

## Your RPSD Leadership Team

We all thank you for joining RPSD and look forward to working with you within our division. Please don't hesitate to reach out to anyone on the leadership team with suggestions or if you'd like to get involved.

### Officers

#### Chair

Glenn E. Sjoden  
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#### Vice Chair

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#### Immediate Past Chair

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### Executive Committee

#### (Terms Expiring June 2015)

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## A Message from the Chair

Dear RPSD:

It is officially the Fall of 2014, and I am writing to you immediately following my transition from a professor in academia to my new job as Chief Scientist of the Air Force Technical Applications Center (AFTAC), at Patrick AFB in Cocoa Beach, FL. I have had the good fortune of a successful 20 year career as a military officer until 2004, then as a professor of nuclear engineering and industry consultant over another 10 years, and now in 2014 as a Federal civil service employee. Over those periods, I have faced numerous challenges, and made several difficult career decisions, but each new task is part of an adventure. The message I want to communicate is that no matter which sector I've worked in, technical excellence, service, and integrity count--all are requirements for work in nuclear engineering and radiation protection. I would tell any young persons--all that knowledge you are accumulating, whether you are a student, a professional, or an executive--your integrated knowledge and desire to serve your office well indeed matter. The learning ongoing in any position is an opportunity, and wherever you've landed, take on the attitude of continuous improvement.

That said, the road ahead will not be easy--we will face critical shortfalls in the years ahead. Shortfalls will occur in raw nuclear engineering expertise, since even if the "nuclear option" for electric power never expands further, we will be short-handed of trained professionals as more of us retire... half of us could retire in the next few years. Shortfalls are already occurring in budgets; Federal dollars drive a significant amount of nuclear research, and although "sequestration" had a small total impact to the Federal deficit, it impacted our budgets, and more cuts are coming. Related to this challenge are the difficulties of even attending ANS conferences--I'm learning first-hand about the limited scope of attendance for Federal employees. While I understand this in principle, in practice our government is likely losing out on new innovation with a near-total hiatus on conference participation. The greatest challenge we face in the years ahead, I believe, is to allocate, with extreme integrity, those precious research dollars focusing valuable human capital on high value nuclear research programs that really do matter. We must avoid allocating funds to research simply due to inertia or expedience--you must be really good to receive funding, no matter where you come from. This is what I have dedicated my service to in the coming years, and is what we, as a division, should strive for in RPSD.

Glenn E. Sjoden  
Chair, 2014-2015



**SAME  
NEWSLETTER,  
NEW LOOK**

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## 2014 ANS Winter Meeting and Nuclear Technology Expo

"Nuclear-The Foundation of Clean Energy"

Anaheim, CA Disneyland Hotel November 9-13, 2014

### RPSD Sponsored Sessions

Mon (PM)	Radiation Protection and Shielding: General
Tues (AM)	Making Ethics Real in Nuclear Engineering—Panel
Tues (PM)	Computational Tools for Radiation Protection and Shielding
Tues (PM)	Radiation Protection and Shielding—Roundtable
Tues (PM)	Deterministic Computational Methods for Radiation Transport and Dosimetry in Physics and Radiation Shielding
Wed (AM)	Introduction to the SCALE/MAVRIC Shielding Tools—Tutorial
Wed (AM)	GEANT4—Tutorial—I
Wed (AM)	Nuclear Nonproliferation Technical Group: General—I
Wed (PM)	GEANT4—Tutorial—II
Thurs (AM)	Tutorial on Radiation Protection and Shielding in Aeronautics and Space Applications

### RPSD Committee Meetings

<b>Joint Benchmark Committee</b>		
Sunday, 1 - 2 PM		Location: Magic Kingdom 1
<b>Program</b>		
Sunday, 2 - 4 PM		Location: Magic Kingdom 1
<b>Executive</b>		
Sunday, 4 - 6 PM		Location: Magic Kingdom 1

Check final program for updated times and locations.

## Computational and Mathematical Challenges in Particle Therapy Workshop

Sunday, April 19, 2015

**Organizers:** Wayne Newhauser (LSU)  
Pedro Vaz (IST)  
Arzu Alpan (Westinghouse)  
Bernadette Kirk (Kirk Nuclear Information Services)

**Attendee Level of expertise:** Undergraduate, Graduate, and Professional

The Computational Medical Physics Work Group (CMPWG) is pleased to announce a workshop, to be held on Sunday, April 19, 2015, in Nashville, TN, USA. The workshop is offered in conjunction with the Joint International Conference on Mathematics and Computation (M&C), Supercomputing in Nuclear Applications (SNA), and Monte Carlo (MC) Method.

The workshop features a diverse panel of researchers engaged in research of relevance to radiation therapy. Specifically, topics will include particle radiotherapy, dose calculations, and other subjects of mutual interest to Medical Physics and other disciplines in radiation science and engineering. The workshop is intended to foster the exchange of ideas and information across disciplines, including radiation transport, radiation protection and shielding, accelerator physics, dose reconstructions, and high performance computing.

The state-of-the-art Monte Carlo, deterministic and hybrid computational tools and programs will be discussed and the use of phantoms (voxel, etc.) in support of medical physics, medical dosimetry and radiological protection calculations will be reviewed.

All presentations will contain extensive introductory material to ensure accessibility of audience members from a wide spectrum of disciplines.

The particle therapy workshop will feature a keynote address, followed by several invited talks and an expert panel discussion with audience participation.

## Joint International Conference Mathematics and Computation (M&C), Supercomputing in Nuclear Applications (SNA) and the Monte Carlo (MC) Method

April 19-23, 2015



The Oak Ridge/Knoxville Section of the American Nuclear Society (ANS) will host and sponsor the FIRST combined Mathematics and Computations (M&C) ANS topical, with Supercomputing in Nuclear Applications (SNA) and Monte Carlo (MC) 2015. The joint international conference will be held at the Sheraton Music City in Nashville, Tennessee during the week of April 19-23, 2015. M&C is the latest in the series organized by the Mathematics and Computation Division of the American Nuclear Society. Prior to 2010, SNA and MC existed as separate conferences. In 2010, SNA and MC combined and held SNA+MC 2010 in Tokyo, Japan. This was followed by SNA+MC 2013 held in Paris, France.

The technical program will consist of plenary sessions, parallel oral presentation sessions, and poster sessions. There will also be several workshops, special sessions, and roundtable discussions requested and organized by participants.

### Scope of the conference

The joint conference will provide an international review of the status and trends of research and applications in the field of numerical simulation and physical modeling for classical and advanced nuclear concepts, including the role and benefits of high-performance computing. Particular emphasis will be placed on deterministic and Monte Carlo methods and their applications.

The main topics will be:

- Computational Methods Using High-Performance Computers
- Computational Reactor Physics and Particle Transport,
- Computational Thermal-hydraulics
- Computational Materials Sciences, Computational Plasma Physics/Fusion, Nuclear Reactor Analysis
- Radiation Physics, Particle Accelerator Physics, Computational Science, Deterministic and Monte Carlo Methods.
- Mathematical Methods in Safeguards and Nonproliferation.

The organizing committee hopes you will make plans to join us for this outstanding conference.

Key Dates	
Paper Submission Deadline:	December 31, 2014
Authors' Notification:	January 31, 2015
Conference:	April 19-23, 2015

<http://mc2015.org>

## RPSD 2014 Meeting Summary

The 18<sup>th</sup> topical meeting of the Radiation Protection and Shielding Division of the American Nuclear Society (RPSD 2014) was held in Knoxville, Tennessee, From September 14 – 18. By all accounts the meeting was a great success. There were 148 attendees from 16 different countries in North America, Europe, Asia, and Africa.

The technical program was divided into four broad tracks: Medical Physics, Health Physics, Radiation Transport Methods and Nuclear Data, and Applications Pertaining to Radiation Protection and Shielding. The four plenary speakers were each aligned with one of these tracks. The plenary speakers and the title of their presentations were:

- John Boice, Vanderbilt University, President NCRP – Epidemiologic Studies of Radiation Workers
- Phillip Taddei, American University of Beirut Medical Center – Radiogenic Risk in Normal Tissues of Cancer Patients Receiving Radiotherapy
- Michael Loughlin, ITER Organization – Nuclear Analysis of ITER
- Cary Zeitlin, Southwest Research Institute – Measurements of Space Radiation On, and On the Way To, Mars

In total there were 106 technical papers presented during the topical meeting. Most of the presentations are posted online at the conference website available to registered attendees, and the conference proceedings will be available from ANS national very soon. Some of the topics with a large number of papers include operational health physics, hybrid radiation transport methods, fusion facility shielding, and accelerator facility shielding. The technical program committee recommended 52 of the summaries to Nuclear Technology for consideration of full journal articles. Of these 52, Nuclear Technology has selected 22 as candidates for revision and submission as full-length journal articles, after peer review, to appear in a special RPSD 2014 issue of Nuclear Technology in 2015.

Another important aspect of the program was the technical workshops, which were presented for free and available to all registered attendees. These workshops included:

- ORIGEN and MAVRIC – Douglas Peplow and Will Wieselquist (Oak Ridge National Laboratory)
- Use of Attila4MC with the MCNP6 Unstructured Mesh Capability – Ian Davis (Varian, formerly Transpire) and Roger Martz (Los Alamos National Laboratory)
- PyNE – Elliot Biondo (University of Wisconsin - Madison)
- ADVANTG Tutorial: Automated Variance Reduction for MCNP – Scott Mosher, Seth Johnson, and Ahmad Ibrahim (Oak Ridge National Laboratory)
- MCNP6 Advanced Tallies Tutorial – Trevor Wilcox (Los Alamos National Laboratory)
- PENELOPE – Francesc Salvat (Universitat de Barcelona)
- Fixed Source Analytical Methods – Barry Ganapol (University of Arizona)

Several of these presentations are also available on the conference website. The final aspect of the technical program was three technical tours:

- Provision Proton Therapy Center – This tour took visitors through the new therapy center in Knoxville, including the current construction of a second gantry and second accelerator proton accelerator.
- Oak Ridge National Laboratory – During this tour visitors were able to see the Graphite Reactor Facility built at Oak Ridge during the Second World War, the Spallation Neutron Source (SNS), and the High Flux Isotope Reactor (HFIR).
- ORTEC and CANBERRA – This tour included visits to crystal growth facilities in Oak Ridge and facilities where these two international companies design, build, and test new detector equipment.

A final highlight of the topical meeting was the banquet, which was held at the Knoxville Museum of Art. The guest speaker was Ray Smith, a long time employee of the Y-12 National Security Complex and the current historian for Y-12. The highlight of the evening was the presentation of awards to three RPSD members:

- Pedro Vaz – Outstanding Service Award
- John W. Poston, Sr. – Professional Excellence Award
- Donald J. Dudziak – The Rockwell Lifetime Achievement Award

The next RPSD topical meeting will be held in conjunction with the 13<sup>th</sup> International Conference on Radiation Shielding in 2016. A group at CEA Saclay in France is planning the conference. While the exact dates and location are still not final, the current leading choices are September or October of 2016 in or near Paris, France.

All of the organizers of RPSD 2014 would like to thank everyone who attended the meeting, submitted and presented a paper, conducted a technical workshop, provided a technical tour, and those that provided sponsorship of the meeting (Varian, Oak Ridge National Laboratory Nuclear Science and Engineering Directorate, Nuclear Safety Associates, Navarro Research and Engineering, Kirk Nuclear Information Services, and the University of Tennessee Department of Nuclear and Radiological Engineering). With out all of these contributions, the topical meeting could not have been such a great success.

## ANS-6 Standards Subcommittee Update

Charlotta E. Sanders, Chair  
University of Nevada, Las Vegas (UNLV)  
charlotta.Sanders@unlv.edu

“Weights and measures may be ranked among the necessities of life to every individual of human society. They enter into the economical arrangements and daily concerns of every family. They are necessary to every occupation of human industry.”

John Quincy Adams, 1821

The ANS-6 Standards Subcommittee supports RPSD related work/interest including Specification for Radiation Shielding Materials (ANSI/ANS-6.4.2), Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants (ANSI/ANS-6.4), Gamma-Ray Attenuation Coefficients and Buildup Factors for Engineering Materials (ANSI/ANS-6.4.3), Neutron and Gamma-Ray Cross Sections for Nuclear Radiation Protection Calculations for Nuclear Power Plants (ANSI/ANS-6.1.2), Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants (ANSI/ANS-6.6.1), Program for Testing Radiation Shield in Light Water Reactors (ANSI/ANS-6.3.1), and Neutron and Gamma-Ray Fluence-to-Dose Factors (ANSI/ANS-6.1.1).

This exciting work is on-going through updates and revisions to the existing standards. We have recently had an increase in the working groups membership, which is appreciated. If you have thought about joining a working group but not yet gotten around to it, it is not too late. Please contact myself or Patricia Schroeder, ANS Standards Administrator [pschroeder@ans.org] for more information.

The recently organized Safety & Radiological Analysis Consensus Committee (SRACC), under which the ANS-6 activities fall, will not meet during the upcoming ANS winter meeting. Some of the ongoing efforts, taking place via electronic communication, is to evaluate which of the ANS-6 standards may be good candidates for becoming an international standard. Updates on these efforts will be provided over the next year.

# HONORS AND AWARDS

## Rockwell Lifetime Achievement Award



The **2014 RPSD Rockwell Lifetime Achievement Award** recipient is **Donald J. Dudziak**.

The Lifetime Achievement award, also referred to as the Rockwell Award, is based on long-term contributions in research, development of technology, or education in radiation measurement, protection, shielding, and dosimetry.

It is expected that most recipients will have been long-time active members of the American Nuclear Society. Moreover, most recipients will be authors of publications that made significant contributions to the science of radiation protection and shielding.

Donald J. Dudziak has dedicated over five decades of his life to outstanding research, development, education, and mentoring in the area of radiation shielding and protection and continues to work in the field as a Los Alamos emeritus fellow, an ANS fellow, and as a journal editor.

## Professional Excellence Award

The **2014 RPSD Professional Excellence Award** recipient is **John W. Poston, Sr.**

The basis for this award would usually be a major contribution to the state of the art, an important publication, a major technical achievement, or a sustained record of significant accomplishment and technical excellence.

This award is presented to John W. Poston, Sr. for his exceptional contributions over the last 50 years to the field of radiation protection as an internationally recognized authority on internal radiation dosimetry research, an educator at two major universities, an author of books and NCRP reports, and a leader for many professional societies.



## Outstanding Service Award



The **2014 RPSD Outstanding Service Award** recipient is **Pedro Vaz**.

This award is in recognition of outstanding past or current service to the Society and/or Division by a member of the Division. This award may be characterized as a distinguished service award or outstanding service award.

This award is presented to Pedro Vaz for his long-time service to ANS/RPSD, most notably in organizing many conferences as a major representative from the international community and for his outstanding research contributions in radiation protection and shielding.

All three awards were presented at RPSD-2014, the 18<sup>th</sup> Topical Meeting of the Radiation Protection & Shielding Division, held in Knoxville, TN (September 14-18, 2014).

Congratulations to our award recipients!

We encourage our members to nominate their peers to these RPSD awards.

For more information on nominations visit <http://rpsd.ans.org/awards/awards.html>

or  
email Arzu Alpan at [alpanfa@westinghouse.com](mailto:alpanfa@westinghouse.com).

## 2014 ANS Annual Meeting RPSD Paper Awards

Six outstanding papers were nominated for the RPSD best paper awards for the 2014 ANS Annual Meeting. These outstanding papers were judged during the presentations, and the following papers were chosen as best papers.

**1<sup>st</sup> place:** MCNP6 Cosmic & Terrestrial Background Particle Fluxes – Release 4, G. E. McMath, G. W. McKinney, and T. A. Wilcox (LANL)

**2<sup>nd</sup> place:** Uranium and Plutonium Fission Product Gamma Intensity Measurements and MCNP6 Simulations, M. T. Andrews (Royal Military College of Canada), J. T. Goorley (LANL), E. C. Corcoran, D. G. Kelly (Royal Military College of Canada)

**3<sup>rd</sup> place:** Production of Energetic Light Fragments with Expanded Cascade Exciton Model (CEM), Leslie M. Kerby (LANL, University of Idaho), Stepan G. Mashnik (LANL), Akira T. Tokuhira (University of Idaho)

Congratulations to Garrett, Madison, and Leslie on their awards! Each will receive an RPSD best paper certificate. Additionally, Madison and Leslie will receive a monetary award of \$100 as student award recipients.

The remaining outstanding papers deserve recognition and were as follows:

Simulation of Electron Probe Microanalysis for the Purposes of Automated Material Identification – Initial Evaluation of Available Monte Carlo Tools, Thomas M. Miller, Bruce W. Patton, and Charles F. Weber (ORNL).

Analysis of the Scattering a Beam of Neutrons or Photons from broad Rectangular Targets – Modeling and Compact Benchmark Tools for quick estimates and MC Verifications, E. V. Steinfelds, D. Andrew (Western Kentucky University).

Preliminary Analysis of a Source Term for Primary Coolant System of China Lead-based Research Reactor (CLEAR-I), Tongqiang Dang, Lanfang Mao, Haixia Wang, Qian Guo, Yican Wu, FDS Team (Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences).

## 2014 RPSD Election Results



**Chair**  
**Glenn E. Sjoden**  
 Chief Scientist  
 Air Force Technical Applications Center PAFB, FL



**Vice Chair**  
**Michele Sutton Ferenci**  
 Chief Medical Physicist  
 Penn State Hershey Cancer Institute Hershey, PA



**Secretary**  
**Steven J. Nathan**  
 Advisory Engineer  
 Savannah River Nuclear Solutions  
 Aiken, SC



**Executive Committee**  
**Jason T. Harris**  
 Associate Professor  
 Idaho State University  
 Pocatello, ID



**Executive Committee**  
**Lawrence H. Heilbronn**  
 Assistant Professor  
 Department of Nuclear and Radiological  
 Engineering, University of Tennessee  
 Knoxville, TN



**Executive Committee**  
**Thomas M. Miller**  
 Research and Development Staff  
 Reactor and Nuclear Systems Division  
 Oak Ridge National Laboratory  
 Oak Ridge, TN

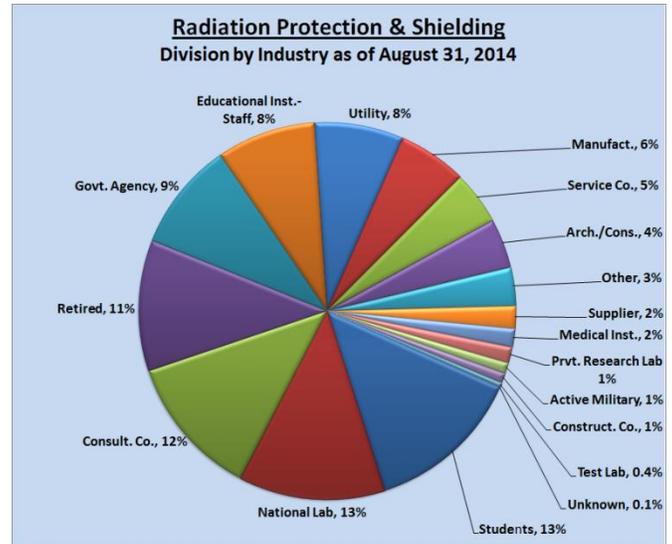


**Executive Committee-Non US**  
**Arkady Serikov**  
 Staff Research Scientist,  
 Karlsruhe Institute of Technology (KIT) Institute for  
 Neutron Physics and Reactor Technology (INR),  
 Karlsruhe, Germany

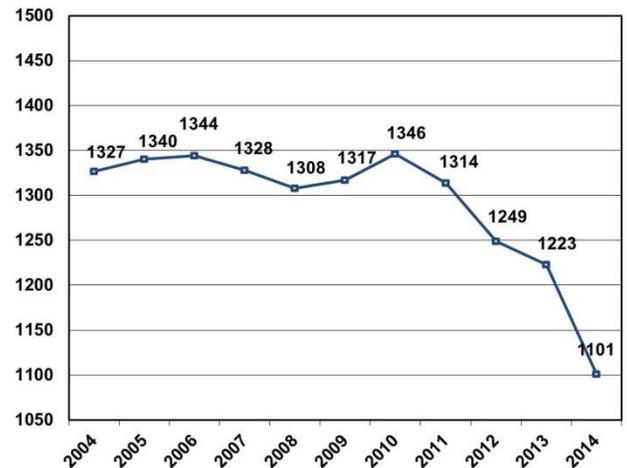


**Executive Committee-Student**  
**Margaret K. Sudderth**  
 Student  
 Georgia Institute of Technology  
 Atlanta, GA

## 2014 RPSD Membership Data



### Radiation Protection & Shielding Division

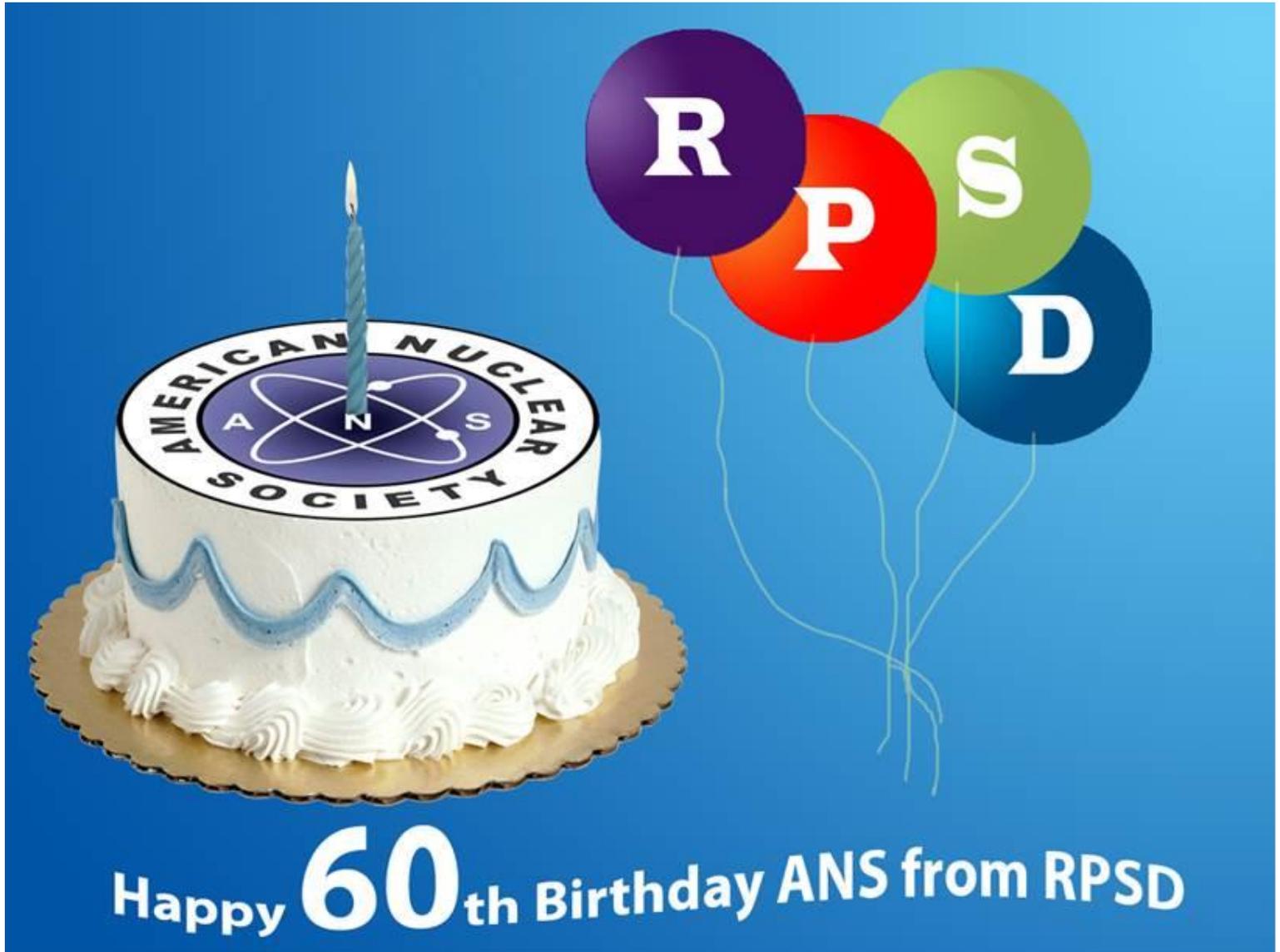


These are the membership stats as of August 31, 2014. Please note this explanation from Diane Cianflone, ANS Membership Director:

“ANS membership has been trending slightly downward over the past few years, although we expect it to stabilize or grow slightly this year.

What also must be kept in mind is the annual membership cycle where in July each year, members who have not paid their dues are dropped from membership. The membership totals at the end of July represent the lowest number of the year. Then, during the ensuing months, membership increases as people join ANS. The membership totals at the end of June each year represent the highest number of the year. In July, the drop for non-payment of occurs and the cycle begins again.

Therefore, we expect division numbers to increase each month until June.”



The **Radiation Protection and Shielding Division** of the **American Nuclear Society** is concerned with radiation protection and shielding aspects of nuclear science and technology -- including interaction of nuclear radiation with materials and biological systems, instruments and techniques for the measurement of nuclear radiation fields, and radiation shield design and evaluation.

The RPSD newsletter is published in the spring and fall of each year. Contributions to the next newsletter can be sent to Michele Sutton Ferenci at [mferenci@hmc.psu.edu](mailto:mferenci@hmc.psu.edu)

October 2014  
Newsletter

Michele Sutton Ferenci, Editor  
[mferenci@hmc.psu.edu](mailto:mferenci@hmc.psu.edu)

RPSD website: <http://rpsd.ans.org/>



**American Nuclear Society**  
Radiation Protection and Shielding Division