer
Yoshiki Nakamura	Tokyo Institute of Techn.	Japan Rep
Daniel Kalina	Gaash Lighting	Observer
Michael Jensen	Delta Light & Optics, Denmark	Observer
Peter Sendrup	Delta Light & Optics, Denmark	Observer
Hans Allan Löfberg	CIE	President
Mojtaba Navvab	Univ. of Michigan, USA	Chairman TC3-11,3-19,3-32
Yoshi Uetani	Fukuyama University	JC3-15 Chair
Richard Kittler	Institute of Construcion & Architecture	
	Bratislava, Slovakia	
Stanislav Darula		Slovakia Rep
		Observer

N Ahmed	Bangladesh University Of Engineering	Observer
Arnold Buddenberg	NSVV, NL	Observer
Hifoshi Nakamura	Kochi Women's University	Japan Rep
Norio Igawa	Takenaka Corp	Observer
Tomoko Matsuzawa	Kyushu Kyoritsu Univ.	Observer
Bartsev Aleksei	All-Russia Lighting Res. Inst.	Observer
Diefrich Gall	TU Ilmeuan, Germany	Germany Rep
Lou Bedocs	Thornlighting, UK	TC3-21 Chair, R3-10 Report.
Martin van Ooyen	Philips Lighting	Netherland Rep
Kunio Matsuura	CIE	Japan Rep TC3-15 Chair
Julian Aizersberg	VNISI, Russia	
David Carter	University of Liverpool, UK	TC3-31 Chair
Nils Swendenius	Fagerhult AB & Dept of Physics	
	University of Lund, Sweden	Observer
Jerzy Bak	Warsaw Universit of Technol., Poland	Observer
Jennifer Veitch	NRC, Canada	TC3-34 Chair
Peter Tregenza	University of Sheffield	Ass. Dir. (Daylighting)
Anthony Slater	BRE, UK	Division Director
Sueko Kanaya	Kanazawa Inst. of Tech	Ass. Dir. (Elec. Light)

Attendees - 29th June 1999

Hayden Willey	CIENZ	NZ Rep
Terry McGowan	LTG Research Office/EPRI	US Rep
Geoffrey Cook	University of Reading, UK	UK Rep & Div. 3 Sec.
Marc Fontoynt	ENTPE, Lyon, France	Division Director
Dominique Dumortier	ENTPE, Lyon, France	Div.3 Secretary
Sueko Kanaya	Kanazawa Inst. of Tech	Ass. Dir. (Elec. Light)
Ivan Pasini	PWGSC	Canada Rep
Yasuko Koga	Kyushu Univ.	Observer
Odd Arnesen	ICG/NTNU Norway	Norway Rep
Piotr Pracki	Warsaw Univ. of Technology/Poland	Observer
Naoya Hara	Osaka Univ.	Observer
Yasuo Ogiuchi	Kyoto Univ.	Observer
Allan Ottosson	Royal Inst. of Technology, Sweden	Observer
Gyula Major	LISTS Studio, Hungary	Observer
Robert Henderson	SANCI, South Africa	S.Africa Rep,
		R3-16 Reporter
Yoshi Nakamura	Tokyo Inst. of Technology	Japan Rep.
Hoo Luoxi	Tsinghua University	Observer
Daniel Kalina	Gaash Lighting, Israel	Observer
Heinrich Kramer	Lighting designer	TC 3-20 Chair
Deitrich Gall	TUI/Meuqa	Germany Rep
Hans Allan Löfberg	CIE	President
Michael Jenson	Delta Light & Optics, Denmark	Observer
Kai Sorensøn	"	TC3-35 Chair
Peter Sendrup	"	Observer
Paola Iacomussi	IEN Italy	Observer
Richard Kittler	ICA, SAS Bratislava, Slovakia	Slovakia Rep.
Stan Darula	"	Observer
Jonathon David	CIBSE, UK	Observer
Heinz D Einhorn	SANCI, South Africa	TC3-01 Chair
Alpin Yener	Istanbul Tech. Univ., Turkey	Observer
John R Hugill	Thorn Lighting, UK	Observer

Lou Bedocs	Thorn Lighting, UK	TC3-21 Chair, R3-10 Reporter
Martin van Ooyen	Philips Lighting, Netherlands	Netherlands Rep
Julian Aizenberg	VNISI, Russia	Observer
A Liliefors	Royal Inst. Techn. Sweden	Observer
Naoyuki Oi	Kyushu Inst. of Design	Observer
Rados Topalova	CNC/CIE	R3-06 & R3-17 Reporter
Jan Ejhed	Konstfack Univ. of Art Craft & Design	Sweden Rep
Anthony Salter	BRE, UK	Division Director
Sueko Kanaya	Kanazawa Inst. of Tech	Ass. Dir. (Electric Lighting)
Eliyahu Ne'eman	Israel Ins. of Tech.	Israel Rep.
Kit Cuttle	Rensselaer Polytechnic Institute	TC3-22 Chair Observer

4. Approval of Ottawa Meeting Minutes

The Chairman reminded all of the delegates that these minutes were the last to be hard copied. All following minutes would only be published on the Division 3 web site.

The secretary called on all delegates to ensure that he was provided with their accurate snail mail, phone, fax, e-mail and world-wide web addresses.

5 Division Membership changes

The Director welcomed new members to Division 3 including national representatives, TC Chairmen and other officials of CIE.

6 The Divisional Director & Associate Director's Report

6.1 Divisional Director

The Divisional Director gave an extensive report on the activities of Division 3 over the last 2 years and in summary the activities during his directorship. Several items were highlighted including:

- The activities in other divisions including in Division 5: Emergency Lighting and Glare in Indoor Sports Spaces, impinge on Division 3 work and there is a need to maintain working links with these and other TCs. A Lighting Study Group is being established which offers a forum for a long term review of lighting issues on the world wide web. This to be run by Yanos Schanda. Division 8 should also be informed of any related Division 3 activity.
- The CIE business plan is progressing
- A new agreement has been reached between CEN and CIE to aid co-operation.
- The Publications Committee have agreed a new concept of a "hand book". This compliments the existing range of publication format produced by CIE.
- Requests continue to be made for CIE to support research proposals. This is to be encouraged.

6.2 Associate Director (Electric Lighting)

The Associate Director reported that there is considerable activity and that this would be covered in detail by the Technical Committees reports later.

Associate Director (Daylighting)

The Associate Director reported that there is considerable activity and that this would be covered in detail by the Technical Committees reports later.

7 TC Chairman reports

TC3-01 Glare from small and large sources - Chairman H Einhorn

The TC Chairman gave a report of the work of the committee. The glare from small and large sources was to be assessed by the use of modifications to the UGR formula. Early work by Hopkinson provided detail concerning the assessment of glare from luminous ceilings and the CIE UGR formula applies to normal luminaires. This TC has been able to link these two approaches to produce a design guide which will be ready for publication in the near future. This committee is due to close at next year's meeting. The committee were thanked for the contributions to the work of Division 3.

TC3-11 Daylight calculation methods - Chairman M Navvab

The TC Chairman gave a report of the work of this TC. A literature review which highlights specific issues is due for circulation to the TC before the end of the year.

TC3-12 Daylight and solar radiation data for building performance - Chairman S Hayman

The TC Chairman reported that the TC is to be disbanded and their work passed on to CIE Headquarters. This was approved.

TC3-15 Sky Luminance models - Chairman K Matsuura

Following the TC meeting at the CIE session the Deputy Director Daylighting confirmed that the work is due to be completed in the next few months. A standard will be proposed and an extended technical report written. The committee were thanked for the work. A change of chairman to Yoshiaki Uetani was approved.

TC3-16 Psychological Aspects of Lighting - Chairman D Tiller

No formal report was available. A draft final report has been received by the Deputy Division Electric Lighting.

TC3-19 Scale Model Photometry for Interior Lighting - Chairman M Navvab

The TC chairman gave a summary of the work of the committee. There is still outstanding work to be done before a final report can be produced. The possibility of producing the final report as a CD rom was discussed. The Vice-President (Publications) confirmed that this would be possible providing it was considered to be the correct format.

TC3-20 Lighting and Architecture - Chairman H Kramer

The TC chairman gave a report on the work of this committee which has produced a final report in draft form. The chairman called for a one year extension so that a new section of lighting quality could be included and also allow for the editing of the report.

The workshop session on Architecture and Lighting which had been held as part of the CIE session had enabled several issues of the report to be examined and the general discussion has provided useful opportunities for further editing. It was agreed that the importance of economics be identified in the report.

TC3-21 CIE/ISO Interior Lighting Standards - Chairman L Bedocs

The TC chairman gave a report of the work of this committee which had produced a final draft CIE/ISO Standard of "Lighting of Indoor Spaces". This had been balloted in Division 3 and ISO and had been favourably received. There were however several technical issues still to be examined including possible changes to Glare Index values and quantities of illuminance. It was anticipated that this final editing process would be completed by the end of the year.

The chairman of the TC emphasised the need to develop design guidance to meet this standard. This could involve Technical Committees of CIE being formed to write application guides for particular interiors. A list of potential topic areas was discussed. There then followed some general discussion with regard to the issues raised by the chairman of the TC. The TC Chairman replied to requests for explanation as to the basis of technical queries concerning illuminance, glare and health and safety issues. The TC chairman confirmed that the committee would be standing down when the standard is published.

**TC3-22 Museum Lighting and Protection against Radiation Damage
Chairman E Ne'eman**

The TC chairman and secretary gave a report of the work of this committee, which had met during the CIE session. A final draft of their work will be made available shortly which extends the scope of other lighting guides currently available. The TC has successfully matched the needs of illuminance for display and the risks concerning conservation when providing high illuminance. The TC chairman asked for an extension of this TC for one year in order to produce and finalise their report. This was approved.

**TC3-25 Co-ordination Development of the IDMP and its data
Chairman D Dumortier**

The TC chairman gave a report of its work. A call for more IDMP stations particularly in Africa and South America was made. Full details of the IDMP web server were illustrated.

A revision of the CIE daylight measurement guide is to be an output of this TC. A new study group is to be formed around this general subject area. The director thanked the TC Chairman for their work.

TC3-26 Development of a Protocol for Post Occupancy Evaluation of Lighting - Chairman D Tiller

No report has been received from this committee. This committee had been formed in 1991 and has so far produced no report at any Division 3 meeting. It was agreed that this TC be closed and that all of the data gathered would be sent to the CIE Secretary in Vienna.

TC3-30 Hollow Light Guides - Chairman L Whitehead

A draft final report had been sent out to TC members in April. The Divisional Director Electric (Lighting) had also received a copy. A member of the TC, J Aizenberg, then addressed the meeting and cast considerable doubt on the objective and scientific basis of this report. It was suggested that there was an element of bias towards a particular commercial interest which did not match the overall requirements of a CIE publication. This was noted with concern by the new Divisional Director who agreed to make contact with the TC Chairman to resolve this matter. The Vice President (Publications) confirmed that he had given the chairman of the TC guidance on the writing of the first draft and it was expected that this should be acted upon.

TC3-31 Lighting for Real Spaces - Chairman D Carter

The TC chairman reported on the work of this committee which had met during the CIE session. Work is progressing and a final report is in progress, this is due to be completed within the next 6 months and passed to the Division early next year. A one year extension to the work of this committee was requested and approved. Links with TC3-33 concerning the data sets of computer test cases were continuing to be effective.

**TC3-32 Validation of Algorithms for Daylight Outdoors
Chairman N Navvab**

The TC chairman gave a report on the work of this committee which confirmed that the mathematical elements of this work are progressing. The intermediate output of the work of this committee would be issued later this year.

TC3-33 Test Cases for the Assessment of Accuracy of Lighting Computer Programmes - Chairman R Mitanchey

The new Divisional Director reported on the work of this committee and confirmed that work was progressing. A workshop had taken place at the CIE session prior to this meeting which had raised several issues. It was confirmed that the International Energy Agency had been involved in some of this work providing sources of information and links with collaborating organisations. In general a web based approach to the work of this committee is being adopted. It was confirmed that Division 8 will be involved with the colour graphical output of the computer simulations examined. It was anticipated that next year a software company would be approached to carry forward the work of this committee.

Note: The president of CIE confirmed that CIE has a policy including the names of contributors to final reports to get the appropriate credit.

8 Division Reporters' Reports

R3-02 Stage and studio lighting - K R Ackerman

The Retiring Divisional Director reported that the work of this committee is progressing to produce the event Showlight 2001. A web site has been produced giving details of this work. This can be found on <http://www.plaza.org>. It was agreed that this very successful reportership should continue, providing as it does a unique dimension to the work of Division 3.

R3-06 Accidents and lighting - R Topalova

A report was received on the work of this reportership. Little progress was reported. Various delegates reminded the reporter of the existence of several CIE and other reports. These included the work of TC3-05 which might provide useful data for the work of this reportership.

R3-10 Maintenance of indoor lighting - L Bedocs

The output of this reportership continues to be cited by many Standards and other CIE publications and no further major problems associated with their output have been noted.

R3-13 Lighting vocabulary - C Belcher

No report was provided for the work of this reportership although several delegates and the CIE Secretary asked for information. In order to establish what activity had taken place it was agreed that Deputy Director Electric Lighting would contact the reporter and report back. It was recognised that the Division 3 vocabulary contribution is affecting the production of the new lighting vocabulary. The new Division Director proposed to put the Division 3 vocabulary onto the Division 3 website to allow access to the information to all interested members.

R3-14 Lighting quality - C Jones

The work of this reportership was summarised. The successful staging of a Lighting Quality symposium in May 1998 and a subsequent publication was a highlight. A request that this reportership be closed down was accepted. A new technical committee proposal would be discussed later.

R3-15 Lighting standards - S Simos

No report had been received of the work of this reporter although a general request for more information had been made. Delegates offered to provide additional references for the work of this reportership.

R3-16 Lighting in developing countries - R Henderson

The reporter gave a brief report of the work to date which had involved informal discussions in a variety of developing countries including South Africa, Brazil and Argentina. The work was examining applications of lighting as well as light sources and confirmed that within 12 months a report would be produced giving guidelines for schools, houses and shops. The reporter made a call for

collaboration from all those delegates interested in this work. It was confirmed that economic aspects were also to be considered within the work of this group.

R3-17 Calculation of utilisation factors - R Topalova

A summary report was delivered which established that little progress had been made.

9 Liaison Officers Reports

9.1 CEC JULE Projects: Daylight Europe and Satellite Data

Liaison Officer - Mark Fontgynont

A report by the Liaison Officer was provided.

The Daylight Europe Programme has produced two deliverables: one book dealing with the survey of daylighting performances of 60 European buildings, one daylighting design handbook.

The other programme Satel-Light provides an internet server delivering daylight data for western and central Europe. The data are derived from the recording of the geosationary satellite METEOSAT. These data are available at the following address: <http://satel-light.entpe.fr>

9.2 CEN/TC169 Lighting Applications

Liaison Officer - Anthony Slater

This liaison officer reported that the work of several groups was progressing.

WG 2 was closely linked to the activities of TC 3-21 CIE ISO Interior Lighting Standards.

WG 3 concerned with Emergency Lighting is producing a CEN document which will operate as a CEN standard and therefore will need harmonisation with various other standards and CIE Guides on Emergency Lighting. In particular there may be a need for this particular publication to be revised. This work also includes signs and their associated luminance recommendations.

WG 4 of CEN is concerning with Sports Lighting and this has an Emergency Lighting component. This is examining the provision of two stages of emergency lighting including that which is appropriate for high speed sports.

9.3 International Association of Lighting Designers

Liaison Officer - Jules G Horton

No report was received.

9.4 International Energy Agency

Liaison Officer - Nancy Ruck

No report was received from this Liaison Officer although it was noted that the IEA funding expires this year and therefore this activity may stop. The new Divisional Director is involved in the work of IEA 21 and this is due to meet in Copenhagen in September where further information will be obtained. Any output of this group is likely to be available at the end of the year and since IEA are not a publishing body then CIE maybe able to publish these. The Divisional Director agreed to investigate.

9.5 ISO/159/SC4/WG3: Ergonomics/Signs and Contr./Workpl. and Environ.

Liaison Officer - Lou Bedocs

ISO/TC159/SC5/WG2 Ergonomics Physics Environment Lighting

Liaison Officer - Lou Bedocs

The Liaison Officer gave a brief report of the activities within this working group where a whole series of standards are being produced including those associated with VDT areas.

9.6 ISO/TC160/SC2/WG2 Glass in Buildings - Light and Energy Transmission -

Hans Allan Löffberg

The Liaison Officer reported that he had received no information from this committee.

9.7 ISO/TC59/SC159/SC3: Building Construction User Requirements

Liaison Officer - Peter Tregenza

The Liaison Officer reported that he had received no information from this committee.

9.8 WMO - Liaison Officer Peter Valco

No report was received.

10 Review of Division 3 Publications

Dominique Dumortier gave a presentation to the committee on the Division 3 world wide web site which can be accessed at:

<http://ciediv3.entpe.fr/index.html>

The operation of the web site and its contents was explained in considerable detail. Several key issues emerged from this presentation including:

- Members are to check all of the details contained on this web site and check for accuracy and where there are differences to inform the new secretary.
- It was recognised that the liaisons at the moment were not complete but would be developed over the next year.
- A list of Division 3 publications is contained on the web site.

11 Future work

At this point the new Division Director assumed the Chairmanship of the meeting and offered his thanks and congratulations to the retiring Director for all his work associated with CIE Division 3.

11.1 Summary of Session Workshops

Lighting Quality - This carried forward several of the issues discussed in the Ottawa symposium which had previously been published. These have provided a firm foundation for further work in CIE looking at lighting quality. The meeting was reminded that a detailed report of the workshop would be in Vol.3 of the Proceedings of this CIE Session.

Lighting Software Validation - The Divisional Director gave a brief report of this workshop which was conducted by way of informal discussions amongst interested delegates. There was a general need to

provide test cases, examine standard format, to include lighting quality parameters and ensure a user friendly approach to the software. It was essential that certification/validation using test data must be linked to photometry to ensure accuracy. It was confirmed that the minutes of this workshop would be put onto the Division 3 website.

11.2 New Technical Committees - A Proposal for TC3-34

11.2.1 Protocols for Describing Lighting. This included terms of reference which are directed towards establishing some criteria with regard to the description of lighting quality. Specific outputs and goals were identified as was a TC membership:

Chairman	J Veitch	Can
Members	P Boyce	USA
	T McGowan	USA
	N Miller	USA
	C Cuttle	NS
	J Van Kemenade	NL
	Y. Nakamura	JP
	H Kramer	G
	R Topolova	Can
	N Oui	JP

It was proposed that the life of this TC would be from 1999 - 2001 and the output would be a final report. This proposal was agreed.

11.2.2 Proposal for TC3-35 General Evaluation of Discomfort Glare

This would allow the work of earlier TCs involved in UGR to be developed. In particular there have been several features which are not covered by the existing UGR approach, e.g., road lighting, which is being examined by Division 4. However, the particular interest of Division 3 is to examine daylighting and artificial lighting glare evaluation in a combined and unified way and it is proposed that this is what the TC would do. The work is already supported by a Danish domestic research grant. It was further identified that there should be a need to include overhead glare in any UGR revision. There was also a need for assessing user tolerance and a system of validating any design criteria so that it would be possible to assess and measure effects rather than rely on mathematical descriptions. In particular there was a need for the UGR to be modified so that it could determine glare at a particular point. The proposed TC Chairman was requested to produce full TC details, including Terms of Reference for the Secretary. The TC membership includes:

Chairman	K. Sorensen	Dm
Members:	L Halonen	Fin
	H. Einhorn	SA
	S. Kanaya	JP
	R. Topalova	Can

11.3 Proposals for new reporterships

11.3.1 R3-18 - Thermal environment, outdoor climate and visual preferences

- Catherine Laurentin

This general topic area was discussed by the committee where a call was made for an accurate set of terms of reference to be produced so that a focus study could be undertaken.

11.3.2 R3-19 Glare from windows

- Martine Veldts

The outline of the work pattern and terms of reference for this reportership were discussed and approved.

11.3.3 R3-20 The use of satellite images

- Y Kosa

This reportership would examine various mathematical models and the data obtained from satellite images and terms of reference were produced which effectively described the work of this reportership. The meeting noted that accuracy was a key issue and should be included. This reportership was approved.

11.4 Proposal for Study Group - Study Group Leader Dominique Dumortier

This study group is to be developed from the IDMP and other associated CIE work concerning daylight. It was appreciated that the study group should have a series of clearly specified aims and objectives and that these should be focused on furthering the use of available data as well as developing new areas for research activity. The proposals to set this up were agreed.

12 Other Business

12.1 A call was made for a list of research projects that relate to the activities of Division 3 to be compiled. This would aid as a catalyst to encourage research activity. It was appreciated that such a list would need to be publicised widely and there was a call on Division Directors to collate and encourage this strategic activity. Any list of research projects should also be related to the overall strategy adopted by CIE. An example of a possible research topic area was identified as "illuminance". Since there is a move towards performance specification in terms of lighting or requirements there was a clear need to carry out task analysis in order to substantiate design criteria.

12.2 The maintaining of liaison with Division 5 Technical Committees was identified. In particular the new TC 3-35 should liaise with TC in Division 5 concerning itself with glare and sports lighting.

12.3 It was reported that a Technical Committee exists in Division 5 which is concerned with tolerances. A draft report of this committee exists and since the contents of this may have implications for Division 3. The Vice-President (Publications) agreed to investigate this and report back.

- 12.4 Design Guidance from the findings of TC3-21. It was suggested that the design guides for particular building interiors could be published in the new handbook form as recently approved for use by CIE.
- 12.5 The Division 6 work on bio-medical radiation aspects is nearing completion. This work relates to the work of TC3-16 which was closed at this meeting. The TC Chairman should note, when returning data to the CIE Headquarters in Vienna that this should be passed to the Division 6 TC.
- 12.6 A range of future events was brought to the attention of the Committee. These include:

The IESNA Conference in New Orleans, USA, 9-11th August, 1999

Annual Congress - Light for Life - Kimberley, South Africa
1st & 2nd November 1999

Fax +27 12 464264

e-mail: Robert.Henderson@ESKON.Co.ZA

Domestic Use of Electrical Energy - Cape Town, South Africa
March/April 2000 (before Easter)

Fax: +27 11 6295264

e-mail: Robert.Henderson@ESKON.Co.ZA

VSNC/CNC Joint Conference and Annual Meeting
October 15-17, (Technical reviews and presentations, October 16th), 1999
Toronto, Ontario Canada

Information:

Terry McGowan, VP VSNC

Fax: 216 382 6424

e-mail: lighting@ieee.org

- 12.7 It was agreed that the next meeting of Division 3 would take place on

the afternoon of:

**Saturday 8th July and the morning of Sunday 9th July 2000
at the Joint CIBSE/ILE Conference in York, UK**

The outgoing Director again thanked his Deputy Directors and Secretary as well as the TC Chairmen for all their hard work and support during his years in office.

Members

Here you will find the coordinates of division 3 members,
presented country by country, in alphabetical order.

Last update: 7/6/1999.

Argentina

Mr. HAMAKERS Carlos
Laboratorio Luminotecnia
Av. Independencia 1800
4000 San Miguel de Tucuman
Argentina

Division 3 Representative.

Australia

Mr. HAYMAN Simon
Dept. of Architecture and Design Science
University of Sydney
NSW 2006 Sydney
Australia
Tel: +61 293 51 56 03
Fax: +61 293 51 30 31
e-mail: simon@arch.usyd.edu.au

Division 3 Representative, Chair 3-12,
Member 3-25.

Mr. ROY Geoffrey
School of Engineering
Murdoch University
South Street
6150 Murdoch Perth
Australia
Tel: +61 893 60 71 03
Fax: +61 893 60 71 04
e-mail: geoff@eng.murdoch.edu.au

Member 3-33.

Austria

Mr. DEHOFF Peter
Zumtobel Licht GmbH
Schweizerstrasse 30
A - 6851 Dornbirn

Mr. KENDRICK Derrick
17 The Parkway
Klemzig
South Australia 5087
Australia
Tel: +61 882 66 53 50
Fax: +61 882 66 53 50
e-mail: dkendric@arch.adelaide.edu.au

Member 3-11, 3-15, 3-19, 3-20, 3-25, 3-32.

Ms. RUCK Nancy
Dept of Architectural & Design Science
University of Sydney
PO Box 1
City Road
NSW 2006 Sydney
Australia
Tel: +61 265 54 40 73
Fax: +61 265 54 40 73
e-mail: nanr@arch.usyd.edu.au

Member 3-12, 3-25.

Ms. HERMAN Christine
CIE Central Bureau
Kegelgasse 27
A - 1030 Wien

Austria
Tel: +43 55 72 39 06 87
Fax: +43 55 72 39 01 81
e-mail: dehoff@zumbotelstaff.co.at

Member 3-21, 3-33.

Belgium

Mr. LINTERMANS Rudy
Philips Lighting NV
80 Rue des Deux Gares
B - 1070 Brussels
Belgium
Tel: +32 25 25 76 88
Fax: +32 25 25 76 90
e-mail:
rudy.lintermans@bru.lighting.philips.com

Division 3 Representative.

Brazil

Mr. MINGRONE Antonio Carlos
Faculdade de Arquitetura e Urbanismo
Universidade de Sao Paulo
Caixa Postal 61523
05498-970 Sao Paolo
Brazil
Fax: +55 11 523 30 70

Austria
Tel: +43 17 14 31 87 11
Fax: +43 17 13 08 38 18
e-mail: ciecb@ping.at

CIE Central Bureau Secretary.

Mr. PIMENTA PINHEIRO Jose Luiz
ENERCONSULT
Engenharia e consultoria ltda.
Av. Brig. Faria Lima
1656-12 andar
01474-900 Sao Paolo
Brazil
Tel: +55 11 867 8570
Fax: +55 11 870 6098
e-mail: gertec@enerconsult.com.br

Bulgaria

Mr. DIKANAROV Georgi
Technical University of Sofia
95, Vassil Levski Blvd
BG - 1000 Sofia
Bulgaria
Fax: +359 28 79 360
e-mail: dikanar@vmei.acad.bg

Canada

Mr. LOVE James
Faculty of Environmental Design
University of Calgary, ES 1002
2500 University Drive, NW
T2N 1N4 Calgary, ALBERTA
Canada

Mr. Mc ARTHUR Bruce
National Atmospheric Radiation Centre
Experimental Studies Division
4905 Dufferin Street
M3H 5T4 Downsview, Ontario
Canada

Tel: +1 403 220 7428
Fax: +1 403 284 4399
e-mail: love@evds.ucalgary.ca

Member 3-25.

Mr. PASINI Ivaldo
Public Works Government Services
Services CANADA
ASES Technology Directorate
Place du Portage 3, Level 8 A2
K1A 0M3 Quebec
Canada
Tel: +1 819 956 3410
Fax: +1 819 956 3400
e-mail: pasinii@pwgsc.gc.ca

Member 3-21.

Ms. TOPALOVA Radosveta
Ergonomics, Lighting and Visual Science
University of Waterloo
314-161 University Avenue W
N2L3E5 Waterloo, Ontario
Canada
Tel: +1 519 725 3175
e-mail: roados@topalova.com

Reporter 3-06, 3-17.

Mr. WHITEHEAD Lorne A.
Department of Physics and Astronomy
University of British Columbia
6224 Agricultural Road
V6T 1Z1 Vancouver
Canada
Tel: +1 604 822 3075
Fax: +1 604 822 5324
e-mail: whitehead@physics.ubc.ca

Chair 3-30.

China

Mr. HUIQIAN Xaio
Institute of Building Physics
China Academy of Building Research

Tel: +1 416 739 44 64
Fax: +1 416 739 42 81
e-mail: bruce.mcarthur@ec.gc.ca

Member 3-25.

Mr. TILLER Dale
Institute for Research in Construction
National Research Council of Canada
Indoor Environment Research Program
M-24, chemin Montreal Road
K1A 0R6 Ottawa Ontario
Canada
Tel: +1 613 993 9539
Fax: +1 613 954 3733
e-mail: dale.tiller@nrc.ca

Chair 3-16, 3-26.

Ms. VEITCH Jennifer A.
Institute for Research in Construction
(M-24)
National Research Council of Canada
Indoor Environment Research Program
M-24, chemin Montreal Road
K1A 0R6 Ottawa, Ontario
Canada
Tel: +1 613 993 9671
Fax: +1 613 954 3733
e-mail: jennifer.veitch@nrc.ca

Chair 3-34.

Mr. QINGXUAN Zhan
School of Architecture
Tsinghua University

19 Che Gong Zhuang Street
100044 Beijing
China
Tel: +86 01 839 43 87

Tsinghua Yuan
100 084 Beijing
China
Tel: +86 10 62 78 2206
Fax: +86 10 62 770 314
e-mail: zgx-sa@mail.tsinghua.edu.cn

Member 3-21.

Mr. YANG Guangxuan
School of Architecture & Urban Planning
Chongqing Jianzhu University Sapingba
410-6224 Agricultural Road
630045 Chongqing
China
Tel: +86 811 96 1989
Fax: +86 811 96 6659

Member 3-25.

Croatia

Mr. SEVER Slavko
TEP Rasvjeta
Medarska 69
10090 Zagreb
Croatia
Tel: +385 13 78 23 44
Fax: +385 13 78 23 77

Member 3-01, 3-21, 3-28.

Denmark

Mr. JACOBSEN Hans
Philips Lighting
Postbox 1919
Prags Boulevard 80
DK - 2300 Copenhagen
Denmark
Tel: +45 32 88 27 15
Fax: +45 32 96 01 31

Mr. SENDRUP Peter
DELTA Light and Optics
Hjortekaersvej 99
DK - 2800 Lyngby
Denmark
Tel: +45 45 88 83 33
Fax: +45 45 87 08 00
e-mail: pse@delta.dk

Secretary 3-35.

Mr. SORENSEN Kai
DELTA Light and Optics
Hjortekaersvej 99
DK - 2800 Lyngby
Denmark

Tel: +45 45 88 83 33
Fax: +45 45 87 08 00
e-mail: ks@delta.dk

Chair 3-35.

Finland

Ms. HALONEN Liisa
Helsinki University of Technology
Lighting Laboratory
Otakaari 1
P.O Box 1000
FIN - 02015 Espoo
Finland
Tel: +358 94 51 24 18
Fax: +358 94 51 49 82
e-mail: liisa.halonen@hut.fi

Member 3-01, 1-14, 1-19, 1-39, 4-33.

Mr. PEKANHEIMO Ilkka
AD-Lux Oy
Daylighting Consultant
Brahenskatu 12
20 100 Turku
Finland
Tel: +358 24 69 11 55
Fax: +358 24 69 11 48
e-mail: ilkka.pekanheim@adlux.fi

Light Technology Society in Finland.

France

Mr. DUMORTIER Dominique
LASH-ENTPE
rue Maurice Audin
F-69518 Vaulx-en-Velin
France
Tel: +33 4 72 04 70 87
Fax: +33 4 72 04 70 41
e-mail: dominique.dumortier@entpe.fr

Division 3 Representative, Division
3-Associate Director, Chair 3-25.

Mr. FONTOYNONT Marc
LASH-ENTPE
rue Maurice Audin
F-69518 Vaulx-en-Velin
France
Tel: +33 4 72 04 70 35
Fax: +33 4 72 04 70 41
e-mail: marc.fontoynont@entpe.fr

Division 3 Director.

Mr. MITANCHEY Richard
LASH-ENTPE
rue Maurice Audin
F-69518 Vaulx-en-Velin
France
Tel: +33 4 72 04 77 21
Fax: +33 4 72 04 70 41
e-mail: richard.mitanchey@entpe.fr

Chair 3-33.

Mr. PERRAUDEAU Michel
CSTB
11 rue Henri Picherit
F - 44300 Nantes
France
Tel: +33 2 40 37 20 00
Fax: +33 2 40 37 20 40

Member 3-25.

Mr. QUERE Gilbert
Philips Eclairage
9 rue Pierre Rigaud
F - 94856 Ivry sur Seine Cedex

France

Tel: +33 1 49 87 61 95

Fax: +33 1 49 87 61 86

Germany**Mr. CZEPLAK Gerhard**

DWD

Meteorologisches Observatorium Hamburg
Frahmredder 95

D - 22393 Hamburg

Germany

Tel: +49 40 601 73200

Fax: +49 40 601 73299

Mr. GALL Dietrich

Fakultat fur Maschinenbau

Institut fur Lichttechnik und technische
Optik Fachgebiet Lichttechnik

PF 100565

D - 98684 Ilmenau

Germany

Tel: +49 36 77 202935

Fax: +49 36 77 842463

e-mail:

dietrich.gall@maschinenbau.tu-ilmenau.de**Mr. KRAMER Heinrich**Lichtdesign Ingenieurgesellschaft GmbH
Boratende Ingenieure f?r Lichttechnik

Neusser Strasse 27-29

D - 50670 K?ln

Germany

Tel: +49 22 173 2028

Fax: +49 22 173 4328

e-mail: lichtdesgn@aol.com**Ms. KROCHMANN Eike**

PRC Krochmann GmbH

GenestStrasse 6

D - 10829 Berlin

Germany

Tel: +49 30 751 70 07

Fax: +49 30 751 01 27

e-mail: prc@mail.blinx.de

Member 3-20, 3-22.

Member 3-25.

Mr. REISE Christian

Fraunhofer ISE

Oltmannsstrasse 5

D - 79100 Freiburg

Germany

Tel: +49 76 145 88282

Fax: +49 76 145 88217

e-mail: reise@ise.fhg.de**Mr. STOCKMAR Axel**

LCI

Lindenallee 21A

D - 29227 Celle

Germany

Tel: +49æ51 41 830 69

Member 3-25.

Member 3-31.

Greece**Mr. PETRAKIS Michael**

IMPAE/NOA

Lofos Nimfon Thission

PO Box 20048

GR - 11810 Athinai

Greece

Tel: +30 1 345 6257

Fax: +30 1 342 1019
e-mail: mike@env.meteo.noa.gr

Hong Kong

Mr. TONG Chi Ying
Philips Hong Kong Ltd
Lighting Division
27/F Hopewell Center
17 Kennedy Road
Wanchai
Hong Kong
Tel: +852 82 15 311
Fax: +852 86 10 568

Hungary

Mr. DEBRECZENI Gabor
Hungarian Nat. Committee
Magyar Tudomanyos Akademia
Eotvos utca 11/A
H - 1067 Budapest 6
Hungary
Tel: +36 1 322 5049
Fax: +36 1 342 5369

India

Mr. BANDYOPADHYAY Pranab K.
Indian Society of Lighting Engineers
c/o Philips India Ltd.
Bandbox House
254-D, Dr. Annie Besant Road, Worli
400 025 Mumbai
India
Tel: +91 22 4932511
Fax: +91 22 4950498
e-mail: b.sivakumar@pin.philips.com

Mr. SAXENA Brijendra
Central Building Research Institute
247667 Roorkee
India
Tel: +91 133 27 25 06
Fax: +91 133 27 22 72
e-mail: general@cbri.sirnetd.ernet.in

Member 3-25.

President of the Indian Society of Lighting Engineers.

Mr. VALIA Anil
Lighting Systems
9 Omex Apartment
64 Sahar Road, Koldongri
Andheri (E)
400 069 Mumbai
India
Tel: +91 228 20 84 13
Fax: +91 228 38 47 52

Division 3 Representative, Member 3-30.

Indonesia

Dr. RAHIM Ramli

Hasanuddin University
Dept of Architecture
Faculty of Engineering
Kampus Unhas Tamalanrea
90245 Ujungpandang
Indonesia
Tel: +62 411 45 47 46
Fax: +62 411 51 00 88
e-mail: parenta@indosat.net.id

Member 3-25.

Israel

Mr. FEIMAN David

Jacob Blaustein Institute for Desert
Research
Ben Gurion University
84 993 Sede Boker
Israel
Tel: +972 756 50 63
Fax: +972 755 50 60

Mr. NE'EMAN Eliyahu

Faculty of Architecture and Town Planning
Technion, Israel Institute of Technology
32000 Haifa
Israel
Tel: +972 4 8294059
Fax: +972 4 8294617
e-mail: arren01@tx.technion.ac.il

Chair 3-22, Member 3-25.

Italy

Mr. Di FRAIA Luciano

Electrical Engineering Dept.
University of Napoli Federico II
Via Claudio 21
I - 80125 Napoli
Italy
Tel: +39 81 761 1957
Fax: +39 81 761 1957
e-mail: difraia@unina.it

Mr. PLATONE Carlo

P. Mascagni, 7
I - 100199 Roma
Italy
Tel: +39 68 39 1896
Fax: +39 68 60 8968

Member 3-10, 3-21.

Japan

Mr. IGAWA Norio

Research and Development Institute
Takenaka Corporation
5-1, 1-Chome
270-1395 Inzai, Chiba

Ms. KANAYA Sueko

Kanazawa Institute of Technology
Division of Human Information System
7-1 Ohgigaoka, Nonoichi
921-8501 Ishikawa

Japan
Tel: +81 476 47 1700
Fax: +81 476 47 3060
e-mail: igawa.norio@takenaka.co.jp

Japan
Tel: +81 76 294 6710
Fax: +81 76 294 6711
e-mail: suekok@neptune.kanazawa-it.ac.jp

Division 3, Associate Director.

Ms. KOGA Yasuko
Dept of Architecture
Kyushu University
6-10-1 Hakozaki, Higashi
812-81 Fukuoka
Japan
Tel: +81 926 42 3338
Fax: +81 926 42 3363
e-mail: yskktar@mbox.nc.kyushu-u.ac.jp

Mr. MATSUURA Kunio
Kyoto University
28-1 Kitashirakawa-Yamadacho
606-8272 Kyoto
Japan
Tel: +81 75 791 0314
Fax: +81 75 791 0314
e-mail: matsuura@mxn.meshnet.or.jp

Member 3-11, 3-15, 3-22.

Member 3-15, 3-25.

Mr. NAKAMURA Hiroshi
Faculty of Human Life and Environmental
Science
Kochi Prefectural Women's University
15-5 Eikokuji-cho
780-8515 Kochi
Japan
Tel: +81 888 73 2027
Fax: +81 888 73 2027
e-mail: nakamura@kochi-wu.ac.jp

Mr. OKI Masato
Dept of Architecture
Ashikaga Institute of Technology
268-1 Ohmae-cho
326 Ashikaga
Japan
Tel: +81 284 62 0605
Fax: +81 284 62 4235
e-mail: oki@ashitech.ac.jp

Member 3-25.

Member 3-11, 3-12, 3-15, 3-25.

Mr. TAKAHASHI Sadao
Fukui University of Technology
1-28, B-602
Deiki Kanazawa-Ku
236 Yokohama
Japan
Tel: +81 45 701 59 55
Fax: +81 45 701 59 55
e-mail: taka28@mb.infoweb.or.jp

Mr. UETANI Yoshiaki
Faculty of Engineering
Fukuyama University
Higashi-mura
729-0292 Fukuyama
Japan
Tel: +81 849 36 2111
Fax: +81 849 36 2023
e-mail: uetani@fuarc.fukuyama-u.ac.jp

Member 3-28.

Chair 3-15, Member 3-33.

Mr. UMEMIYA Noriko
Kyoto University
Dept of Global Environment Eng.
Faculty of Engineering
Yoshida-Hanmachi

606-8501 Sakyo-Ku, Kyoto
Japan
Tel: +81 757 53 5748
Fax: +81 757 53 5732

Netherlands

Mr. DIEPENS Jan
Eindhoven University of Technology
Faculty of building and Planning
B-FAGO
PO Box 513
NL 5600 MB Eindhoven
Netherlands
Tel: +31 40 47 35 14
Fax: +31 40 43 85 95
e-mail: jadi@fago.bwk.tue.nl

Mr. RUTTEN Ton
University of Technology
Faculty Building and Planning
PO Box 513
NL 5600 MB Eindhoven
Netherlands
Tel: +31 40 24 72 195
Fax: +31 40 24 38 595
e-mail: toru@fago.bwk.tue.nl

Member 3-25.

Mr. VAN BOMMEL Wout
Philips Lighting
Building ED2
PO Box 80020
5600 JM Eindhoven
Netherlands
Tel: +31 40 27 56 314
Fax: +31 40 27 56 406
e-mail:
wout.vanbommel@ehv.lighting.philips.com

Mr. VAN OUYEN Martin
Philips Lighting
Building EEC 1.07
PO Box 80020
5600 JM Eindhoven
Netherlands
Tel: +31 40 27 56 072
Fax: +31 40 27 56 038
e-mail:
martin.vanooyen@ehv.lighting.philips.com

Observer.

Division 3 Representative, Member 3-21.

Mr. ZONNEVELDT Laurens
TNO-TUE
Centre for Building Research
P O Box 513
5600 MB Eindhoven
Netherlands
Tel: +31 40 24 72 814
Fax: +31 40 24 38 595
e-mail: l.zonneveldt@bouw.tno.nl

New Zealand

Mr. BITTAR Antoine
Industrial Research Ltd
Gracefield Road
Lower Hutt
New Zealand
Tel: +64 4 569 0731

Mr. WILLEY Hayden
University of Auckland
Dept of Architecture
Private Bag 92019
Auckland
New Zealand

Fax: +64 4 569 0003
e-mail: t.bittar@irl.cri.nz

Tel: +64 9 373 7599
Fax: +64 9 373 7694
e-mail: h.willey@auckland.ac.nz

Division 3 Representative.

Norway

Mr. ARNESEN Odd
IGP A/S
Brattorgata 5
PB 7001
7000 Trondheim
Norway
Tel: +47 73 895 800
Fax: +47 73 895 889
e-mail: oa@igp.no

Poland

Mr. OKON Marian
Luxmat Sp. zoo
62 Wspolna Street
00-684 Warszawa
Poland
Tel: +48 391 30 434
Fax: +48 391 30 434

Portugal

Mr. SANTOS Antonio
LNEC
Avenida do Brasil, 101
P - 1799 Lisboa
Portugal
Tel: +351 1 848 21 31
Fax: +351 1 849 76 60
e-mail: asantos@lnec.pt

Republic of Korea

Mr. KIM Kwang-Woo
Dept of Architecture
Seoul National University San 56-1
Shillim-Dong
Seoul, Kwanak-Gu
Republic of Korea
Tel: +82 2 880 70 65
Fax: +82 2 885 80 57

Romania

Mr. MIRA Nicolae

Comitetul National roman de Iluminat
Universitatea de Constructii
B-dul Lacul Tei 124
72305 Bucuresti 2
Romania
Tel: +40 1 642 4200
Fax: +40 1 312 6880

Russia**Mr. AIZENBERG Julian**

3M Russia
Samarsky Per, 3
Next to Hotel Penta
1291100 Moscow
Russia
Fax: +70 952 889 792

Mr. BORISENKOV E.P.

Main Geophysical Observatory
Actinometric Laboratory
Karbyshev Str. 7.
194018 St Peterburg
Russia
Tel: +70 952 470 103
Fax: +70 952 478 661

Ms. FEDYUKINA Galina

Russian Nat. Com. of the CIE
VNISI
Prospect Mira, 106
129301 Moscow
Russia
Tel: +70 952 871 352

Mr. SHILOVTSEVA Olga

Meteorological Observatory Geographical
Dept
Moscow State University
Vorob'jevy Hills
119899 Moscow
Russia
Tel: +70 959 394 284
Fax: +70 959 394 284
e-mail: farom@gol.ru

Singapore**Mr. ULLAH M.B.**

School of building & Estate Management
10 Kent Ridge Crescent
511 Singapore
Singapore
Tel: +657723538
Fax: +657755502
e-mail: bemullah@leonis.nus.sg

Slovakia**Mr. DARULA Stanislav**

ICA
Slovak Academy of Sciences
Dubravska cesta 9
SK - 842 20 Bratislava
Slovakia
Tel: +421 73 78 24 98

Mr. KITTLER Richard

ICA
Slovak Academy of Sciences
Dubravska cesta 9
SK - 842 20 Bratislava
Slovakia
Tel: +421 73 78 28 92

Fax: +421 73 72 494
e-mail: usarsdar@savba.savba.sk

Member 3-25.

Ms. PULPITLOVA Janka

Ustav Zdravotnej
Vychovy Bratislava
Zeleznicarska 3
81104 Bratislava
Slovakia
Tel: +421 74 92 349
Fax: +421 74 92 349

Member 3-25.

Slovenia

Mr. SOVIC Boris

Drzavni zbor Republike Slovenije
Subiceva 4
SI 2000 Ljubljana
Slovenia
Tel: +386 61 12 50 256
Fax: +386 61 12 55 077
e-mail: boris.sovic@dz.sigov.mail.si

South Africa

Mr. HENDERSON

South Africa

Reporter 3-17.

Fax: +421 73 72 494
e-mail: usarkit@savba.savba.sk

Member 3-15, 3-19, 3-25, 3-32.

Mr. EINHORN Heinz

Consulting Lighting Engineer
University of Cape Town
9 Bloemendal Road
7700 Mowbray
South Africa
Tel: +27 21 68 92 370
Fax: +27 21 68 92 370
e-mail: einhorn@eleceng.uct.ac.za

Chair 3-01, Member 1.33, 1.14, 5.04, 5.11.

Mr. GRUNDY John

Lighting Sciences Africa Ltd
30 Golden Drive Micehill
PO Box 309
1501 Benoni
South Africa
Tel: +27 11 42 52 203
Fax: +27 11 42 52 205

Member 3-21.

Spain

Mr. GANDOLFO A.J.
Philips Alumbrado
Iberica de Alumbrado, S.A.
Domicillio Social
Martinez Villergas, 2
E - 28027 Madrid
Spain
Tel: +34 1 326 0726

Mr. SOLER Alfonso
Departamento de Fisica
Escuela Tecnica Superior de Arquitectura
Avenida Juan de Herrera 4
E - 28040 Madrid
Spain
Tel: +34 1 336 6542
Fax: +34 1 544 2481

Member 3-25.

Sweden

Mr. EJJHED Jan
Goteborg University
Lighting Center
Styrmansgatan 51
S - 11460 Stockholm
Sweden
Tel: +46 86 61 49 51
Fax: +46 86 62 01 71
e-mail: ejhed.arch@swipnet.se

Mr. JOSEFFSON Weine
Swedish Meteo. And Hydro. Institute
Folksborgsvagen
S-60176 Norrk?ping
Sweden
Tel: +46 11 15 81 83
Fax: +46 11 17 02 07
e-mail: weine.joseffson@smhi.se

Member 3-31.

Mr. LIEDQUIST Leif
Swedish National Testing & Research Inst.
Brinellgatan 4, Box 857
S - 50115 Boras
Sweden
Tel: +46 33 16 54 48
Fax: +46 33 16 56 20
e-mail: leif.liedquist@sp.se

Mr. LOFBERG Hans Allan
KTH, Dept of Built Environment
PO Box 88
S - 801 02 Gavle
Sweden
Tel: +46 26 14 78 00
Fax: +46 26 14 78 01
e-mail: hansallan.lofberg@bmg.kth.se

CIE VPT, Member 3-25.

Mr. PERSSON Thomas
Swedish Meteorological and Hydrological
Inst.
Folkborgsvagen 1
S - 60176 Norrkoping
Sweden
Tel: +46 11 49 58 229
Fax: +46 11 49 58 001
e-mail: tpersson@smhi.se

Member 3-25.

Switzerland

Mr. INEICHEN Pierre
University of Geneva
Group of Applied Physics - Energy
19 av. de la Jonction
CH - 1205 Geneva
Switzerland
Tel: +41 22 705 72 84
Fax: +41 22 705 72 00
e-mail: pierre.ineichen@gap-e.unige.ch

Mr. SIMOS Simon
Ecole d'Ingenieurs de Geneve
4 rue de la Prairie
CH - 1202 Geneva
Switzerland
Tel: +41 22 343 52 81
Fax: +41 22 343 58 80
e-mail: simos@eig.unige.ch

Reporter 3-15.

Mr. VALKO Peter
Langswattstrasse 26
CH - 8125 Zollikerberg
Switzerland
Tel: +41 13 91 75 53
Fax: +41 13 91 75 53

Thailand

Mr. HOKIERTI Jamnarn
Faculty of Engineering
Kasetsart University
Phaholyothin Road
10900 Bangkok
Thailand
Tel: +662 56 14 621
Fax: +662 57 97 566
e-mail: fengjnh@nontri.ku.ac.th

Turkey

Ms. ALPIN Koknel Yener
Istanbul Technical University
Faculty of architecture
Taskisia, Taksim
80191 Istanbul
Turkey
Tel: +90 212 293 1300
Fax: +90 212 251 4895
e-mail: alpin@superonline.com

Mr. ENARUN Dilek
Istanbul Technical University
Faculty of Electronical and Electrical Eng.
Maslak
80626 Istanbul
Turkey
Tel: +90 212 285 6953
Fax: +90 212 285 6700

United Kingdom

Mr. ACKERMAN Kenneth
1 Dunstan Road
Golders Green

Mr. BEDOCS Lou
Thorn Lighting Limited
Lighting Technology Centre

NW11 8 AG London
United Kingdom
Tel: +44 81 455 2366

Reporter 3-02.

Spennymoor
DL16 7UR CO. Durham
United Kingdom
Tel: +44 191 301 3074
Fax: +44 191 301 3035

Chair 3-21, Reporter 3-10.

Mr. BELL James
International Union of Architects
Half Acre Green
Manchester Road
SK9 2J Wilmslow, Cheshire
United Kingdom
Tel: +44 162 552 5990

Mr. BELL Robert
Siemens Lighting Ltd
Brookvale Road
B67 EU Witton, Birmingham
United Kingdom
Fax: +44 121 322 6678

Mr. CARTER David
School of Architecture and Building Eng.
University of Liverpool
Leverhulme Bldg
Abercromby Square
L69 3BX Liverpool
United Kingdom
Tel: +44 151 794 2622
Fax: +44 151 794 2605
e-mail: eb09@liv.ac.uk

Mr. COOK Geoffrey
The University of Reading
WhiteKnights
RG6 6AW Reading
United Kingdom
Tel: +44 173 431 6734
Fax: +44 173 431 6735
e-mail: g.k.cook@reading.ac.uk

Secretary 3-31.

Chair 3-31, Member 3-30.

Mr. DAVID Jonathan
The Chartered Institution of Building
Services Engineers
222 Balham High Road
SW12 9BS London
United Kingdom
Tel: +44 181 675 5211
Fax: +44 181 675 5449
e-mail: j david@cibse.org

CIBSE Manager.

Mr. LITTLEFAIR Paul
BRE
Lighting & Applied Vision Section
Garston
WD2 7JR Watford
United Kingdom
Tel: +44 192 366 4874
Fax: +44 192 366 4781
e-mail: littlefairp@bre.co.uk

Member 3-11, 3-12.

Mr. MUNEER Tarik
Dept of Mechanical Engineering
Napier University
10 Colinton Road
EH10 5DT Edinburgh
United Kingdom
Tel: +44 131 455 2541
Fax: +44 131 455 2264

Mrs. SECKER Sheila
Mellor Stockport
150 Longhurst Lane
Mellor
SK6 5PJ Cheshire
United Kingdom
Tel: +44 161 427 3993

e-mail: T.Muneer@Napier.ac.uk

Member 3-25.

Member 3-25.

Mr. SLATER Anthony
Building Research Establishment
Garston
WD2 7JR Watford, Herts
United Kingdom
Tel: +44 192 366 4472
Fax: +44 192 366 4095
e-mail: slaterai@bre.co.uk

Mr. TREGENZA Peter
School of Architecture
University of Sheffield
The Arts Tower
Western Bank
S10 2TN Sheffield
United Kingdom
Tel: +44 114 222 0301
Fax: +44 114 279 8276
e-mail: p.tregenza@sheffield.ac.uk

Member 3-15, 3-25, 3-32.

United States

Mr. BELCHER Clay
University of Kansas
Marvin Hall
66045 Lawrence, KS
United States
Tel: +1 785 864 3260
Fax: +1 785 864 5099
e-mail: cbelcher@ukans.edu

Mr. IRVINE Gerald
Irvine Engineering
Post Office Box 246
Suffern
10901-0246 New York
United States
Tel: +1 914 262 7300
Fax: +1 800 626 3339
e-mail: irvine@internetmci.com

Member 3-01, Reporter 3-13.

Ms. JONES Carol
Battelle/PNL
901 D Street S.W.
Suite 900
20024-2115 Washington D.C.
United States
Tel: +1 202 646 5270
Fax: +1 202 646 7845

Mr. Mc GOWAN Terry K.
Lighting Research Office
3574 Atherstone Road
Cleveland Heights
44121 Ohio
United States
Tel: +1 216 291 1884
Fax: +1 216 382 6424
e-mail: lighting@ieee.org

Reporter 3-14.

Member 3-34.

Mr. NAVVAB Mojtaba
College of Arch & Urban Planning
The University of Michigan
2000 Bonisteel Boulevard
48109-2069 Ann Arbor, Michigan
United States
Tel: +1 313 936 0228
Fax: +1 313 6473 212

Mr. PEREZ Richard
Atmospheric Science Research Center
The University at Albany
251 Fuller Road
N.Y. 12203 Albany
United States
Tel: +1 518 437 8751
Fax: +1 518 437 8711


e-mail: moji@umich.edu

e-mail: perez@asrc.cestm.albany.edu

Chair 3-11, 3-19, 3-32, Member 3-25.

Member 3-25.

Mr. SMITH Michael
Lighting Technologies Inc.
5171 Eldorado Springs Dr
80303-9642 Boulder, CO
United States



Courses in Architectural Lighting Design

- Learn lighting design practice on your own time—courses tailored to your busy lifestyle and educational needs.
- Enhance your abilities and better prepare yourself to work in the lighting and building industries.
- Prepare for the NCQLP examination or earn CEUs for recertification.
- Transfer and apply credits to undergraduate and graduate degrees from accredited educational institutions.

Developed in cooperation with the Illuminating Engineering Society of North America (IESNA) and the AIA/CES.

To be added to our mailing list, please call
the World Campus at: **1-800-252-3592.**

For program content information,
send e-mail inquiries to: lighting@psu.edu

PENNSTATE



World Campus

Courses in Architectural Lighting Design

No prior course work in Lighting Design is required for admission into the courses; however, a baccalaureate degree in a building/lighting-related field, or a position or work experience in the lighting industry with a baccalaureate degree in business, science, or engineering is required. Students with 60 undergraduate credits from an accredited university are eligible to take these courses with the approval of the department. The credits obtained through these courses may also be applicable toward a graduate program in architectural engineering.

Certification

The newly instituted National Council for Qualification for Lighting Professionals (NCQLP) certification requirement has created a need for formal training in lighting design. These courses can be used to prepare for the NCQLP examination, as well as provide CEUs for recertification. They can also help prepare for the Certification in Interior Design and the Certification for Facilities Management examinations.

Penn State World Campus

The Penn State World Campus, powered by technology, provides you with the freedom to study wherever there's a Web connection. Whether you are available to study early in the morning, late in the evening, or on weekends—from work or at home—you can log on to the World Campus.

Course Information

Architectural Lighting Design Practice I * (A E 461: Theory of Building Illumination, 3 credits)

This course provides comprehensive coverage of basic architectural lighting design practices. The materials covered provide a basic understanding of terminology, including basic units and photometry, along with lamp, luminaire, and control technologies; the use of light loss, lumen method, inverse square law, and computer analyses; and consideration of multiple fundamental design criteria for architectural lighting systems.

** Meets the Quality Level III criteria for 133 LUs*

Architectural Daylighting (A E 565: Daylighting, 3 credits)

This course provides a comprehensive understanding of the design and analysis of daylighting elements for buildings. Materials covered will include basic parameters for daylighting elements, daylight availability, daylight analysis techniques, and daylight-responsive control systems. (Prerequisite: A E 461, or approval from the department)

PENNSTATE



World Campus

In cooperation with



The
LIGHTING
AUTHORITY



an outreach program of Penn State's College of Engineering and the Department of Architectural Engineering

This publication is available in alternative media on request.

Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce.

Produced by Outreach Marketing Communications. U.Ed.OCE 99-1991Bj/ch Copyright ©1999 The Pennsylvania State University

DIVISION FOUR REPORT

Richard E. Stark, USNC Division Four Representative
Division 4 met in Warsaw, Poland on June 28, ~~28~~, 1999
29

Prior to the Division Four meeting there were several papers during the Conference Session which were of great interest to Division Four.

An invited paper "Balance Between Energy, Environment and Visual Performance" was presented by Dr. K. Narisada. This is the first paper from those outside North America who are beginning to deal with the visual approach to roadway lighting. The ideas of course have been around for a long time but the practical application to installation design has only been researched during the last decade.

It should be noted that both Sea and Air transportation papers or posters as well as Land transportation were included. A list of Division 4 papers is attached.

Jim Havard, Paul Lutkevich and Tom Schnell joined me in either chairing or attending the various technical committees of Division Four.

The opening session of the division was a workshop on "Criteria and Road Lighting." Due to the absence of two presenters the introduction was handled by Dr. Duco Schreuder and presentation on Criteria for Road Lighting, Road Safety and Thru-put and Amenity Considerations and Aesthetics in Road Lighting were presented.

This was followed by a panel discussion moderated by Dr. P.L. Walraven and including representations from the U.S. (R. Stark), Japan (Dr. K. Narisada) Turkey (Professor S. Onaygil), South Africa (R. S. Yates) and Belgium (Mr. G. Vandermeersch).

Several technical committees met in Warsaw and other progress has been made since the previous Division Four meeting in Bath, England,

Technical Committee status

TC 4-07 Design methods for road lighting. The Report is now published as Publication CIE 132.

TC 4-15 Road Lighting Calculations

The fourth draft is finished now, thanks to the continuing efforts of the chairman, and was sent to TC-members for voting. This ballot ended at the 15th of May 1999. This showed unanimous agreement among the voting TC-members, except for the request for some editorial modifications. The report now goes to the Division for voting. The chairman is congratulated on reaching this stage.

There are no test data in the report. The test data will be produced as a separately issued report or separately issued part of the report. The question will be studied whether there is a need for a

TC on Road Lighting Measurements, taking into account the activities of TC 4-26.

Near the completion of the work it will be investigated whether or not it would be appropriate to make a CIE/ISO standard for the calculation procedure. No meeting was held in Warsaw.

TC 4-16 The transfer of photometric data for road lighting

The Division meeting expressed its wish that the report should be transformed into an ISO-standard. Ron Simons, with assistance of Dick Schwab, adapted the report to the requirements of an ISO-standard.

The text is sent to CIE Central Bureau for voting by the National Committees.

TC 4-21 Interference by light of astronomical observations

The 15th meeting was held on Thursday 15 July 1999 (date subject to change) in Vienna, Austria in conjunction with the IAU symposium and with the UNISPACXE III meeting, organized by the UN Committee on the Peaceful Uses of Outer Space.

TC 4-24 Calculation and measurement of tunnel lighting criteria

A meeting of the TC was held April 26, 1999 in Boston, USA. A proposal to use the L_{seq} method in the main body of the document and put L_{20} in the appendix was approved providing the atmospheric luminance was included. This was again discussed in Warsaw after much evidence for this factor was presented.

In the absence of the chairman Mr. Riemenschneider, Mr. Stark served as chairman pro tem.

TC 4-25 Road surface and road marking reflection characteristics

The report is now sent to the Division members for voting.

TC 4-26 Systems for measurement of photometric quantities of road lighting installations

The Proceedings of the Poitiers workshop were sent to the Central Bureau for printing.

TC 4-27 In service visibility requirements for road markings

A proposal to fill the vacancy for chairman will be sent shortly to members for approval.

TC(S) 4-29 Standard on road traffic Lights

TC is closed by publication of S 006 (1998) Road traffic light - 200 mm roundel signals photometric properties.

TC 4-31 Colour vision standard for transport

A meeting was held in Warsaw to discuss draft #3.

TC 4-32 Surface colours for traffic signs

A meeting was held in Warsaw to discuss draft #3.

TC 4-34 Revision of CIE publication 92

The report is ready for print, except for some final editorial changes.

TC 4-35 Tunnel lighting

A meeting was held April 22-24, 1999 in Boston, USA. The Tunnel Calculation Committee met in Warsaw with Mr. Stark as chairman Pro-tem. The committee recommended that the tunnel lighting calculations be incorporated with the road lighting calculation in order to eliminate repetition of material already contained in the road lighting document. This will be brought to the Division for their consideration. These calculations will be added to the road lighting document when finished.

TC 4-36 Visibility design for roadway lighting

It will be investigated whether a workshop could be held on this topic, like the one we had in Orlando. The planning of a workshop on visibility design for roadway lighting is under consideration and it is anticipated that it will be held in Toronto in September of 2000.

TC 4-37 Roadway lighting in developing countries

There will be a publication drawing together material from all of the workshops i.e. from South Africa, India meetings and subsequent workshops. Dr. Schrueder stated that there are four areas that should be considered - road lighting, vehicle illumination, road markings and reflectorization. There should be an initial report covering these four items as they relate to safety and improvement in night time visibility. Phase 1 is to be a Table of Contents or Business Plan. (Here's what we plan to do, here's how, etc.) Phase 2 1st step of real report. The committee should be renamed "Industrialized vs Transitional" Countries to eliminate the bad thoughts that "Developing Country" bring to mind.

TC 4-38 Daytime visibility requirements for roadway signs

Thomas Schnell (U.S.A.) is the new chairman of this committee. It was decided that the name of the technical committee should remain "Visibility Requirements of Roadway Signs" unless some specific need might arise that would warrant a change of the committee name. It was decided that the committee was to focus on daytime requirements of traffic signs and that only brief references to other committees be made to address issues of nighttime requirements.

The majority of the committee membership pointed out that the resulting technical report should provide the framework for an applied guideline so as to benefit practitioners throughout the world. Brief references to scientific sources are required but the report should be understandable by a wide audience and technical jargon should be limited, if possible. It was further decided that a section dealing with daytime fluorescent traffic signs should be included in the technical report. The working program was discussed.

Tom Schnell and one of his graduate students (Jennifer Blackhurst) will compile the preliminary draft report #2, containing references to all the relevant literature that they were able to locate. This draft report will be made available online to the membership of TC 4-38 on a password protected web site with the following url:

<http://arrow.win.ecn.uiowa.edu/cieto4-38>

The chairman of TC 4-38 suggests that the committee meet again in January, during the 79th Annual Meeting of the Transportation Research Board in Washington, DC. Possible dates are January 10th 2000 and January 11th, 2000. The membership is asked to provide immediate feedback to the chairman for setting up a follow-up meeting.

TC 4-40 Requirements for retroreflective traffic signs

The first draft of the report is sent to members of the TC, and was discussed during a meeting in Warsaw.

TC 4-41 Crime and lighting

Members were requested to bring to the meeting any research published in their respective countries. Several countries reported their experiences. The chairperson, Dr. Kate Painter noted that of all the reports to date she has found only one (in the U.S.) that comes close to having the proper experimental controls. The immediate committee goal is to prepare a set of criteria for a crime versus lighting study and to find locations where the methodology can be implemented.

National Committees are requested to delegate members from their countries to this new committee.

Other business of Division Four.

TC 4-19 Visibility in Fog will be eliminated.

New TC's.

It was suggested that a maintenance TC be added. Dr. Schreuder will make a proposal next year (2000).

Peter Walraven will examine the issue of road lighting with mesopic lumens to decide what is the appropriate curve to use.

Interchange with other Divisions

Division 5, 2 and 3 have expressed an interest in meeting with Division 4.

As a result Division 4 will meet with Division 5 in Toronto, Canada in September 2000. The following meeting will be in Istanbul in September 2001. The only other meeting scheduled is for San Diego in 2003.

CIE Division 4

Presented Papers

80	Furusho, M.	The characters of visual environment and sight-line displacement at sea for a good lookout of the ship's operators	169
190	Bommel, W.v.	Road lighting research over the past 80 years; what lessons can we take with us into the next millenium ?	174

Presented Posters

2	Dijon, J.M., Embrechts, J.J., Brusten, S.	Measurements and modelization of light reflection on road pavement samples	179
27	Orreveteläinen, P., Soriano, J.C., Molina, M.T., Pantoja, A., Baldovi, R., Wallard, J.-P., Adomo, G., Romero, F.	Development of a standard measurement method for characterizing luminous distribution and reach of sea signals	182
104	Weksej, E.	Modernisation of street lighting in Bielsko-Biala - 5 years practical experience (1993-1997)	187
115	Leszczynska, H.	Aktuelle Trends bei der Außenbeleuchtung - Lichtimmission	188
131	Rondeau, T., Brusque, C., Noe, N., Péroché, B.,	Study of road surface photometrical properties by numerical simulations	191
133	Dumont, E.	Influence of fog microstructure on road visibility	196
201	v.d. Brink, T., Heerkens, J., Sools, F., v.d. Poel, L.,	Dynamic road-marking, a new weapon against traffic jams	201
211	Hayman, S., Rogers, J.	Sky luminances and tunnel entrance lighting	204

Displayed Posters

62	Muramatsu, R., Nakajima, S., Nakamura, Y., Kobayashi, S.	The function of lighting environment as social representation	205
79	Aoki, T., Shiina, T., Ikeda, K.	Estimation of slant visual range under the low visibility condition of category III	208
81	Ishikura, T., Mitsuhashi, K., Takenouchi, M.	Study of the road lighting installation methods accounting for visibility and comfort	211
129	Bacelar, A., Cariou, J., Hamard, M.	Current street lighting characteristics and visibility level	214
132	Brusque, C., Paulmier, G., Carta, V.	Study of the influence of background complexity on the detection of pedestrians in urban sites	217
139	Nurmi, T., Kama, J.	Light signals: The effects of the place of light source on the distribution of luminous intensity	220
148	Sengupta, B.	Recent trends in airfield visual aids	221
183	Schreuder, D.	The principles of light and dark: Decency and dignity	224
183	Schreuder, D.A.	The principles of light and dark: The value of road lighting	227
189	di Fraia, L.	Road lighting optimisation: Influence of the road width	230
191	Swart, L., Schreuder, D.	Contrast measurements basis for new calculations tunnel lighting systems	231
198	Bjelland, E.M.	Intelligent road lighting - Report from a Norwegian test program	232



COMMISSION INTERNATIONALE DE L'ÉCLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

Canadian National Committee Comité National Canadien



CIE DIVISION 5:

EXTERIOR AND OTHER LIGHTING APPLICATIONS

REPORT to CNC/CIE, 44th ANNUAL MEETING

October 15, 1999

Jacques Roberge

600, de la Promenade,
Saint-Hyacinthe, Québec J2S 6R6

Telephone : (450) 774-0688

FAX : (450) 223-1731

e-mail : jroberge @login.net

The 1999 annual meeting of Division 5 took place on June 28, 1999, at the Warsaw University of Technology, venue of the 24th Session of the CIE.

The 1998 annual report, CIE Division 5, was only received by Members in the second quarter of 1999, and was used as a working document for the annual meeting: the data contained therein was updated and the Minutes of the 1999 Division 5 Meeting represent the best and most recent Division 5 information available. A copy of those minutes is attached.

A total of 30 people from 19 countries attended, 16 of them being voting Members. Changes in Membership were reported for 4 countries, Russia, Belgium, Netherlands and Austria.

Jozsef Horvath was reelected during the year as DD for the next Quadrennium

Nigel Pollard will continue as Secretary

Pranah Bandyopadhyay will continue as Editor

Canadian involvement in TC work: J. Roberge , member of the following TC's:

TC 5-13 CIE/ISO Standard for the Lighting of Exterior Working Area

TC 5-14 Maintenance of Outdoor Lighting Systems

TC 5-15 Tolerances in Lighting Design

TC 5-17 Standardization Format for Sports Guide

Although I am not a member of TC 5-12 Obtrusive Light, I believe that I have attended every committee meeting and the symposium held on the subject so far. With Nigel Pollard as the new Chairman, I may ask to join for the final stretch, since the subject is of much interest to me, and I had pushed for the establishment of that committee from the start.

I would like to hear from anyone interested in the work of any of those committees, who could replace me as committee member, in the not too distant future.

The Secretary strongly urged all Members to get e-mail addresses, and all TC chairs are to route all communications through him. A Divisional Web Site is planned, to include a Study Group.

A thorough review of TC's (10) and Reporter's (3) activity can be found under item 6. No TC's were dissolved at the meeting, one new TC (Emergency Lighting-Dr B. Weiss) was approved for proposal to the Board, as well as one new Reportership (Modelling in Sports Lighting - T. Lemons).

It was reported that a suggestion was made at the Board to create one large Applications division out of Divisions 3, 4, and 5. The majority opinion of the Div.5 people present was that if that should happen, it should be done in steps. One way would be to look at Div.4 and 5 first. It was suggested that the next Div. 5 meeting take place at the same time and place as the Div.4 meeting, with the least possible amount of overlap in time, so that interested members of one division could attend functions of the other, and evaluate the benefits and drawbacks of a potential merge.

Since Canada had already invited Div.4 for the year 2000, this was extended to Div.5 as well: Werner Adrian is looking at Toronto, Sept. 1st to 6th, 2000.

CNC is not in a position to help much financially, and the expectations of Div.4 being high for facilities and functions, either good sponsors need to be found or a high registration fee will be necessary (current estimate: \$250C). To make matters worse, a strong point was made at the last General Assembly by Germany (not the poorest country in the lot) that people giving their time and travel expenses should not have to pay as well to provide their (free) expertise in Div. or TC meetings.

The question is on the agenda of the CNC meeting.

CIE DIVISION 5

Minutes of the Division Meeting Held on Monday 28th June 1999 at the Warsaw University of Technology "Politechnika Warszawska"

Present:	Audestad, Jan	✓Norway	(m)	
	Bandypoadhyay, Pranah	✓India	(m)	Editor + TC 5-18
	Bjorset, Hans-Henrik	Norway		Chair, TC 5-08
	van Bommel, Wout J M	✓Netherlands	(m)	Vice President
	Buddenberg, Arnolo	Netherlands		
	Culley, Dennis	✓South Africa	(m)	
	Gang, Chen	✓China		
	Gielec, Henry	✓France		
	Horvath, Jozsef	✓Hungary	(m)	Division Director
	Hugill, John	✓UK		
	Kalina, Daniel	✓Israel		
	Kaltiola, Ilkka	✓Finland		
	Kawakami, Kahji	✓Japan	(m)	Reporter, R 5-10
	Lasinski, Marek	✓Poland	(m)	
	Lecocq, Jacques	France	(m)	
	Lemons, Tom	✓USA	(m)	Chair, TC 5-09, 5-17
	Major, Gyula	Hungary		
	Nilanen, Pasi	Finland	(m)	
	Pollard, Nigel	UK	(m)	Secretary + TC 5.14
	Ravizza, Giancarlo	✓Italy		
	Roberge, Jacques	✓Canada	(m)	
	Rombauts, Patrick	✓Belgium	(m)	Reporter, R 5-05
	Paulin, Doug	USA		
	Schwarcz, Peter	Hungary		Chair, TC 5-16
	Di Segni, Yochanan	Israel	(m)	
	Shakppranians, Guennasky	✓Russia		
	Serefhanoglu-Sozen, Mujgan	✓Turkey	(m)	
	Stockmar, Axel	✓Germany		
	Weis, Bruno	Germany	(m)	
	Yoshikawa, Kojiro	Japan		
<u>30</u>		<u>19</u>	<u>16</u>	

Note: (m) = Divisional voting member (16)

1. OPENING OF THE MEETING

The Division Director welcomed all delegates to the meeting and hoped that they had all enjoyed the main 24th Session Meeting the previous week.

Apologies were received from:

van Den Beld, Gerrit	Netherlands
Di Fraia, Luciano	Italy
Fisher, Alec	Australia
Joye, Phillippe	Switzerland
Kozobko, Alexei	Russia
Manzano, Eduardo	Argentina
Neumuller, Smiljan	Slovenia
San Martin, Ramon	Spain
Vassilev, N	Bulgaria
Zhang, Hai-Cong	China

Changes in Membership

Dr Alexei KOROBKO (Russia)	- from Mr Boos
Dr Patrick ROMBAUTS (Belguim)	- from Mr Philippot.
Ir Remoc SPIERING (Netherlands)	- from Ir Wort van Bommel (from 29/7/99)
Mr Walter STEFANIK (Austria)	- from Mr Dechat

Divisional Director and Secretary

At the General Assembly meeting held on the 23 June 1999, the Division's vote for Dr Jozsef HORVATH (H) to continue as Director was confirmed. The votes were 16 - 0 .

Mr Nigel Pollard (UK) - agreed to continue as Division Secretary.
My Pranah Bandyopadhyay - agreed to continue as Division Editor.

Delegates introduced themselves to the meeting.

2. MINUTES OF LAST MEETING : BARCELONA, JUNE 1998.

Minutes accepted. Any matters arising were covered in the agenda.

3. QUADRENNIAL REPORT

This had been circulated before the meeting.

The Director summarised the report which is attached as Appendix 1.

Requests were made for a Divisional Roster - a draft of which will accompany these minutes. and clarification was sought as to whether the main editing of Reports was carried out by the Divisional Editor or at the Central Bureau in Vienna. - it should be done initially by the Division.

The report was accepted unanimously.

4. SECRETARY'S REPORT

The Secretary promised a more streamline service to Members but asked for their assistance to bring this about.

Following a meeting of the Division Secretaries and Editors held the previous week, it was requested that ALL National Members, TC Chairs and Reporters obtain their own e-mail addresses as soon as practicable and notify then to the secretary. If this is not possible then a contact e-mail address should be sought and if this is not possible then a fax line.

[The Secretary's address is: nep_lighting@compuserve.com]

ACTION: ALL

It was planned to produce a **Divisional Web Site** during the next Quadrennium which would have a "Study Group" to help Reporters acquire information on their topics.

An **Activity Report** as outlined in the CIE Code of Procedure would be produced every six months.

In order to produce the next **Roster**, all TC Chairs were asked to send the Secretary an up to date list of all their TC members.

ACTION: TC Chairs

It was also agreed that ALL future correspondence within the Division should be via the Secretary, preferably by e-mail.

5. EDITOR'S REPORT

The Editor submitted the following Report:

1. During the Quadrennium, the following drafts have been edited:

- Guide to the Lighting for Open-cast mines (TC5-03).
This has been published as CIE 128-1998.
- CIE Guide for the Lighting of Exterior Work Areas (TC5-13).
This has been published as CIE 129-1998:
- Drafts 5 and 6 of Practical Design Guidelines for the Lighting of Sports Events for Colour Television and Filming. (TC5-1 1). Comments given to the TC Chairman.

2. TC 7-06 "Terminology"

As decided in the Division 5 meeting at Eindhoven held in May 1997 all papers received from Ms Christine Hermann, the TC Chairperson, were sent to the DD, the Secretary and three more members for comment.

As comments were not forthcoming, it was decided in the Division 5 meeting held in Barcelona in June 1998, that only the papers concerning Division 5 should be circulated to the larger group of Division Members, TC Chairs and the ILE(UK) representative present. Whatever comments received would be reported to TC 7-06.

Only two members sent some valid editorial comments, which were sent to the TC Chairperson and again reported in the TC 7-06 meeting held at Warsaw on June 26, 1999.

3. In the meeting off Divisional Secretaries and Editors held at Warsaw on June 26, 1999, the new VP (Publications) mentioned the formation of the publications Committee. All Division editors would be members of this Committee, which will have its first meeting in Budapest on 30th September 1999.

The report was accepted unanimously.

5. CIE BUSINESS PLAN

CIE Vice-President, Wort van Bommel gave a presentation on the results of a Workshop held in 1998 and presented and agreed for action by the General Assembly at the 24th Session the previous week.

In essence, the plan allowed for

- New membership Categories
- Employers support for TC members
- Publications to mention Company names for working members
- Internet "Study Groups"

It also listed CIE Target Groups as follows:

- Science Bodies
- Quality Assurance Organisations
- Government and Intergovernmental Bodies
- Professional and Technical Societies
- Consultants, specific and design
- Industry, producers and service providers
- National Committees
- User Groups

There was much discussion that in the main focused on the financial aspects of the new membership categories which would include a large number of bodies that currently support the National Committees.

Internet Publishing was also a cause for concern as the IEC was already questioning whether there was a future for publications helping to finance an organisation. It was noted that the USA fees were already subsidised by publication sales and if this were lost, their problem would get even worse.

The DD would take all these views to the next BA meeting

6. TECHNICAL COMMITTEE REPORTS

TC 5-08 "Lighting of Off-shore Gas and Oil Structures" (H-H Bjorset)

The Chairman reported that although little work had been done since the last meeting, a possible new Norwegian member would be joining and that a request to Division 4 on the particular problems of lighting for Helidecks was being sought. It was agreed that luminance not illuminance was the required lighting parameter but unfortunately the manufacturers of one of the luminaires best fitted for this purpose had been discontinued.

A suggestion from the meeting called for the study of LED's and fibre optic devices to be examined, as the signalling of, rather than the direct lighting of, these decks may be more relevant to the pilots.

A draft Report is still awaited.

ACTION: HH Bjorset

TC 5-09 "Illuminance Levels for Sports Events" (T M Lemons)

There was still no draft Report available although the CEN Report was now out for voting in Europe.

As CIE-CEN liaison was now official it was requested that this be sent to the Chairman as a matter of urgency so that he could equate it with the non-European data he has in order that it can be a put together for a future TC meeting.

An earlier workshop had questioned that illuminance levels were all that was required,

It was suggested by the Chairman to change the Terms of Reference of the Committee to:

"To Prepare a Standard in liaison with CEN to provide a listing of illumination levels, become a preface for the various CIE Sports Lighting Guides and to prepare a basic recommended Guide for the application of the illuminance level recommendations for sports activities where there is no present CIE Report."

After some discussion, it was decided to postpone this idea for one year, during which the CEN document should be published and be available to Division Members at the next Divisional Meeting.

ACTION: TM Lemons/CB

TC 5-11 "Practical Design Guidelines for Sports Lighting Installations for Television and Filming" (G van Den Beld)

Apologies had been received from the new Chairman who reported that the text was now completed and would hopefully be ready for voting before the end of 1999.

ACTION: G Den Beld

TC 5-12 "Obtrusive Light" (N E Pollard)

Dr A Fisher had sent a letter to the DD resigning from the Chair which was being passed on to Nigel Pollard. This change of TC Chairman was voted on and agreed unanimously by the meeting.

Mr Pollard, following the TC meeting in Barcelona had already scanned the existing document into MS Word and had produced a 4th Draft. A limited number of these were available at the meeting and following their distribution to TC members would be finalised and hopefully be ready for final voting at the next Divisional Meeting in 2000.

ACTION: NE Pollard/TC

TC 5-13 "CIE / ISO Standard for the Lighting of Exterior Working Areas"
(J Horvath)

The Chairman had not yet progressed the document towards an ISO standard but would pursue this with the CB in Vienna.

ACTION: J Horvath/CB

TC 5-14 "Maintenance of Outdoor Lighting Systems" (N E Pollard)

Following the Barcelona Meeting Draft 5(a) had been produced. A limited number of these were available at the meeting. However, due to a number of interesting developments in Italy, Spain and elsewhere, a further draft would be produced for discussion at a further TC meeting.

ACTION: NE Pollard/TC

TC 5-15 "Tolerances in Lighting Design" (Vacant)

The current chairman, Dr Fisher had retired but would send a copy of the new Australian Standard to the new chairman when appointed.

TC members who offered their assistance at the last meeting in Barcelona, were: D. Coatham (UK), L. Di Fraia (Italy), J. Lecocq (France) and J. Roberge (Canada). A possible chair was suggested from Germany although J. Roberge would send a copy of the member list from the UK Lancaster Meeting for the Secretary and DD to discuss further.

ACTION: J. Roberge/Sec/DD

TC 5-16 "Exterior Security Lighting of Private Properties" (P Schwarcz)

The decision to form this TC was taken in the Barcelona meeting of the Division held in June 1998. This was confirmed by the Central Bureau in April 1999.

Terms of Reference: To prepare a guide giving recommendations on lighting designed primarily to improve security of homes, industrial and commercial properties and working areas, and serving as an additional guide to existing ones on exterior lighting. The Guide shall exclude security aspects of public lighting (to avoid parallel work with Division 4 covering the same topic) and lighting of high security areas (military, nuclear areas, prisons), which topic is complex enough to have its own guide.

The following members have agreed to join the TC:

J-H. Audestad	(Norway)
P. Bandyopadhyay	(India)
W. van Bommel	(Netherlands)
D. Culley	(South Africa)
S. Neumuller	(Slovenia)
D. Paulin	(USA)
R. San Martin	(Spain)
A. Scott	(UK)
Valero-Sevos	(Spain)

The Chairman had sent out a circular letter dated 4 June 1999 requesting more members and following the Divisional meeting work would start in producing the first draft.

ACTION: P. Schwarcz/TC

TC 5-17 "Standardisation Format for Sports Guide" (TM Lemons)

The decision to form this TC was taken in the Barcelona meeting of the Division held in June 1998. This was confirmed by the Central Bureau in April 1999.

Terms of Reference: To prepare a report that establishes a format for sports lighting reports to use to prepare revisions of Publications CIE 42, CIE 45, CIE57, CIE58 and CIE62.

The following members agreed at Barcelona to join the committee:

G. van Den Beld	(Netherlands)
J. Roberge	(Canada)
P. Schwarcz	(Hungary)

The Chairman tabled a draft Contents Page for the Reports as outlined below:

- 1 Introduction
- 2 Scope
- 3 Definitions
- 4 Lighting Requirements/Principals
- 5 Lighting Techniques
- 6 Lamps and Luminaires
- 7 Installation and Operation
- 8 Maintenance
- 9 Bibliography
- 10 Annex

and asked for comments to be sent to him.

ACTION: T Lemons/TC

TC 5-18 "Practical Design Guidelines for the Lighting of Exterior Work Areas"
(P K Bandyopadhyay)

Mr Bandyopadhyay tabled the following Report:

The decision to form this TC was taken in the Barcelona meeting of the Division held in June 1998. This was confirmed by the Central Bureau in April 1999.

Terms of Reference: To produce an "applications" guide for exterior work areas that compliments Pub.129-1998, by updating where necessary the relevant portions of the withdrawn CIE Publication 68.

The following members agreed to join the TC at Barcelona:

D. Coatham (UK)
M. Lasinski (Poland)
P. Schwarcz (Hungary)

Papers have been circulated to these members in May 1999 and very good comments have been received from M. Lasinski and P. Schwarcz. It is proposed that the table of Contents of the new Guide will be practically the same as the CIE Publication 68, except the chapter on security lighting, for which another TC has been formed. However, the information will be fully updated as per the latest application practices.

The following time-table has been kept as the target:

The TC will finalise the draft for presentation to the Division at Istanbul, Turkey to be held in September 2000

The new Guide will be available by the next CIE Session at San Diego, USA, to be held in July 2003.

To achieve this target, full support and co-operation of all Division members are necessary. At the request of the TC Chairman the following members agreed to join the TC:

Dennis Culley (South Africa)
Dr. Bruno Weis (Germany)

Also, Tom Lemons agreed to give the address of a possible member from USA. Jan Audestad proposed the name of Mr Pertti Pylvanainen of Finland.

The TC Chairman confirmed that he has already established contacts with Mr Esko Kaswennen and Mr Pasi Nilanen. Mr Kaswennen has agreed to ask Mr Pylvanainen to join the TC.

ACTION: P. Bandyopadhyay/TC

7. REPORTERS' REPORTS

R 5-05 "Semi-cylindrical Illuminance" (P Rombauts)

A Report of around 50 pages would be ready by November 1999

ACTION: P. Rombauts

R 5-08 "City Beautification" (M. Serefhanoglu-Sozen)

Ms Serefhanoglu-Sozen produced a comprehensive Report which was available to all present and can be obtained from the Secretary to those that ask for it.

It was agreed that a TC would be the next step and would be aimed at two distinct Groups:

Study Groups: Architects, Landscape architects, Electrical and Maintenance Engineers

Target Groups: Central Government (Tourism), Local Government, Private Companies, Foundations and other.

It was also suggested that this TC could produce one of the suggested CIE Handbooks and be set up with Division 4.

It was also noted that there was a possibility of a major symposium on the subject being held in conjunction with the CIE Mid-Term Session Meeting in Istanbul in September 2001 at which both Division 4 and 5 would be present.

ACTION: M. S-Sozen/Secretary/DD

R 5-09 "Emergency Lighting" (Dr B. Weis)

Dr Weis reported that in the interior lighting sector, this subject was covered for luminaires by IEC Committee 598-2-22. However this committee was now working on the photometric properties for the luminaires and was looking to the CIE for help. It was suggested that this request should be followed up by the CB.

With regard to the application side, in Europe this had been addressed by EN 1838 and Mr Weis suggested that a TC Guide using this as a 1st Draft would be a practical way forward.

His suggested Terms of Reference were:

The Standard to specify the luminous requirements for emergency lighting systems installed in premises or locations where such systems are required. It is principally applicable to locations where the public or workers have access.

Members from the following countries offered to send information about their own Guides, and possible membership interest in a new TC, to Dr Weis:

Hungary India Japan Poland USA

ACTION: NC/DD/Dr Weis

8. LIAISON OFFICERS' REPORTS

The DD Reported on a formal liaison between CIE and CEN was due to be signed at the Warsaw Session.

A Stockmar reported on liaison with CEN TC 169, WG4: Lighting Application - Sports Lighting, had worked well and the document was now out for voting and would soon be published.

However, the proposed Standard on Exterior Work Areas, was probably being shelved for the time being and the current liaison would therefore stop.

The above mentioned formal liaison should take action if this work is started again.

9. WORK PROGRAMME

i) TC's dissolved - None

ii) New TC's:

5-xx Modelling in Sports Lighting (Chair: Tom Lemons)

Suggested Terms of reference:

To prepare a Guide to be used to specify modelling for sports lighting and give recommendations for its application for various sports.

After much debate it was decided that many aspects of this work may already be covered by TC 5-11 and that it's Chairman, Mr van den Beld, should be consulted. It was further suggested that this important topic should not be ruled out but that a Reportership be created, which was agreed by vote.

Mr Lemons agreed to be that Reporter (see below)

5-xx Emergency Lighting" (Dr B. Weis)

Suggested Terms of Reference:

The Standard to specify the luminous requirements for emergency lighting systems installed in premises or locations where such systems are required. It is principally applicable to locations where the public or workers have access.

This was agreed and future action would be discussed at the BA meeting.

iii) Reporting Topics : Changes / Additions

R 5-xx Modelling for Sports Lighting (T. Lemons, USA)

This Reportership was set up in place of a suggested TC. However, it was questioned whether there is much new data to be collected on the subject and all Division Members are asked to research any material and send it directly to Mr Lemons for a Report in September 2000.

ACTION: ALL

10. CIE-ISO/IEC STANDARDS

DD to take forward Pub. 129 as a suggested ISO Standard

ACTION: DD

11. LIASION DIVISION 4 & 5

At the GA/Board Meeting the question of setting up an "Applications" Division from parts of Divisions 3,4 and 5 had be suggested as also had a suggested to merge Divisions 4 & 5.

After much debate it was decided to take it in steps and as the Division was now planning to hold a meeting once a year, it would be sensible to hold this in conjunctio with Division 4 which already held annual meetings.

10. DATE AND VENUE OF NEXT MEETING

The next Division 5 meeting would be held in **Toronto, Canada** in early **September 2000** together with Division 4.

**CIE DIVISION 6, Photobiology and Photochemistry
Report to the Canadian National Committee
October, 1999**

Delegate: Jennifer A. Veitch, Ph.D.
National Research Council of Canada
Institute for Research in Construction
M-24, 1500 Montreal Road
Ottawa, ON K1A 0R6
jennifer.veitch@nrc.ca

The division met in conjunction with the CIE 24th Session in Warsaw, Poland, on Monday, 28 June 1999. The report is primarily drawn from notes taken at the meeting by the chair, Dr. David H. Sliney, Division Director.

1. Division Leadership

The Board of Administration agreed to waive the usual 2-term limit for Division Directors to permit Dr. Sliney to continue as DD until the 25th Session (San Diego, CA, 2003).

Division Director's Report (Highlights)

- the importance of recruiting more energetic and younger participants in CIE Division 6 activities
- the current vacancy in the Associate Division Director (ADD) position which has been vacant for several years since the tragic loss of Prof. Mutzhas. This ADD related to the subjects which did not require a background in the life sciences, such as photochemistry, photobiological measurement, testing of fabrics and shading structures, etc.
- the past year's accomplishments:
 - three reports had been published in a new issue of the CIE Collections in Photobiology and Photochemistry (Divisions of UVA1, UVA2, UVB, etc.; UV dosimetry and eye protection; and Photobiological Safety Standards for Lamps),
 - three TC reports were in the final editing and balloting process (UV Index; Blue-light hazard; and high-resolution erythral action spectrum);
 - the CIE standard erythral action spectrum and the Standard Erythral Dose (SED) Unit had been established as an ISO standard as well;
 - a 700+ page book, *The Measurement of Optical Radiation Hazards*, had been published as an outcome of the CIE/ICNIRP/NIST/CHPPM International Symposium on the Measurement of Optical Radiation Hazards held last September at NIST, Gaithersburg, MD, USA. He explained that the text had been crafted to be a handbook, which made use of the material presented at the MORH Symposium, but went much further into detail and was not a proceedings document (it is a joint CIE/ICNIRP publication).

2. TC Status

Only a few were discussed in detail. Complete details are available on request.

- Dr. Sliney noted his disappointment that Dr. Dieter Kockett was not present to report on the progress made last year in TC 6-08 on Guidelines for Obtaining Action Spectra. This was the oldest standing TC, and the report was nearly finished.
- Dr. Jennifer Veitch (CDA) reported that she had taken over as Chair of TC 6-11 on Systemic (Neuro-endocrine) Effects and she would report a final draft at a meeting of TC 6-11 to be held in conjunction with a joint meeting of the US and Canadian National Committees of the CIE to be held in Toronto, CDA in the Fall.
- It was reported that TC 6-15 chaired by Nils Svendius required a new TC Chair, inasmuch as Mr. Svendius had retired and this was a matter of "number crunching" of the currently available data. Dr. Sliney stated that he would seek a new chair to complete the project.

- Dr. Jean-Pierre Cesarini explained that he had an extensive list of photobiologically active chemical compounds which he had decided only to summarise in the most limited manner in order to complete this report. The original goal to provide in-depth information had been shown to be overly optimistic, and such a list would never be completed. He also reported on the progress of related TCs 6-24 on sunscreen testing, 6-31 on immediate pigment darkening (IPD) and 6-28 on UV-A sunscreen testing. All of these TCs were expected to meet jointly at the NRPB meeting on the health effects of UV to be held in Oxford, England in the fall.
- On behalf of Mr. Stephen Wengraitis, Chair of TC 6-25 on the spectral weighting of sunlight, Dr. Sliney presented an overhead transparency from the draft report of TC 6-25. Mr. Wengraitis, along with Dr. Sasha Madronich and Prof. John Fredericks were producing a number of tables on the spectrally weighted solar spectrum from CIE 85-1989 with an extension below 300 nm and the key action spectra, such as erythema, blue light, safety, etc.
- Mr. Stephen DiDomenico (USA) reported for Natasha van Tonder (SA) Chair of TC 6-36 on shading materials. He summarised their work in better defining the geometrical shading effects of solar umbrellas, etc. He pointed out that although the fabric in some shading structures might be listed at 50, the effective protection factor might be only 5.
- Mr. K. Kohmoto (JA) presented the status of his TC 6-39 on the UV in lighted environments. He presented the ratios of UV watts to 1,000 lm of a number of representative lamps. He stated that the data tended to fall into three general categories. This was un-weighted UV and erythemally weighted UV. He proposed three classes, I, II, and III based upon the relative UV content in the spectrum. He explained that this was not only of health interest, but also of interest to artists, museum curators, advertising display specialists, et al. This led to a discussion of their liaison with CIE TC 3-22 on Museum Lighting. Later, Dr. Ne'eman (Israel) summarised the work of TC 3-22. There was some discussion as to the state of knowledge of the action spectra of paints, pigments, newspaper (NIST action spectrum), and other materials. Dr. Ne'eman noted that some action spectra of organic dyes extended into the visible and that it depended upon the absorption spectrum of the chromophore. Liaison would continue. Other liaisons with other committees were then reviewed.
- Prof. Kuller, University of Lund, Sweden spoke on the progress of his TC 6-16, which had completed their report. After listing the participants, he explained that they had conducted a major review of the literature and he listed 71 citations on ultradian rhythms, 453 citations on circadian rhythms, quite a number related to menstrual cycles and he noted several other categories. He described how his database was developed. He explained that the only remaining task was to obtain assistance from the CIE CB in formally obtaining copyright release for some of the abstracts. Dr. Sliney explained that the report would soon be submitted for approval after a final review by Dr. Veitch and Dr. Brainard. Dr. Kuller explained that he expected final completion in September after he returns from summer vacation.
- Dr. Sliney summarised a number of other TC reports. He explained that Dr. Forbes had completed the report on the UV Carcinogenesis Action Spectrum and also was nearing completion on the carcinogenesis testing protocol. A number of other TCs had really only begun to work. He asked the participants to consider proposals for new work over the lunch hour.

3. CIE Policy Changes - Special presentation

Mr. Wout van Bommel (NL), a Vice President of the CIE, visited the D6 meeting to provide a briefing about several important changes in the direction and membership of the CIE. International or regional organisations (NGOs) and even multi-national corporations can now be supporting members (e.g., organisations like the International Olympic Committee (interested in sports lighting) and large corporations could provide support and have the honour of putting a CIE logo and "supporting member" on their stationery, etc) This change is in support of the new CIE business plan and is aimed at increasing revenues to sustain the organisation.

Divisions are also now authorised to prepare research agendas and even to propose particular research teams, and that such documents could be used by researchers in their grant proposals. Furthermore, the CIE could approach potential corporate sponsors for research funding in a needed area. This was of

particular interest to some of the research scientists in attendance. The machinery for this type of activity was still not quite in place.

The attendees were highly receptive to Mr. van Bommel's presentation, although Mr. Kohmoto noted that there was concern that the new approach might reduce income from local divisions of international companies which was critical to the life of the national committees. This led to further discussion and Dr. Sliney explained that the CIE General Assembly had solved this problem with certain safeguards. Dr. Cesarini noted that COLIPA and similar organisations could be approached for support. He, Dr. Sliney and others agreed to explore those groups in the field of photobiology.

The CIE Board of Administration has been exploring the idea of a series of CIE Handbooks, also as potential revenue-generating activities. Dr. Sliney suggested that Division 6 could consider developing a *CIE Handbook on Photobiology*. Such a project would clearly take several years, given the past performance of voluntary workers, but within the next one or two quadrenniums it is not unrealistic. We now have a great deal of material prepared in the MORH book and with a number of recent TC reports on many topics, it was not unreasonable to expect that this material could be arranged into a Handbook. Dr. Sliney asked for the attendees to consider whether they would be willing to be an editor or co-editor of the Handbook.

4. New TCs and Reporterships

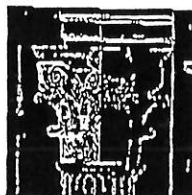
- TC 6-51 would examine the proper "Determination and Measurement of Passive UV Air Disinfection" under the chairmanship of Richard Vincent (US). Initial members would be Cabaj (A), Bergman (USA) and Kohmoto (J). The Terms of Reference would be: To specify the biologically meaningful measurement distances and positions in installations of UV germicidal lamps for open, upper-air disinfection.
- TC 6-52 would develop a "Standardised Solar Simulator Spectral Irradiance Distribution for Sunscreen Testing" under the chairmanship of Robert Sayre (USA), with an initial membership of Jean-Pierre Cesarini (F), Frank Wilkinson (Aus) J. Chandon (F), and Daniel Berger (USA). The terms of reference would be to provide a standardised solar simulator emission spectrum for testing sunscreens. Spectral tolerance values will be provided.
- TC 6-53 would re-examine "Personal Dosimetry for UV Radiation." A number of new devices have developed since the publication of the previous Division 6 report on this subject.
- Reportership: "Short-hand Notations of UV Selected Bands in Photobiology and Photochemistry." (Prof. Masako Sasaki (J)) :to examine terms such as "UV-A" and "UV-B" as well as "Near UV" and "Middle UV" and their use by different groups using definitions at variance with the standardised CIE terms, UV-A (315 - 400 nm) and UV-B (280 - 315 nm) and relate the impact in summations of spectral irradiance. CIE Report 134/1 provided the rationale for retaining the CIE definitions which have not changed since the 1930's, but this report will explain computational impact and may also suggest alternative terms for specialised purposes.

5. Next Meeting

D6 will meet at the International Congress on Photobiology, first week of July 2000, San Francisco, CA (tentative).

6. New CNC Delegate to D6

My term as Division 6 delegate ends at the end of 1999. I am unable to continue as a delegate because the work of the division at present is too far outside my expertise for me to do a competent job, and because of other volunteer commitments. I have approached Dr. Yvon Deslauriers of Health Canada, and he has agreed to serve for the next term (subject of course to the agreement of the CNC and of the Director-General of INMS).



DUSCHENES & FISH / D.F.S. Inc.

A R C H I T E C T E S

CNC/CIE Report to the 44th Annual Meeting

Division 7 – General Aspects of Lighting

Canadian Representative :

Robert White
Suite 1001
1425 René-Levesque West
Montreal, QC H3G 1T7
Tel: 514-879-1708
Fax: 514-861-6219
Email: ombres@excite.com

This is the shortest report on record.

According to a letter ballot among the National Committees, the division was dissolved.

TC 7-06 (C. Hermann: Lighting Terminology) was transformed into a Reportership to the Board RB-01

TC7-08 (R. Vincent: Lighting Research Overview) was transformed into a Reportership to the Board RB-02

The CIE Division 8 "Image Technology" and its Activities in 1998/1999

Report to the CNC-CIE, October 15, 1999

Réjean Baribeau
Institute for National Measurement Standards
National Research Council Canada
Ottawa, Ontario K1A 0R6

Phone: (613) 993-9351
Fax (613) 952-1394
E-mail: rejean.baribeau@nrc.ca

1- Introduction

The CIE Division 8 "Image Technology" was created in 1998 and held its first meeting on 29 September 1998 where its chairmen, Terms of Reference, and working programs for 5 Technical Committees (TC8-01 to TC8-05) were approved. The 1999 meeting took place in Warsaw on 28 June, where a new technical committee (TC8-06 Image Technology Vocabulary) was approved, as well as two Reporterships (R8-02 Reportership on Fluorescence, R8-03 Reportership on potential CIE and IEC/TC100/PT61966 interactions). The next meeting will be at the Colour and Imaging Institute in Derby, England on 10 April, 2000. Section 2 summarizes the current organization of the CIE Division 8, and Sections 3-4 report on the activities inside the various Technical Committees and Reporterships.

2- Organization

Terms of Reference:

To study procedures and prepare guides and standards for the optical, visual and metrological aspects of the communication, processing, and reproduction of images, using all types of analogue and digital imaging devices, storage media and imaging media.

Domain d'activité:

Etudier les méthodes et préparer des recommandations et des normes, relative aux aspects optiques, visuels et métrologiques de la communication, du traitement et de la reproduction des images, applicables à tous les types de dispositifs d'acquisition, de conservation et de restitution, aussi bien analogiques que numériques.

Web site: <http://www.colour.org/>

2.1 Division Officers

Director of Division	Todd Newman
Associate Directors	Dr. Mike Pointer (CIE liaison) David McDowell (external liaison) Dr. Noboru Ohta (reporters)
Secretary of Division	Michael Stokes
Editor of Division	Dr. Mike Pointer

2.2 Official Division Members

CIE Division 8 has 34 member countries. Canadian Member: Réjean Baribeau

2.3 Liaisons

CIE Division 8 has liaisons with the following organizations and liaison officers:

AIC - Association Internationale de la Couleur
ISO/TC36: Cinematography
ISO/TC38/SC1: Textiles: Colour Fastness & Measurement
ISC/TC42: Photography (Mike Pointer)
ISO/TC61/SC5/WG1:
ISO/TC159/SC4/WG2: Ergonomics/Sign & Contr/VDU Requirements
ISO/TC187: Colour Notations
ISO/TC6/WG3: Paper Board and Pulp - Optical Properties
ISO/TC130: Graphic (Danny Rich)
ISO/IEC/JTAG2: joint technical advisory group for (Tim Kohler)
ICC -- International Colour (Tim Kohler)
CCPR - Comité Consultatif de Photométrie et Radiométrie,
BIPM
IEC/TC100 Multimedia Equipment and (Danny Rich)
ASTM/E12 Color and Appearance (Mike Pointer)

2.4 Publications from Division 8

None.

2.5 Technical Reports

None.

2.6 Technical Committees

TC8-01: Colour Appearance Modeling for Colour Management Applications
TC8-02: Colour Difference Evaluation in Images
TC8-03: Gamut Mapping
TC8-04: Adaptation under Mixed Illumination Conditions
TC8-05: Communication of Colour Information
TC8-06: Image Technology Vocabulary

2.7 Activity Reports

The following activity reports are available in electronic format at the CIE Division 8 Web site:

Report from 29 September 1998 Division meeting
Divisional Status report prepared for 24th Session of the CIE
Report from 28 June 1999 Division meeting
Attendees at the 28 June 1999 Division meeting

3- Technical Committees work in progress

TC8-01: Colour Appearance Modeling for Colour Management Applications

Terms of Reference:

To study, develop, and recommend a colour appearance model based on CIECAM97s for use in digital colour management and to develop clear usage guidelines for common applications. Consideration is to be given to colour and engineering requirements for open colour management systems.

Web site: <http://www.colour.org/tc8-01/>

The initial TC membership has been determined and discussion has begun as to what should be the major technical and engineering issues that need to be solved. The following issues had been identified as of Fall 1998: Floating J_{min} , Categorical Surround, Gamut Size Issues, Invertability, Cartesian Representation, Complexity, Chroma Expansion, and Viewing Condition Parameter Guidelines (see http://www.colour.org/tc8-01/QR_Fall98.pdf for more details). Regarding the first of those issues, Luo and Hunt have developed a modification that makes $J=0$ when $L^*=0$. Current work plan includes the setup of a CIECAM image processing testbed at HP Labs.

TC8-02: Colour Difference Evaluation in Images

Terms of Reference:

To study, develop and standardize methods to derive colour differences for images.

Web site: <http://www.colour.org/tc8-02/>

The working draft interim report "Methods to Derive Colour Differences for Images" has been produced. It describes visual and instrumental methods for the derivation and description of colour differences for digital images. Topics discussed include: factors affecting the evaluation of colour differences for digital images, reference colour digital images (the "ISO TC130 images" available on a CD-ROM), statistical processing of colour differences, instrumental and visual colour difference methods, and reporting colour differences using a colour reproduction index. Plans are to develop guidelines to implement these recommendations based on both visual and measured data for a variety of colour imaging technologies, and to analyze and derive an industrial color-difference evaluation method based on a quantitative model of color-differences for pictorial images for an average observer under conditions typical of industrial imaging applications.

TC8-03: Gamut Mapping

Terms of Reference:

To study, develop and recommend an optimal solution for cross-device and cross-media image reproduction. This solution will provide a standard procedure to calculate the colour gamut of an image, an imaging system, or its components, and either one algorithm, or a set of algorithms and rules for use in specific applications.

Web site: <http://www.colour.org/tc8-03/>

In short, the work program of this TC is:

- To review current Gamut Mapping Algorithms (GMAs).
- To provide guidelines for the evaluation of GMAs.
- To review results of GMA evaluation.
- To recommend a standard GMA, or a small number of GMAs with rules for deciding which one to use.

The survey of GMAs has been completed. A document *Survey of Gamut Mapping Algorithms* was prepared in March 1999 and has been submitted to Color Research and Application for publication. A draft of it can be downloaded as a PDF file, and extracts in HTML format are available as well.

The following sections of the guidelines for the evaluation of GMAs have been suggested:

1. Test Images.
2. Media.
3. Viewing Conditions.
4. Measurement.
5. GMAs.
6. Gamut Boundary.
7. Colour Space.
8. Experimental Method.

Each is to be prepared by a small number of TC members.

TC8-04: Adaptation under Mixed Illumination Conditions

Terms of Reference:

To investigate the state of adaptation of the visual system when comparing soft-copy images on self-luminous displays and hard copy images viewed under various ambient lighting conditions.

Web site: <http://www.colour.org/tc8-04/>

The work program of this TC is:

- To gather the members
- Survey past relevant works
- Share a standard method and guideline for cross-examination
- Perform cross-examinations at different laboratories
- Publish a Report

Members have been gathered and a survey of relevant work (authors, titles, and, for some, abstracts) has been made available on the Web site.

The TC has agreed on the following:

Images of sizes between 6x8 in. and 8x10in. will be prepared using the S-LMS, CIECAM97s and CIECAM97s2 models. Soft-copies (on 6500K and 9300K displays) and hard-copies (under diffuse "close to F11" top lighting) will be shown side by side to at least 15 well-selected test observers. The goal is to find the percentage of adaptation between the two illuminants for the best match.

Actions to be carried-on include the creation and distribution of the photographic prints and the determination of the best available lamp. Digital images for testing the observers for colour vision will also be obtained. The TC will also consider as a subset of their terms of reference the problem of white point estimation under mixed illumination for a single media.

A side note is that the TC thinks CRT monitor should be characterized as good as ΔE^*_{ab} of 2~3.

TC8-05: Communication of Colour Information

Terms of Reference:

To standardize a minimal set of techniques that enable unambiguous and efficient communication of the colour information in images. Two fundamental approaches will be addressed:

- The association with the image data of additional data that describes the colour space of the image data.
- The representation of the image data in a standard colour space.

The standard will also define a minimal set of standard colour spaces that addresses a wide range of imaging applications. Whenever possible, existing standard colour spaces will be used in preference to creating new ones.

Web site: <http://www.colour.org/tc8-05/>

This TC is to meet at the Color Imaging Conference in Scottsdale in November, 1999.

TC8-06: Image Technology Vocabulary

Terms of Reference:

To liaise with TC7-06 (International Lighting Vocabulary) and collate definitions of terms associated with image technology.

This is a newly formed CT.

4- Reporterships

The following Reporterships have been ratified:

R8-02 Reportership on Fluorescence

C McCamy (USA)

Terms of Reference

To report annually on problems involving fluorescence in image technology, activities in the standards bodies and publications that bear on fluorescence problems, and to recommend the formation of a technical committee if such activity appears desirable.

R8-03 Reportership on potential CIE and IEC/TC100/PT61966 interactions

H Ikeda (Japan)

Terms of Reference

To produce a report on how CIE Division 8 should interact with IEC TC100 PT61966. End Date: March 2000.