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| **Reported by (Name):** | **Geoffrey S. Ibbott, Ph.D.** |
| **Organization:**  | **International Electrotechnical Commission** |
| **Position Title:** | **Convenor, Working Group 1 of Subcommittee 62C** |
| **Activity:** | **IEC General Meeting, including meetings of WG 1, Subcommittees 62B and 62C, and Technical Committee 62.** |
| **Meeting Dates:** | **October 28 to November 4, 2022** |
| **Meeting Location:** | **Hilton Union Square, San Francisco** |
| **Payment $:** | **See expense report** |
| **Reasons for Attending or not Attending** | **Attended to represent US National Committee and to Chair Working Group 1.** |
| **Issues from Previous Meetings or Year:** | **See report** |
| **General Description of Activities of the Organization and/or Meeting:** | **IEC writes international standards governing the safety and essential performance of electrical equipment. WG 1 is responsible for radiation therapy equipment.** |
| **Issues for AAPM:** | **No immediate issues** |
| **Budget Request ($):** | **See WGIEC budget** |

**Working Group 1 – Meeting Report**

**October 28th to November 1st 2022 in San Francisco, California, USA**

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| **Meeting venue:** Hilton Union SquareRoom: Golden Gate 6 | **Begin**: 2022-10-28, 09.00**End:** 2022-11-01, 17.00  |

***Meeting Attendees***

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| TC 62/SC 62C Secretary | Ms Regina GEIERHOFER | Austria |
| TC 62/SC 62C Assistant Secretary | Ms Annette HAGEN | Germany |
| Convenor | Mr Geoffrey S. IBBOTT | US |
| Member | Mr John ALLEN | UK |
| Member | Mrs Giulia ARICO | Belgium |
| Member | Mr Luca BENINI | Belgium |
| Member | Mrs Caterina BRUSASCO | Belgium |
| Member | Mr Ilsung CHO | South Korea |
| Member | Mr Alan COHEN | US |
| Member | Mr Giuseppe FELICI | Italy |
| Member | Mr Shigekazu FUKUDA | Japan |
| Member | Mr Yasushi ISEKI | Japan |
| Member | Mr Thomas JAKOB | Switzerland |
| Member | Mr Kari JYRKKÄLÄ | Finland |
| Member | Mr Dominik KOWALSKI | Germany |
| Member | Mr Michael MOYERS | US |
| Member | Ms Anita NILSSON | Sweden |
| Member | Mr Jim PERCY | US |
| Member | Mr Anuj PURWAR | US |
| Member | Mr Abdul SAYEED | UK |
| Member | Mr Kazuo TOMIDA | Japan |
| Member | Mr Lindsay TREMETHICK | Australia |
| Member | Mr Johan VAN DEN BRINK | The Netherlands |
| Other participation | Ms Gwe-Ya (Grace) KIM | US-TAG |
| Other participation | Ms Neelu SONI | US-TAG |
| Other participation | Mr Steven SUTLIEF | US-TAG  |
| Young Professional Observer | Mr Murat Gündüz | Turkey |
| Young Professional Observer | Mohammed Hasan | UAE |

**Administrative** The WG members and observers were welcomed and introduced. The IEC Code of Conduct was reviewed. The agenda was reviewed and approved.
Brief reports were received from the Chair and Convenor.

***Progress on Development Work***

**IEC 60601-2-44, CT Safety**. Geoff Ibbott reported on the discussions he and Thomas Jakob have had with SC 62B/WG 30. 62B has asked that WG 1 discuss the requirements and justification for accuracy to relay to 62B/WG 30. It was agreed that in most cases, accuracy of 1-2 mm was required for RT planning, and that non-perpendicularity between the CT gantry and patient positioner should not lead to larger errors. It was also agreed that as a safety standard, 60601-2-44 should specify conditions to maintain essential performance, and that manufacturers should be required to disclose the actual performance of their equipment. Geoff and Thomas will relay our recommendations back to 62B/WG 30.

**IEC 63464, Neutron Capture Therapy.**Hiroshi**(“**Techie") Akiyama and the Japanese NC had provided a Powerpoint presentation for Geoff Ibbott to review with WG 1. The PPT explained the history behind the development of the new project and the anticipated timeline for development of the standard. The expert team expect to have a 1st CD ready for circulation in late July 2023. It was noted that the project had been assigned a 5-digit number, but that our intent was that the standard be published as a Part 2 standard in the 60601-2-XX series. Geoff agreed to address this with the Secretariat.

[NB: Geoff spoke with Regina and with Miroslav Siket who agreed that we could request that the project be a Part 2 standard and be given a 60601-2-XX number when we officially move to the next stage of the project.]

**60601-2-29, Simulator Safety:** WG 1 agrees to maintain the current edition of this standard, and to prepare amendments only as needed for compliance with the general standard.

**All other part 2 standards:** Revisions are needed for Ed. 3.2 of General Standard. It was agreed that Geoff Ibbott would add these to the WG 1 program of work to complete these amendments as soon as practical.

**60601-2-64 A1, Light Ion safety.**Kazuo (“Elvis") Tomida and the Japanese National Committee had distributed a CD in August and comments from National Committees had been submitted. The major technical comments were reviewed and discussed at length. Most were resolved, particularly clauses having to do with the measurement of neutron leakage dose. Further discussion was held to resolve clauses having to do with gating, to bring them in line with other 62C standards. The expert team will plan to prepare a Working Group draft for circulation in advance of the spring meeting of WG 1.

**62274 Ed 2, Treatment Course Management.**  Jim Percy and Abdul Sayeed presented a document that proposed the scope of the new edition. Discussion was held on some details but in general there was consensus. Because this standard is quite dependent on the treatment planning standard, IEC 62083, it was agreed to defer further work until 62083 Ed 3 is substantially complete.

**60601-2-68 A1, IGRT Safety.**Thomas Jakob continued the review of comments to the A1 that had been begun during an earlier virtual meeting. Several of the most controversial comments had to do with possible conflicts with other part 2 standards. These were resolved and Thomas will prepare a new CD for distribution and review in time for the next WG meeting to be held in the spring of 2023.

**62083 Ed 3. TPS Safety.** Thomas Jakob reviewed the comments received on CD3. There was extended discussion regarding site testing to confirm the correct import of CT data that was not resolved during the meeting. Most other comments were addressed. Thomas will prepare a Working Group draft for circulation

**60601-2-XX. FLASH Radiotherapy (PWI 62C-1).** Guiseppe Felici reviewed the developments and early investigations leading to the construction of equipment dedicated for FLASH radiotherapy. He explained the origins and development of the Preliminary Work Item proposal. The PWI was approved by National Committees in May 2022. Lindsay Tremethick mentioned that WG 3 has not considered a standard or amendment for dosimetry equipment for FLASH. Topics to be included in the standard include: Temporal beam structure; adequacy of radiation detectors; monitoring of energy; treatment planning; radiation protection. Energy monitoring of an electron beam is necessary because at high beam current, the power absorbed by the beam is comparable to the power absorbed by the accelerator waveguide. It is proposed that electrons and light ions be considered separately. Giuseppe will prepare a Working Group draft for review in advance of the spring 2023 meeting of the WG.

**61217 Ed 3. Coordinates.** Geoff Ibbott reviewed a small number of major issues that had been raised in National Committee comments to the circulated CD. Attendees agreed that the proposed restructuring of the standard, to include gantry, treatment head, source(s) and detector(s), and an independent imaging system. It had been recommended, and was approved, to require that angular movements be carried out as pitch first, then roll, and then yaw, followed by linear translations in any order. Geoff will prepare a 2nd CD for review in advance of the spring WG meeting.

**60601-2-XX. MR-IGRT Safety**. Abdul Sayeed led a discussion of comments on the PNW draft. A lengthy discussion was held on the question of the alignment between the MR image axes and the fixed coordinate system axes. Ab expects to complete a WG draft for discussion in the spring 2023.

**63322. Source Security.**Anita Nilsson reviewed the history behind the 63322 standard and the early development work. She reminded the WG that the standard is focused on source security and will not affect any safety requirements for equipment employing radioactive sources but recognizes that safety and security are synergistic. She briefly discussed the outline of the standard and approaches for the next draft. Some complications had been considered by the expert group, including our ability to impose requirements on the Responsible Organization. Regina explained that while this is unusual in TC62, it is quite common in other IEC committees, so we should not be hesitant. It is understood that a certificate of compliance cannot be issued to the responsible organization. It was also recommended that the requirements for the manufacturer be separated clearly from the requirements for the RO.

WG 1 agreed that the best approach would be to incorporate the text and methods from EN 1143 rather than to reference it. WG 1 forwarded a request to 62C that resulted in the following resolution: ‘SC 62C asks IEC Central Secretariat to contact the committee CEN/TC263 responsible for EN 1143-1, regarding the usage of the standard in IEC 63322 ED1 “Security of Medical Electrical Equipment Containing High-Activity Sealed Radioactive Sources” which is currently in the work program of SC62C. SC 62C asks permission to use the standard EN 1143-1 in whole or in parts in its project.’

There was discussion about the preferred method of publishing; the WG felt that publication as a stand-alone standard was preferable, then the part 2 standards could require compliance with 63322. Anita and Geoff will talk with Per Kjäll, the lead writer, about finishing a WG draft in time for review in the spring.

**63321, IGRT Performance.**Dominik Kowalski continued the review of NC comments that had been submitted on the CD. This review had been started during a virtual meeting held earlier this year. Several difficult topics having to do with image quality and registration accuracy were discussed and resolved. Dominik will prepare a Working Group draft for circulation and review before the spring meeting.

**Upcoming Meetings:** The Working Group is aware that TC 62 is discussing meeting independently in September 2023, in Seoul, while the General Meeting is held elsewhere at another time. So that our two meetings in 2023 aren’t too close together, we propose to meet in late April or latest early May, 2023, somewhere in Europe. Several groups were approached to consider hosting a meeting during this time frame.

Respectfully submitted,

Geoffrey S. Ibbott, Ph.D.

November 2, 2022