ADMINISTRATION OF THE US NUCLEAR TECHNICAL ADVISORY GROUP (NTAG) FOR ISO/TC85

NIST Cooperative Agreement No. 70NANB4H1136 with ASTM

ANNUAL REPORT
08/15/05 to 08/14/06

A. OVERVIEW

Background. The United States participates actively in the *nuclear fuel, reactor technology* and *radiation protection* standards development efforts of the International Organization for Standardization (ISO). The US involvement in this standards development effort is coordinated by the US Nuclear Technical Advisory Group (NTAG). Since 2000, ASTM International has administered NTAG, which is responsible for the US review and balloting of all the standards developed by ISO Technical Committee 85 (ISO/TC85) on *Nuclear Energy*. The administration of NTAG is funded by a grant from the US Government and by contributions from US industry. Active US involvement with ISO is critical because it allows direct US influence in the development of international standards that govern many aspects of US business activities both here and overseas.

All project goals of the original 3-year NIST Cooperative Agreement were accomplished, and progress was discussed in semiannual reports and in the Final Report dated February 22, 2004. After a formal limited competition in the summer of 2004, ASTM International and NIST executed a new 5-year Cooperative Agreement No. 70NANB4H1136 starting on August 15, 2004 for ASTM to continue to administer NTAG. The US Department of Energy, the US Nuclear Regulatory Commission and NIST continue to provide the funding for this grant, but the release of the funds is conditional on ASTM securing a 25% industry "cost share" contribution. This requirement is being partially met by ASTM donating its normal 15% indirect costs while at the same time the nuclear industry is being asked to provide or renew past financial donations. In Calendar Year 2005, generous financial contributions were received from fifteen organizations: AREVA, Bechtel Power Corporation, Canberra Industries, Duke Energy Corporation, the Electric Power Research Institute, Gamma Engineering Corporation, General Atomics, Landauer Incorporated, the National Institute for Standards and Technology, Oak Ridge National Laboratory, Overhoff Technology Corporation, Thermo Electron Corporation, the US Department of Energy, the US Nuclear Regulatory Commission and Westinghouse Electric Company.

Membership. Technical experts from the US now review all the nuclear standards being developed or revised by ISO, and the US chairs an important subcommittee (SC6 on *Reactor Technology*) and several working groups. Although membership of NTAG has grown to 154 "active" participants, an aggressive effort to recruit new members representing US industry continues. As a result, the United States now has an average of 4 technical experts formally placed on each of the 25 active ISO working groups. A number of the new experts have already been interacting with their counterparts in other countries in the development and updating of international nuclear–related standards, and the US has been instrumental in forcing the forward movement of several standards of interest to the United States. Updated NTAG Membership Address Lists were distributed to all NTAG members in August and December, 2005 and May 2006.

NTAG Management Team. The duties of the NTAG officers, US Overall Advisors, Technical Experts and other contributors are described in a 2002 document "*Responsibilities of Elected Officers and Members of NTAG*". In September 2005, a Nominating Committee consisting of James F. Mallay, Joseph C. McDonald, Wade J. Richards and Harry Farrar was formed to search for and select nominees for eight elective NTAG positions. The committee met by telephone to discuss the personal attributes needed to fulfill the various positions and to discuss candidates who had already expressed an interest in serving. During October, the committee sought out additional candidates

and discussed their willingness to take on an increased NTAG role and to make sure they had the necessary financial support to fulfill the duties. A total of 18 people expressed an interest. The committee met again late in October and finalized their selection.

A ballot was sent to all NTAG members, and the election results were subsequently distributed on November 10, along with a number of appointed positions. ASTM had earlier appointed Todd Sandler, Don Spellman and Harry Farrar be NTAG Administrator, NTAG Secretary and NTAG Chairman, respectively. The four Vice Chairs and five US Overall Advisors were approved unanimously by all 63 NTAG members who voted. The Deputy Advisors and Liaisons were appointed subsequently by the Overall Advisors and by Farrar, respectively. The resulting 25 positions comprise the NTAG Management Team.
In June 2006 Harry Farrar suffered complications as a result of an operation and is on a long road to recovery. To continue NTAG work in his absence ASTM appointed George W Campbell as Interim Chair with the support of the other 3 Vice-Chairs and the NTAG Administrator.
Don Spellman resigned as Secretary in 2006 and Gary?? Was appointed Interim Secretary.
Don Spellman was elected as the US liaison to SC6 since Wade Richards was proposed as Convener of SC6.

NTAG Meeting in Washington. A half-day NTAG meeting was held during the ANS meeting in Washington DC on Wednesday, November 16, 2005, principally to handle administrative matters. Seventeen NTAG members participated in person, with an additional nine members connected by telephone. Farrar reviewed the recent election and changes in the NTAG Management Team. He noted that four Vice Chairs have been elected with the intent to spread some of the Chair's responsibilities and accomplish a significant number of actions that need to be completed in the short term. Farrar stated his intent for one of the new vice chairs to replace him in approximately one year. The position of NTAG International Liaison remains open.

Reports were presented on the interactions between US experts and the various ISO subcommittees and working groups. Particular attention was given to SC6 on *Reactor Technology*, which is chaired by the United States, and the fact that several US initiatives to develop standards in *emergency preparedness* and *nuclear facility siting* were not accepted by a number of other ISO member countries, partly because such standards might conflict with IAEA "standards". The ANS Standards Board Chairman, Prasad Kadambi, expressed his opinion that it might help if NRC officially recognizes a difference between consensus standards and other documents called standards. Harry Farrar then appointed a subgroup led by Brian Grimes and Don Spellman to examine the relationship between ISO and IAEA on standards development, and perhaps recommend changes to an existing *Memorandum of Understanding* between ISO and IAEA, developed in 1981. Farrar subsequently obtained and distributed several documents written on this subject in the early 80s and late 90s. Farrar concluded the meeting by reminding everyone that the most important goal of NTAG is making sure that ISO nuclear standards provide a "level playing field" and properly reflect the interests of the United States. All NTAG's efforts to find new members, to raise money, to improve the website, to improve document distribution, etc. are secondary, and should be designed to make it easier to get top US experts to spend valuable time to help generate good standards.

Periodic Meetings of the NTAG Chair and Four Vice-Chairs. At the NTAG meeting in Washington on November 16, 2005, Harry Farrar proposed that he and the four NTAG Vice-Chairs (George Campbell, Gary Smith, Al Tschaeche, Mike Westfall) hold regular conference calls to discuss the results of the NTAG election, to plan the future direction of NTAG and to figure out how best the Vice-Chairs could contribute to this effort. As a result, they had two very-productive 2-hour calls on December 2 and December 9, and have conducted additional calls approximately every month.

The problem of obtaining financial support from government and industry for ASTM's administration of NTAG was reviewed and actions assigned in each meeting. All the Vice-Chairs agreed to assist in this effort, and several prominent organizations that the group felt should be supporting our efforts were identified. Farrar pointed out that Technical Experts are NTAG's main resource, and that there are still many nuclear-related companies in the US (such as GA, GE and Westinghouse) that are very under-represented on the various ISO working groups. He then requested assistance from the four Vice-Chairs to identify additional US technical experts, and forwarded copies of typical invitation letters and explanatory material. Farrar then emphasized the importance of personally contacting candidate experts, and that a personal call and additional information from the Overall Advisor is important. Al Tschaeche has followed up on his

suggestion to develop a draft agreement letter that technical experts would be asked to sign formalizing their agreement to participate in the ISO standards development process. This letter is being reviewed by the Executive Committee.

Farrar expressed the desirability of having a brief document describing NTAG and its procedures, to be given to existing and new members to help them understand why NTAG is needed, and what members are expected to do. Such a document would be helpful in recruiting new technical experts, raising money, and would form the centerpiece for a revamped NTAG website. In the time period between the two telephone calls, Farrar distributed copies of an NTAG information package prepared by Todd Sandler, intended as a starting point. In the discussion that followed, the group decided to generate two documents. The first one: "*What is NTAG?"* will perhaps include a brief description of responsibilities of technical experts, and will be written by Al Tschaeche. The second will be on *NTAG Operating Procedures*, including document distribution, to be prepared by George Campbell. A key function of NTAG is to organize the documentation (reports, technical comments, ballots, meeting notices, etc.) received from the TC85 Secretariat (France), from ISO Headquarters (Switzerland) and from ANSI (New York), and to distribute these materials to the appropriate NTAG technical experts and members for action. The set of operating procedures is in draft, has been reviewed by the Management Committee and is expected to be submitted to the membership for vote in October 2006. The new document entitled "What is NTAG" is also in draft and will be submitted for member vote in October 2006.

The group agreed that the existing NTAG website needs to be upgraded and updated. Some old information currently on the website should have been replaced years ago. Gary Smith offered to lead the effort and will work with the NTAG Administrator, Todd Sandler who is also our contact point with the firm that maintains the website for ASTM. Gary will make an effort to improve the site appearance, remove expired documents, make the site more useful and more likely to be read, and will make sure the site is easy to find. It was agreed that links to related ASTM C26, IEC, IAEA and perhaps other activities need to be added. In addition to this, Mike Westfall renewed his offer to help develop an improved document distribution procedure, and to develop or adapt a document tracking table that will provide a running list of all outstanding ISO documents that need approval or attention. The plan is for the table to include, all in one place, document designations and titles, the applicable SC/WG, the responsible US persons, deadline dates, etc. This table will be placed on the NTAG website and will be updated by Todd Sandler whenever a new document becomes available. The database enabling NTAG member access to the website has been completed and is in the process of being verified. NTAG technical members have been added to the system and will have access to the tables from the restricted portion of the website. It is anticipated that this access will be rolled out by mid-august. NTAG members will be notified about how to access the tracking tables. The seven document-distribution functions remain as described in the NTAG procedures document. The NTAG webpage is currently located on the NTAG Committee page on the ASTM International website, www.astm.org. The NTAG link is: http://www.astm.org/cgi-bin/SoftCart.exe/COMMIT/COMMITTEE/085.htm?L+memberstore+ridn2452.

Resolution of ANS Copyright Questions. For many years, it was generally understood that the American Nuclear Society (ANS) would allow the use of certain nuclear standards as the basis for developing ISO standards on the same subject. In fact, ANS was instrumental in the formation of SC6 for this purpose in the mid-1990s. However, copyright questions and uncertainty as to whether the US would be permitted to distribute these ANS standards in 2005 also contributed to the failure of ISO member countries to approve the development of new ISO standards on *emergency preparedness* and *nuclear facility siting*. After a lot of discussions and preparations, and help from Jim Mallay, on November 17, 2005, the ANS Board of Directors approved releasing selected ANS standards to ISO for consideration as part of the basis for new international standards on nuclear technology. The exact wording of a caveat to be included whenever ANS releases a standard was subsequently worked out by ANS to everyone's satisfaction.

ISO Procedures for Writing and Balloting Standards. Early in December there were many letters and phone conversations concerning the use of ANS standards as the basis for ISO standards, and a lot of speculation on what the resulting ISO standards would look like. Some of the comments expressed a hope that the ANS standards would be adopted by ISO without change (highly unlikely), or that the outcome might be an ISO/ANS standard (not an option). Farrar then commented that much of the speculation was the result of a lack of knowledge about the ISO process for developing standards, even though he had sent a complete set of ISO Directives to most of those involved on two previous occasions: in February 2002 and again in January 2005. Farrar then, on December 11, wrote another letter

to the NTAG Management Team and to all the US members of SC6, describing the exact process, and enclosing the latest versions of the ISO Directives (Parts 1 & 2, and a supplement), along with a model ISO manuscript. In the letter, he pointed out the specific applicable pages, and urged the key players to print out and read the rules.

TC85 Meeting in Ottawa, Canada. The biennial international meeting of ISO/TC85 on *Nuclear Energy* in Ottawa, Canada took place on June 19 - 23, 2006. During this period, Subcommittees 2 (*Radiation Protection*), 5 (*Nuclear Fuel Technology*) and 6 (*Reactor Technology*) as well as Working Group 1 3 (*Dosimetry for Radiation Processing*) conducted multi-day working group **technical** meetings. A total of 28 NTAG technical experts attended the TC 85 meeting. (see the attached list) The host hotel was the very elegant Château Laurier.
. Complete sets of resolutions and committee minutes for SC2 (Radiation Protection) as well as TC85 and all of the subcommittees are available and these will not be repeated. They are posted on the ASTM web site
http://www.astm.org/COMMIT/ISO/ISOTC85/TC85_SubcomInfo.htm

Special Session on Harmonization of Standards

The US led this session.

A special session was held on the harmonization of standards. The basic premise was that the IAEA documents do not have the status and review of standards. Unfortunately the IAEA representative was unable to attend this session. Some points that came up: 1. review of ISO standards is dependent upon the member countries. ISO expects that the standards will be circulated for wide review within the various countries including public comment. 2. IAEA "standards" do not receive wide review. 3. Improvement is needed in the liaison between IAEA and ISO—particularly in SC6 and SC5. 4. Noted by Carolyn MacKenzie (IAEA) in another session: the IAEA represents international regulatory bodies and the ISO represents industry. 5. Safety guides are IAEA approved and an IAEA requirement.

The subject of liability was brought up and whereas standards developers could be liable in the US the French noted that the liability was always with the operator. A resolution was put forward that the SIO form a task force to liaise with the IAEA on the memorandum of understanding (MOU). An MOU does exist, but apparently has not been effective.

Ad Hoc Session on Emergency Preparedness and Security
The US had proposed an Ad Hoc Standards group to prepare an emergency preparedness standard. The conclusion of TC85 was that such a standard is not a technical standard and that such standards are the responsibility of the regulatory bodies from each country. TC 85 did agree that if TC223 did ask for a Nuclear technical emergency preparedness standard that it would as SC 6 to prepare one. In addition, TC 85 requested the US to recommend a TC85 liaison to TC223. NTAG is in the process of finding the liaison with the help of Don Spellman.

ISO TC 85/SC2 MEETING SUMMARY REPORT
Ottawa, Canada; 18-23 June 2006
KL Swinth

Opening Session/Welcome

The openings for the TC85 and TC85/SC2 sessions were back to back. The new chair of TC85 was introduced. He is Bernard Sevestre who is Deputy Director of Saclay. He was quite impressive in his grasp of the standards process and his interest in seeing the process evolve in a positive direction. It was noted that nuclear power is poised for additional growth and that it was felt that a lot of the growth will be through international cooperation. The ISO central office representative provided information on the initiatives and vision of the ISO. A couple of points were the promotion of standards over technical regulations, working on global relevance, providing guides for conformity assessment (accreditation standards), training and enhanced tools for standards development. It was noted elsewhere that in the future voting will be done directly on the website, documents will be submitted directly to the site and notifications of document availability will be automatically sent out.

TC85/SC2 Working Group Sessions

The meetings of the working groups in Ottawa included working groups 2, 5, 11, 13, 14, 17, 21and 22. I spent most of my time with working group 2 due to my convenorship of SG0, but attempted to follow the work of WG17 because of my interest in the 7503 series of standards (contamination measurement) which are now undergoing revision in this working group. I met separately with members of other working groups to discuss their progress and any problems; particularly with US participation.

WG2--Reference radiations – Peter Ambrosi, Germany
The group met in Italy last fall. The progress at that meeting was discussed along with the status of WG standards. SG0 (beta reference radiations) standards are out for ballot as FDIS and their final approval is expected to complete the currently planned work of the subgroup. Comments on the neutron reference radiation standards were discussed in detail. Possible changes to the photon radiation standards (4037 series of standards) were discussed along with the general philosophy of the group of reference radiation standards that have been developed. It is expected that a general standard will be developed to consolidate some of the common elements of the reference radiation standards (i.e. definitions, phantoms, quantities, etc.) and that eventually a single standard for each reference radiation will replace the basic series of three now in place. Germany will submit a new work item entitled, "Reference radiation fields-definitions and fundamental concepts." During the working group meeting a talk was given by Dave Rodgers of Carleton University on modeling for beta radiations using Monte Carlo techniques. A lot of progress has been made when compared to the initial attempts at modeling for the 7503-3 standard. A progress report for the group was provided for the plenary session along with several resolutions. Attendance at the working group meeting was about 15.

WG5 -- Materials and devices for protection against radiation- Gilbert Bruhl, France
This group is working on several standards and the group met in Ottawa. They have a new standard on air monitoring in the works and will need to coordinate closely with WG14. The group also nominated Pierre Cortez as liaison to ISO/TC142, "Cleaning equipment for air and other gases."

WG11 – Sealed sources – Mike Krzaniak, Canada
WG11 is updating ISO 2919 (Performance Classification of Sealed Sources) in light of revisions to ANSI N 43.6 and other national standards. The working group is also responsible for the new standard on the radiation warning symbol proposed as a new work item by the IAEA. This is intended to be an intuitively understandable symbol meant to avoid handling of radiation sources by the untrained (similar to the skull and cross bones for poison). This will become ISO 21482.

WG 13 – Performance requirements for internal dose evaluation of bioassay results-- Tom Little attended as the US representative. The convenor, Maria Limson-Zamora (Canada), is resigning from the convenorship after successfully leading the group for about three years following her replacement of the US convenor, Dave Hickman. The new convenor is Klaus Heinrichs (Germany) with both Tom Little and Philippe Berard as co-convenors. The group is becoming aware that they need to coordinate with members of the ANSI N 13.30 working group. I have been suggesting this for some time and I feel that it would be valuable to have this group meet in parallel with some of the HPS working groups. They need to be aware of N13.30 revisions and there are several ANSI standards (phantoms) that could be directly adopted by the committee.

WG 14 – Air monitoring and control--Dr. John Glissmeyer, US
The group met in Ottawa with five attendees. The work on the standard is progressing and they committed to submitting a working draft on July 31.

WG 17- Radioactivity measurements—Dominique Calmet, France
Although Germany no longer supports efforts on this working group, Dr. Rolf Michel from Germany was present. This was very useful due to his involvement in establishing the work group and his expertise in statistics. Dr. Michel did propose replacing parts 1-3 of the original standards on statistics with a single standard at the Beijing meeting in order to improve compatibility with the later parts and with the new

ISO/IEC standard on Guidance on Uncertainty of Measurement (GUM). This improves handling of type B errors. This will be a useful change since the GUM is strongly endorsed by NIST.

The soil contamination standards were worked on at the meeting and the group committed to submitting parts 4-6 of the standard for DIS ballot by the end of November of 2006.

The work of the disbanded WG 9, Surface contamination, now resides in this working group. It is clear that the 7503-1,2,3 series needs revision and the work falls under Christoph Schuler as project leader within WG17. Based on discussion at several meetings it has been decided to "clean-up" the present series of three standards and add a fourth to reflect advanced technology for surface contamination measurements. This is a change from the original proposal to replace the existing standards with two standards integrating existing guidance and new technology. The new approach will probably be more acceptable considering the commitment of many countries to the current technology. It has been decided to let the present 7503 series continue until a revision is available and then submit a new work item proposal.

WG21 – Radiation protection for exposures to cosmic radiation in civilian aircraft – David Bartlett, UK
The US originally proposed this standard and we have two active members of the writing group. Unfortunately, neither individual was able to attend the meeting. The group did make substantial progress on their standards. Due to his upcoming retirement, David Bartlett is resigning the convenorship and Dr Bottollier-Depois (France) will be the new convenor and Dr Wissmann (Germany) will be the new co-convenor..

WG22 – Ionizing radiation dosimetry and protocols in medical applications – Bernard Aubert, France

The group continues to have problems making progress on the standard for medical protocols for pediatric CT examinations. Getting support from the medical community (physicians) has been difficult and they plan to change the emphasis to dosimetry for CT examinations with emphasis on pediatrics. This will draw from a pool of medical physicists and they expect better support. A new work item will be submitted with this new emphasis.

The second half of the working group (SG2) led by Chris Soares continues to make progress and is planning to submit a new work item on clinical dosimetry using radio chromic films. This will be initiated through the US. Comments on the standard on brachytherapy were reviewed and following distribution of a revised draft within the committee the plans are to submit the standard for circulation as a DIS by October of this year.

WG 4(gamma radiography and irradiators), WG18 (biological dosimetry), WG19-Dosemeters for external personal dosimetry and WG20 (illicit trafficking of radioactive materials) did not meet in Ottawa. These working groups do not have any items requiring attention at this time.

SC2 Advisory Group

The purpose of the Advisory Group is to advise WG convenors on new work items, to explore new ideas and fields not related to present work items and to provide advice on maintenance of existing standards. The group consists of the WG convenors and a representative from each P member country. KL Swinth is the official US representative. No presentations were made on new work items. Raquel Barquero (Spain) is the new convenor of the Advisory Group (nominated at the meeting in Beijing) and led the meeting.

The working groups presented actions related to new developments at the meeting. WG2 presented their interest in a new harmonizing standard for the several standards that they have in place. WG13 noted that the two new work items from the Beijing meeting were approved and WG17 mentioned interest in gamma spectroscopy for field applications and in radium measurements. It was noted that gamma spectroscopy interests should be harmonized with SC5. WG22, our newest WG noted the difficulty in formalizing medical protocols and in getting medical staff to participate in the standards development process. The group has two subgroups and the one on brachytherapy dosimetry led by Chris Soares continues to make substantial progress. The subgroup on medical protocols led by

Bernard Aubert (the WG convenor) continues to have difficulty on the pediatric CT dosimetry standard that they proposed a few years ago. The group has potential interest in dosimetry of the neutron fields around medical accelerators, radio chromic films for medical dosimetry (a NWIP) and on TLDs for medical dosimetry.

I had intended to provide information on the HPS summer school on medical health physics, but did not receive the material that I had expected. I later learned that my contact had died of a massive heart attack and that the summer school staff was stressed just to meet the school commitments. I obtained a copy of the proceedings at the HPS meeting and will forward information to the SC2 secretariat and to Bernard Aubert.

The group spent time discussing liaisons and concern was expressed over the IEC effort on passive dosimeters and readers (IEC62837-1) which conflicts with agreed areas of standards development. A request was made by SC2 in January to obtain a copy of the document, but to date it has not been received. A resolution was presented at the plenary session to request the central office to delay this standard until a copy had been received and ISO members had a chance to comment on the standard. Questions arose about the possibility of joint standards development with the IEC as done on the quality standards such as ISO/IEC 17025, 9002, 17011, etc. The ISO representative noted that this area was established as a joint work area and that there is not a normal mechanism for cooperatively developing standards. However, it was noted that if the ISO questions work on a standard the work item will be tabled at headquarters until any issues are resolved. A second resolution was made to consider publishing future version as joint ISO/IEC efforts.

It was also noted that an interagency group in the radiation area meets periodically to review ongoing work and potential needs or conflicts. The group consisting of representatives from WHO, IAEA, ISO, IEC ICRU, ICRP, etc. will meet again in about 18 months.

TC85/SC2 Plenary Session

During the secretariat report the status of the standards was presented. Since the meeting in Buenos Aires in March 2004, sixteen standards have been published or are in the process of being published, two are in process for FDIS vote, five processed for DIS vote and an additional ten drafts were submitted for CD ballot or under review of comments from the CD balloting process. Three new work item have been proposed and fifteen standards are under review for revision or reconfirmation. Twenty one countries are P members (participants) in TC85/SC2 and eighteen O members (observers). Kenya and the Republic of Korea are the newest members. TC85/SC2 maintains approximately 59 published standards (report available). It should be noted that the above report covers a period of about two years; the interval since the last TC85 plenary. SC2 averages 4-6 standards per year.

Time was spent on the issue of liaisons. In order to improve the liaisons specific individuals were named as official liaisons operating at the SC2 level. Dr Alain Rannou will be liaison for IAEA, IACRS, ICRP and UNSCEAR. Dr .David Bartlett will be the liaison to ICRU and Dr. Grant Malkoske will be liaison to ISSPA. These individuals already have associations with the named organizations which should facilitate the liaisons.

The reports of the working groups were given in order. The general status of work is noted in the previous section. The specific reports and resolutions are available on the web site or from the author.

The SC2 plenary meeting went quite well. Mr. Diakonoff prepares most of the resolutions on his laptop prior to the meeting, which speeds things up. Along with the decision a few years ago to eliminate the French translation during the session, this has cut a two-day meeting down to one and in this case was cut to one-half day by quickly accepting the WG reports and the general lack of new business. The next plenary meeting of SC2 is planned for Madrid, Spain in April 2007.

TC85/SC5 Plenary Session

During the secretariat report the status of the standards was presented by each Working Group Convener. Since the last Plenary meeting of SC5 in Oak Ridge, Tennessee in 2006, twelve new ISO standards have been published, two new FDIS standards have been submitted, nineteen DIS standards have been submitted, three CD have been prepared, and two NWIP have been submitted. SC5 maintains approximately 44 published standards with approximately fourteen Participating countries and eleven Observer countries.

TC85/SC6 Plenary Session
During the secretariat report the status of the standards was presented. Two new ad hoc working groups were formed and the subcommittee plans to meet in 2007.

B. REPORT ON SC2 (Radiation Protection)

ISO/TC85/SC2 on *Radiation Protection* is a major subcommittee of TC85, with 12 active working groups. Ken Swinth is the US Overall Advisor for SC2 while the Health Physics Society Standards Committee (HPSSC) acts as the secretariat for SC2 by supporting its US activities. The number of deputy advisors for SC2 has been increased from two to four to expand the group of individuals familiar with the ISO and NTAG processes. The deputy advisors and their overlapping areas of responsibilities are: William Hopkins (WGs 4, 5, 11, 14 & 20); Sandy Perle (WGs 2, 11, 17, 18, 19, 20 & 22); Joseph Rotunda (WGs 4, 13, 14, 17, 18, 19 & 21); and Christopher Soares (WGs 2, 5, 13, 19, 21 & 22). The United States now has 46 technical experts serving on the various SC2 working groups.

A plenary meeting of SC2 was held in Beijing in March 2005 and was reported in detail in the previous NTAG semiannual report. Ken Swinth attended the meeting and represented NTAG and US interests at the meeting. Ken also presented information on ISO activities at the HPSSC meeting at the Health Physics Society meeting in Spokane, July 10-14, 2005. The next plenary meeting of SC2 will be in conjunction with the general biennial meeting of ISO/TC85 in Ottawa, Canada, June 19-23, 2006.

SC2's Working Group 2 (WG2) on *Reference Radiations* did not meet in Beijing, but met in Frascati, Italy in October 2005. Chris Soares from NIST participated in this meeting. The group discussed ongoing work, proposed a new work item on "*Reference Radiation Fields-Definitions and Fundamental Concepts*" and proposed making minor adjustments to the 4037 series of standards (photon radiations). The working group convenor, Juergen Boehm, is retiring this year and a new convenor, Peter Ambrosi, and co-convenor, Jean-Marc Brody, were nominated.

The subgroup on beta-particle brachytherapy of WG22 (*Radiation Protection in Medical Protocols*) met in Delft, The Netherlands, on October 12-14, 2005 to continue work on the *beta-particle brachytherapy* standard. The subgroup, led by the convenor, Chris Soares, made good progress, and in December submitted the standard for circulation as a CD in hopes of having comments back before the Ottawa meeting. Several US representatives participated, including Sam Trichter who was recently appointed to the working group.

The Advisory Group for SC2 also met in Frascati, Italy on October 14, 2005. The US did not participate in this meeting, but provided information on US standards on *fetal radiation exposure* and other relevant areas in the medical health physics field.

Twenty-one countries are now P-members (participants) in TC85/SC2 and ten are O-members (observers). TC85/SC2 maintains 54 (43 in March 2004) published standards. Commenting on work items has been minimal during this particular reporting period. Three standards have been reviewed and commented on during the period, but more activity is expected as the time of the plenary meeting approaches. As noted in the previous semiannual report, the ISO standards on *surface contamination* are undergoing revision (ISO 7503-1,2,3). The convenor for the work, Christoph Schueller, was invited to NIST in October to make a presentation on the effort, and to discuss papers by US representatives on surface contamination measurement.

A plenary meeting of SC2 was held in Ottawa, Canada in 18-23 June 2006 and was attended by Ken Swinth who represented NTAG and US interests for SC2 at the meeting. Ken also presented information on ISO activities at the HPSSC meeting at the Health Physics Society meeting in Providence, RI (June 24-29, 2006). The next plenary

meeting of SC2 will be held in Madrid, Spain in April 2007. The location for the biennial TC85 meeting has not been determined, but the US has been suggested as a possible host.

Complete sets of resolutions and committee minutes for SC2 (Radiation Protection) as well as TC85 and all of the subcommittees are available and these will not be repeated. They are posted on the ASTM web site http://www.astm.org/COMMIT/ISO/ISOTC85/TC85_SubcomInfo.htm with document N880 containing the bulk of the SC2 plenary information with the resolutions in document N866-R1. Document N869 is the report of the TC85 plenary session. The ASTM site can be reached through the link on the HPS web site under the standards activities. The U.S. delegation consisted of: KL Swinth (US Head of Delegation for SC2, HOD), John Jankovich, Joe Rotunda, Sam Trichter, John Glissmeyer, Tom Little, and Chris Soares. There were actually more individuals attending the SC2 working groups (WGs) meetings since they do not all attend the plenary session. The total number of participants was comparable to the Buenos Aires meeting. During the week Ken Swinth participated in the following activities:

- TC85/SC2/WG2 – Participant
- TC85/SC2/WG2/SG0 - Convenor
- TC85/SC2/WG2 Radiation Advisory Group – U.S. Representative
- TC85/SC2 Plenary Session - US Head of Delegation (HOD), U.S. Overall Advisor to SC2
- TC85 special session on harmonization of standards
- TC85 special session on emergency preparedness

The status of standards was discussed at the SC2 plenary in Ottawa in comparison to status at the last TC85 plenary. Since the meeting in Buenos Aires in March 2004, sixteen standards have been published or are in the process of being published, two are in process for FDIS vote, five processed for DIS vote and an additional ten drafts were submitted for CD ballot or under review of comments from the CD balloting process. Three new work item have been proposed and fifteen standards are under review for revision or reconfirmation. Twenty one countries are P members (participants) in TC85/SC2 and eighteen O members (observers). Kenya and the Republic of Korea are the newest members. TC85/SC2 maintains approximately 59 published standards (report available). It should be noted that the above report covers a period of about two years; the interval since the last TC85 plenary. SC2 averages 4-6 standards per year.

The issue of liaisons with other radiation science organizations was discussed at the meeting. In order to improve the liaisons specific individuals were named as official representatives operating at the SC2 level. Dr Alain Rannou will be liaison for IAEA, IACRS, ICRP and UNSCEAR. Dr .David Bartlett will be the liaison to ICRU and Dr. Grant Malkoske will be liaison to ISSPA. These individuals already have associations with the named organizations which should facilitate the liaisons.

The reports of the working groups were given in order. The specific reports and resolutions are available on the web site or from the author. A full report on the meeting and progress within the working groups is contained in the report by Ken Swinth, "ISO/TC85/SC2 MEETING SUMMARY REPORT." A change (WG17) was made in the direction of the 7503 series of standards on contamination measurement. Rather than develop new standards to replace the existing standards, the standards will be updated with a new standard added to the series. WG2 on reference radiations intends to develop a new general standard on definitions and general concepts and eventually revise and consolidate the series of three standards for each type of reference radiation (photon, beta, neutron). WG22 (Ionizing radiation dosimetry and protocols in medical applications) has continued to have difficulties in promoting standards on medical protocols and will revise the focus to dosimetry for specific medical radiation protection applications. They already have a new work item on TLD dosimetry for radiotherapy applications.

Progress following the meeting has included the review of 15 TC85 standards that were up for periodic review. Basically the recommendation was to reaffirm the standards as they exist. However, several of the standards are undergoing revision within the working groups or are under consideration for revision and updating by the working groups. It is important to reaffirm the standards so that active standards will be available. WG 14, "Air monitoring and control," convened by Dr. Glissmeyer (US) submitted a standard for circulation as a CD at the end of July as committed in a resolution at the Ottawa meeting.

C. REPORT ON SC5 (Nuclear Fuel Technology)

Currently, there are seven active working groups in ISO/TC85/SC5. The work programs for WG1 (*oxide fuels*), WG3 (*nuclear chemistry*), WG8 (*criticality safety*-Calvin Hopper Convenor), and WG12 (*MOX fuels*) have been particularly active from the perspective of US participation. Calvin Hopper was elected by the NTAG membership as the new US Overall Advisor for SC5. Newly appointed Deputy Advisors for SC5 are: Charles Pietri (re-appointed) with responsibilities for nuclear fuels and nuclear chemistry (WG1, 3 & 12); Ron Knief with responsibilities for waste characterization and nuclear criticality safety (WG5 & 8); and Rick Rawl with responsibilities for UF_6 transport containers and nuclear transportation (WG4 & 9).

Issues of potential impact to the USA nuclear industry:

From an international trade and safety perspective, several ISO initiatives have a potential influence on USA Nuclear Energy issues associated with nuclear material accountability, security, and safety. These include:

- Activities regarding ISO/TC 85/SC 5/WG 8 N 858 NWIP affirmative ballot and WG 8 comments on *Criticality evaluation methodology for PWR burn up credit*. There is the potential that internal transportation/trade will be impacted by the constraints of this new work item proposal for the performance of safety analyses of cask, storage, and transport of spent nuclear fuel.
- Activities regarding the development of a WD on *Critical values for homogeneous mixed plutonium-uranium oxide fuels (MOX)* may have an impact on accepted safely subcritical mass values of MOX considered for international transport and potential indigenous regulatory limits.
- Addition of activities of ISO TC85/SC5 standards and new work item proposals potentially impacting developing IAEA regulations/guides as presented below in the categories presented in Appendix B include:
    - Measurement methods for chemical and physical characterisation of UF_6 ,UO_2 and UO_2/Gd_2O_3
    - Measurement methods for determination and characterization of input and end products of reprocessing plants
    - Standardization for transport containers for UF6
    - Standardization of measurement methods for the characterization of solid and solidified waste forms, and for the corrosion of their primary containers
    - Trunnions for spent fuel element shipping casks
    - Measurement methods for chemical and physical characterization of MOX pellets

The next SC 5 meeting is planned to be in Europe in 2007.

Activities on SC5 Working Group Products

During the period between the prior April 2005 Oak Ridge, Tennessee ISO TC85/SC5 Working Group and Plenary meetings and the Plenary Session of the June 2006 Ottawa Ontario Canada Plenary Session numerous Working Group work items have been initiated, drafted, and approved. The following provides the summary of work items by each of the Working Groups that the NTAG members responded.

TC 85/SC 5/WG 1 Measurement methods for chemical and physical characterization of UF6, UO2 and UO2/Gd2O3 ***The convener can be reached through: SIS***

DIS 21847-1	Determination of Np in uranium and its compounds – Alpha spectrometry". (Target date 2006-12-31)
DIS 21847-2	Determination of Pu in uranium and its compounds – Alpha spectrometry". (Target date 2006-12-31)
DIS 21847-3	Determination of uranium 232 in uranium and its compounds – Alpha spectrometry". (Target date 2006-12-31)
DIS 22875	Determination of Cl and F in uranium dioxide powder and sintered pellets. (Target date 2008-06-07)
FDIS 9005rev.	Uranium dioxide powder and sintered pellets - Determination of oxygen/uranium atomic ratio - Amperometric method. (Target date 2005-06-15)
DIS 9278rev.	Uranium dioxide pellets – Determination of density and amount of open and closed porosity - Penetration immersion method. (Target date 2008-03-03)
DIS 21847-1	Determination of Np in uranium and its compounds – Alpha spectrometry". (Target date 2006-12-31)
DIS 21847-2	Determination of Pu in uranium and its compounds – Alpha spectrometry". (Target date 2006-12-31)
DIS 21847-3	Determination of uranium 232 in uranium and its compounds – Alpha spectrometry". (Target date 2006-12-31)
DIS 22875	Determination of Cl and F in uranium dioxide powder and sintered pellets. (Target date 2008-06-07)
FDIS 9005rev.	Uranium dioxide powder and sintered pellets - Determination of oxygen/uranium atomic ratio - Amperometric method. (Target date 2005-06-15)
DIS 9278rev.	Uranium dioxide pellets – Determination of density and amount of open and closed porosity - Penetration immersion method. (Target date 2008-03-03)

TC 85/SC 5/WG 3 Measurement methods for determination and characterization of input and end products of reprocessing plants ***The convener can be reached through:***

AFNOR

DIS 18213 -1	Tank calibration and volume determination for nuclear materials accountancy
DIS 18213 -2	Tank calibration and volume determination for nuclear materials accountancy
DIS 18213 -3	Tank calibration and volume determination for nuclear materials accountancy
DIS 18213 -4	Tank calibration and volume determination for nuclear materials accountancy
DIS 18213 -5	Tank calibration and volume determination for nuclear materials accountancy
DIS 18213 -6	Tank calibration and volume determination for nuclear materials accountancy
NWIP 11482	Guidelines for Plutonium Dioxide (PuO_2) Sampling in a Nuclear Reprocessing Plant

TC 85/SC 5/WG 4 Standardization for transport containers for UF6 ***The convener can be reached through: BSI***

There was no report of progress. There is a request for ANSI N14.1 to provide current engineering drawings of the UF_6 cylinders for use in the ISO standard development.

TC 85/SC 5/WG 5 Standardization of measurement methods for the characterization of solid and solidified waste forms, and for the corrosion of their primary containers ***the convener can be reached through: AFNOR***

ISO 6962	Standard method for testing the long-term alpha irradiation stability of matrices for solidification of high-level radioactive waste
ISO 16797	Soxhlet-mode chemical durability test – Application to vitrified matrixes for high-level radioactive waste.
ISO 14850-1	Waste-packages activity measurement – high-resolution gamma spectrometry in integral mode with open geometry.
DIS 14850-2	Standard guide for gamma-ray spectrometric measurements of radioactive waste packages using HPGe-detectors.
CD 14850-3	Waste-packages activity measurement – high resolution gamma spectrometry using segmented gamma scanning.
DIS 21238	Standard guide for the scaling factor method to determine the radioactivity of low and intermediate level radioactive waste packages generated at nuclear power plants

TC 85/SC 5/WG 8 Standardization of calculations, procedures and practices related to criticality safety *the convener can be reached through: ANSI*

NWIP Balloted	*Criticality evaluation methodology for PWR burn up credit*
CD	Nuclear criticality emergency planning and response
NWIP Balloted	Recommendations for the safety analysis of a postulated criticality accident
CD	Critical values for homogeneous mixed plutonium-uranium oxide fuels (MOX)

TC 85/SC 5/WG 9 Trunnions for spent fuel element shipping casks *the convener can be reached through: AFNOR*

DIS 10276	Trunnions for spent fuel element shipping casks
ISO 12807	Safe transport of radioactive material - Leakage testing on package

TC 85/SC 5/WG 12 Measurement methods for chemical and physical characterization of MOX pellets *the convener can be reached through: BSI*

ISO 22765	(ceramographic preparation) –approved as CD now ready for DIS vote
ISO 21484	(O/M) approved as NWI now ready for CD vote
ISO 15646	(re-sinter) – approved as NWI now ready for CD vote
ISO 21483	(solubility) – approved as CD now ready for DIS vote
ISO 21614	(carbon) - approved as CD now ready for DIS vote
ISO 21613	(F and Cl) - approved as NWI now ready for CD vote
ISO 26062	ICP-MS – approved as NWI now ready for CD vote

Co-operation with IAEA continues to be strengthened with very fruitful results. SC 5 is represented on a number of major IAEA committees such as TRANNSAC, WASSAC and WATAC with reciprocal membership of IAEA representatives on SC 5 and appropriate WGs. SC 5 also maintains their category B liaison with the "World Nuclear Transport Institute" (WNTI).

D. REPORT ON SC6 (Reactor Technology)

The United States holds the international Secretariat of ISO/TC85/SC6 on *Reactor Technology*, with Dr. Wade Richards (NIST) slated to replace Dr. James Adams as Chairman. The appointment of Wade Richards by ANSI as SC6 chairman will be confirmed by ISO/TC 85 through a resolution per correspondence. The two working groups of SC 6 are: WG1, *Decay Heat Power in Light Water Reactors* and WG2, *Technical Specifications for Research Reactors*. The goals of ad hoc groups WG3 and WG4 were changed from preliminary standards development in the areas of emergency preparedness and nuclear facility siting to laying the groundwork for groups of standards in the areas of siting, design, operation, and decommissioning for reactors and reactor fuel facilities.

Plan of Action. James Adams developed a Plan of Action for SC6. Some elements of the plan were implemented prior to the June 2006 Ottawa meeting, and other elements were revised during the course of the meeting. The plan required circulation of initial drafts for *Decay Heat Power in Light Water Reactors* and *Technical Specifications for Research Reactors* to current members of SC 6 and potential members identified by the leadership of the working groups. In accordance with the plan, an electronic distribution list was created and invitations to join a working group were extended to the subcommittee membership and others. The WG1 draft standard was circulated prior to the meeting and that draft and proposed additional standards were discussed during the meeting. Two versions of the WG2 draft standard were circulated prior to the meeting after addressing responses from a number of experts. Review of the WG2 standard was completed during that group's breakout session in Ottawa, with a final draft to be sent to the membership for the last round of comments.

Annual SC6 Meeting. The subcommittee met in conjunction with the ISO/TC85 biennial meeting in Ottawa, Canada, June 19-23, 2006. An opening session of SC 6 was held on June 19 followed by two ISO/TC 85 sessions. Seven member countries (Canada, China, France, the Republic of Korea, Sweden, the United Kingdom, and the United States) were present and one observer country (Japan) was present. Areas of discussion included: the future of SC 6 and future standards needs; ISO and ANSI/ANS; ISO, the International Atomic Energy Agency (IAEA), and national regulatory bodies; and proposed areas of standards development by WG 3 (as hoc) and WG 4 (ad hoc).

Further areas of discussion by SC 6 were influenced by the ISO/TC85 sessions, *Harmonization of International Standards* and *Emergency Preparedness*, led by Donald Spellman, Brian Grimes, and George Campbell. It was hoped that these sessions would provide guidance for SC 6 in developing standards for emergency preparedness and security in cooperation with the other subcommittees of TC 85. What emerged from these sessions was a clear reluctance by the sessions' participants to proceed beyond that which had been accomplished to date. More than a few P-members and O-members were concerned about additional requirements that could be generated by ISO standards in security and emergency preparedness. While there was some support for standards development in these areas and other areas in which the IAEA currently exerts considerable influence, there was insufficient enthusiasm in this forum to come to a consensus that favored new standards.

A full subcommittee session was conducted on June 20, followed by breakout sessions for the working groups on June 21. Given the tone of the two aforementioned TC 85 sessions, discussions of emergency preparedness and security were tabled. The status of *Decay Heat Power in Light Water Reactors* and *Technical Specifications for Research Reactors* was provided to the subcommittee. Both standards are progressing, with a final draft expected to be ready for the technical committee by the end of the year. A reorganization of WG 3 and WG 4 was talked about at length and a motion to reorganize those working groups carried, resulting in a resolution that assigned responsibility for exploring standards in siting, design, operation and decommissioning for reactors and reactor fuel facilities to WG 3 (ad hoc) and WG 4 (ad hoc), respectively. A presentation by Dimitrios Cokinos of WG 1 included a proposal to add three new ISO standards to WG 1. The subcommittee agreed to preliminary work continuing on these three standards. The plenary was held on June 22 and SC 6 activities were described, with six resolutions offered for consideration by TC 85, including: approval of WG 1 and WG 2 activities; the reorganization of WG 3 (ad hoc) and WG 4 (ad hoc); and the pursuit of an SC 6/IAEA liaison. A tentative deadline for action on these resolutions was set for the end of the year.

Internal US Actions Concerning SC6.

Overall Advisor
Don Spellman agreed to become the overall US Advisor for SC6

SC6/WG1 - Decay Heat Power in Light-Water Nuclear Reactors. Dimitrios Cokinos (Brookhaven National Laboratory) is the international co-Convenor of SC6/WG1. There was no objection to his proposal to add three reactor physics standards, based on ANSI/ANS 19 standards, to the current standard. WG1 is now developing or discussing standards for:

- Decay Heat Power in Light Water Reactors

- Power Reactor Analyses and Operations
- Nuclear Data Sets for Reactor Design
- Reaction Rate Distributions & Reactivity in Power Reactors
- (Proposed) Reload Startup Physics Tests for Pressurized Water Reactors
- (Proposed) Standard for Verification and Validation of Scientific and Engineering Computer Programs for the Nuclear Industry

SC6/WG2 - Technical Specifications for Research Reactors. Tawfik Raby (NIST) is the international co-Convenor of SC6/WG2. The working group solicited members from the International Group on Research Reactors (IGORR) and the National Organization of Test, Research and Training Reactors (TRTR). Currently, there are approximately 30 members from thirteen countries, and two additional nations participated in the 2006 meeting activities of WG 2. There is confirmed participation of some kind by 9 nations. An electronic distribution list has been created and the draft standard has been circulated twice. The draft standard was also discussed during the meeting breakout session on June 21 and a number of changes were made, most of which were editorial in nature. A draft will be circulated soon for final review, with the comment period ending September 30, 2006.

Ad Hoc SC6/WG3 – Reactor Siting, Design, Operation and Decommissioning. WG 3 was reorganized and France will lead the effort to explore the need for standards in these areas and report back its findings by the end of the year.

Ad Hoc SC6/WG4 - Reactor Fuel Facility Siting, Design, Operation and Decommissioning. WG 4 was reorganized to expand its responsibilities and remain compatible with SC 6 and TC 85. Canada will lead the effort to explore the need for standards in these areas and report back its findings by the end of the year.

Systematic review allocated to SC 6. ISO 6258:1985 Nuclear Power Plant - Design against seismic hazards (review results in document ISO/TC 85 N 818) was allocated to SC6 for consideration in its work program. This allocation by TC 85 was the result of a subcommittee going dormant.

E. REPORT ON WG1 (Terminology, Definitions, Units and Symbols)

For a number of years, the United States was responsible for chairing Working Group 1 (WG1) *Terminology, Definitions, Units and Symbols*, which reports directly to the main Technical Committee ISO/TC85. Although WG1 convened during the biennial meeting of ISO/TC85 in March/April 2004, and a new organizational structure for WG1 was proposed by the US, almost nothing happened after that, and a proposed WG1 meeting in the Washington DC area in 2005 did not take place. With the imminent retirement of the WG1 Convenor, Larry Fischer, the TC85 Secretariat decided to reassign the Convenorship of WG1 to Argentina. Burt Rothleder has been elected by NTAG to be the US Overall Advisor for WG1 and Ron Knief has been appointed to be the US Deputy Advisor for WG1.

F. REPORT ON WG3 (Dosimetry for Radiation Processing)

The United States holds the chairmanship of Working Group 3 (WG3*) Dosimetry for Radiation Processing*, which reports directly to the main Technical Committee ISO/TC85. Harry Farrar is the (international) Convenor of WG3. John Logar has been elected by NTAG to be the US Overall Advisor for WG3 and John Williams has been appointed to be the US Deputy Advisor for WG3. During Harry Farrar's illness in June 2006, Rod Chu, a Canadian member of WG3, acted as Deputy Convenor of WG3.

ISO Ballot of Four Revised Standards. The following four revised ISO/ASTM standards that have completed their ASTM ballot approval process had been sent by ASTM to the TC85 Secretariat for ISO ballot in the summer of 2005:

• ISO/ASTM 51538 *Practice for Use of an Ethanol-Chlorobenzene Dosimetry System*
• ISO/ASTM 51205 *Practice for Use of a Ceric-Cerous Sulfate Dosimetry System*

• ISO/ASTM 51900 *Guide for Dosimetry in Radiation Research on Food and Agricultural Products*
• ISO/ASTM 51818 *Practice for Dosimetry in an Electron Beam Facility for Radiation Processing at Energies between 80 and 300 keV*

However, late in 2005, the ISO/TC85 Secretariat suspended maintenance balloting of all existing ISO/ASTM standards pending ASTM and ISO agreeing on a post-pilot-project maintenance mechanism. As a result, the ISO balloting for these standards was no longer synchronized with the ASTM balloting and the completion of these four revised standards was being artificially delayed. Both ASTM and TC85/WG3 have expressed their concern that holding up the publication of revised standards is not in the best interests of industry and it was agreed that the balloting should continue under the Pilot Project maintenance procedures.

When the revised drafts were reviewed prior to circulation by ISO/TC 85, it was found that, although two of the drafts had been submitted to ISO for DIS balloting as minor revisions, the changes made to address comments from the ASTM balloting were sufficiently significant to require CD balloting as the first step of a major revision. All four standards were circulated for CD balloting with closing dates shortly before the June meeting of ISO/TC85/WG3 and ASTM Subcommittee E10.01.

Meeting of ISO/TC85/WG3 and ASTM Subcommittee E10.01. A joint meeting of ISO/TC85/WG3 and ASTM Subcommittee E10.01 was held from Monday through Wednesday in conjunction with the ISO/TC85 biennial meeting in Ottawa, Canada, June 19-23, 2006. Seven members of WG3 (three from USA, two from Canada, one from the UK, and one from Austria) met with members of ASTM Subcommittee E10.01 on 2006 June 19-21 to review the comments from the CD ballots for the maintenance of the four ISO/ASTM standards. Since Harry Farrar was seriously ill, Rod Chu acted as deputy convenor for WG3. All ballot results approved the advancement of the standards to DIS, and comments were confirmed to be editorial. The standards are now being revised to incorporate minor editorial changes and will be submitted to ISO for DIS ballot in August.

ISO-ASTM Pilot Project. During the five-year period between 1999 and 2004, ISO and ASTM conducted and successfully completed a Pilot Project "*Radiation Processing Dosimetry Standards*" in which 25 published ASTM dosimetry standards were transformed into ISO/ASTM standards. A comprehensive set of procedures was developed and implemented by ASTM Subcommittee E10.01 and ISO/TC85/WG3 whereby the ISO/ASTM standards were periodically reviewed and maintained by ASTM with unrestricted participation and input from ISO. The resulting revised standards were then balloted independently by ISO and by ASTM using their normal ballot procedures. It was generally agreed that this process worked well, and at the biennial meeting of ISO/TC85 in Buenos Aires, Argentina in 2004, a resolution was passed recommending closure of the pilot project but with ASTM continuing the maintenance of the ISO/ASTM standards with parallel ASTM and ISO ballots, and continued publication as ISO/ASTM standards. Another resolution created an *ad hoc* group to streamline the Maintenance process.

Simplification of Maintenance Procedures. Progress has been made by the WG3 Convenor, Harry Farrar, to simplify and streamline the procedures used by ASTM to maintain the set of ISO/ASTM dosimetry standards in a "post-pilot-project" environment. One of the important changes to the streamlined procedures was the proposed elimination of the CD ballot step added to the procedures, even though this step was not included in the original Pilot Project agreement. This CD ballot was conducted by ISO whenever a draft was balloted by ASTM as an E10.01 Subcommittee ballot.

The 3-month CD ballot introduced delays to the approval process and did not provide technical input in addition to the extensive input provided by the technical experts from ASTM Subcommittee E10.01 and ISO/TC85/WG3. However, the ISO/TC 85 Secretariat insisted that ISO/TC 85 members have an opportunity to comment on the E10.01 ballot version. As a result, it was agreed that the revision (with highlighted changes) submitted for E10.01 balloting will be submitted to ISO/TC 85 for circulation for comments. These comments should be received at approximately the same time that the E10.01 ballot results become available, so there should be no unnecessary delay.

The modified procedures were reviewed by *ad hoc* group members representing E10.01, ASTM, ISO/TC 85, and ISO Central Secretariat. They were then circulated to ISO/TC 85 members for comments. No comments were received.

At the Ottawa meeting of ISO/TC 85, Rod Chu met with the other *ad hoc* group members and with the new Chair of ISO/TC 85 to obtain their agreement for the adoption of these new procedures. At the meeting, a few minor revisions were proposed and the maintenance procedures were revised to include these proposed changes. For the ISO DIS ballot, the balloted version must be a clean copy in the ISO format. However, it was learned that a highlighted version could be included as an Appendix to assist the reader in assessing the changes and to simplify the description of the changes required in the Explanatory Notes.

At the ISO/TC 85 Plenary Session, Rod Chu, on behalf of WG3, requested that ISO/TC 85 approve the adoption of the simplified maintenance procedures. This resolution was accepted without comment. The revised procedure, document ISO/TC 85 N67 (with editorial changes in document ISO/TC 85/N883), can now be used.

Proposed Conversion of Five ASTM Standards to ISO/ASTM Standards. ASTM now has five additional completed standards that are intimately connected to the existing ISO/ASTM standards and which clearly need to be integrated into the set. The five standards are:

• ASTM E 1026-04 *Practice for Using the Fricke Reference Standard Dosimetry System*
• ASTM E 2232-02 *Guide for Selection and Use of Mathematical Methods for Calculating Absorbed Dose in Radiation Processing Applications*
• ASTM E 2303-03 *Guide for Absorbed-Dose Mapping in Radiation Processing Facilities*
• ASTM E 2304-03 *Practice for Use of a LiF Photo-Fluorescent Film Dosimetry System*
• ASTM E 2381-04 *Guide for Dosimetry in Radiation Processing of Fluidized Beds and Fluid Streams*

In 2005, an attempt was made to add these five ASTM standards to the ISO/ASTM standards through the normal ISO NWIP procedure. Five NWIPs were distributed to member countries but were subsequently cancelled by the TC85 Secretariat due to the lack of a new overall "global" agreement between ISO and ASTM.

An initial draft procedure was developed that provides a mechanism for introducing additional published ASTM radiation processing dosimetry standards to the existing set of 25 standards. These procedures to allow the addition of closely related ASTM radiation processing dosimetry standards for which there is no counterpoint in ISO to the set of ISO/ASTM standards were reviewed by the *ad hoc* group. It was agreed that they followed the procedures in the original Pilot Project accepted under ISO Council Resolution 26/1999, so there were no objections based on technical concerns. During the review the *ad hoc* group was also informed that ISO and ASTM had recently agreed that work should continue on the existing Pilot Projects. A new global agreement between ISO and ASTM had not yet been finalized, but this agreement would not address the present Pilot Projects.

Under the new procedures, a proposal is prepared by ASTM stating the need for this International Standard and that there are no counterpoints in ISO. A letter ballot is then sent to ISO/TC 85 members checking the eligibility of the proposed standards and seeking approval for balloting of the ASTM standard as a DIS. The results of a positive letter ballot are forwarded to ISO Central Secretariat.

At the meeting of the *ad hoc* members in Ottawa, there was considerable discussion on what was required in the proposal generated by the E10.01 Chair to "justify" the need for an International Standard. It was agreed that the ISO/TC 85 Secretary would revise the procedure to clarify this requirement. The procedures would then be circulated to ISO/TC 85 members for comments. If there are no unresolved negative comments, the new procedures would be adopted.

At the ISO/TC 85 Plenary Session on 2006 June 23, Rod Chu, on behalf of WG3, requested that ISO/TC 85 approve a resolution encouraging the *ad hoc* group to finalize and propose this new procedure for the addition of closely related dosimetry standards. A French delegate questioned whether this procedure would only apply to the five ASTM dosimetry standards listed in the annex of the procedure or if it could apply to other standards, opening the possibility of introducing additional ASTM standards. He was told that it could apply to other dosimetry standards and accepted the resolution when he was assured that the letter ballot process would allow objections to be raised for each individual standard proposed. The resolution was accepted without further comments.

When the procedure is finalized and adopted, ASTM will be able to propose the addition of the five closely related ASTM dosimetry standards to the set of ISO/ASTM standards.

Rod Chu, Acting Deputy Convenor for ISO/TC 85 WG3
August 16, 2006

George W Campbell
Interim Chairman, NTAG

August 21, 2006

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