

**UNIVERSITY OF WISCONSIN-MADISON**  
**STUDENT SECTION OF THE**  
**AMERICAN NUCLEAR SOCIETY**

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To whom it may concern:

It is with great pleasure that I strongly support the application of the UW American Nuclear Society Student Section (UW-ANS) for the Samuel Glasstone Award. As Faculty Advisor, I place a great value on innovation and creativity in the officers and members of the UW-ANS. As a student section with a strong history of success, it is this creativity that allows them to continue that success and maintain their value to members. With a strong and comprehensive program inherited from the previous year, adding new ideas is a challenge of both imagination and logistics.

An important new effort this year was to take part in the discussion and debate surrounding WI energy legislation. The Clean Energy Jobs Act was crafted in response the Governor's Global Warming Task Force recommendations that included a measure to relax the restrictions on construction of nuclear power plants. In addition to providing informational testimony at a hearing on the bill, UW-ANS members were given advice and training about how to engage their own lawmakers on issues important to them.

A variety of "internal" improvements were also successful this year. These are less visible to members and outsiders, but are important for maintaining the health of the organization. A more rigorous financial planning and accounting methodology was implemented to enable the treasurer to better track the spending of the organization relative to the budget. In addition, the adoption of the Google Docs repository of information will be a tremendous asset for the succession between officers. Even with careful planning, it has been too easy for information to be lost in the transition from one year's officers to the next. This technological change will help guard against that.

One of the most effective ways for the UW-ANS to engage students outside of nuclear engineering majors is to collaborate with other student organizations. While this has often been attempted in the past, this year's program is full of such collaborations. While one or two of these organizations are traditional partners, the UW-ANS hosted events with more than 10 different organizations from across campus.

Enacting these improvements while maintaining the large outreach program that is a hallmark of UW-ANS success requires dedicated effort by the officers. Their efforts to grow the organization and its programs are a testament to their leadership and evidence of a robust and successful student section. I hope that the Glasstone award committee recognizes the continued outstanding accomplishments of this organization when they award the 2010 Samuel Glasstone award.

Sincerely,

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Annual Report: 2009–2010  
University of Wisconsin-Madison Student  
Section

Submitted to the ANS Glasstone Award Committee



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# 1 Introduction

During the 2009-2010 academic school year, the University of Wisconsin-Madison chapter of the American Nuclear Society (UW-ANS) continued its tradition of organizing, coordinating, and executing a myriad of events related to public outreach, community service, and professional development. The goal of UW-ANS and its officers was to maintain the high standard set by the previous administration of UW-ANS as well as to build on the program, both with the events traditionally hosted as well as by developing new opportunities for its members, the College of Engineering, and the Madison, WI community.

As in previous years, UW-ANS continued to participate in such community service and public outreach activities as Adopt-A-Highway, Trick-or-Treat for Canned Goods, the high school essay contest, Boy Scout Nuclear Science Merit Badge Days, and Science Olympiad. And as in previous years, these events were incredibly successful.

UW-ANS hosted a variety of professional development events that allowed students the opportunity to network with professionals and to learn more about the prospects available to them upon graduation. These events included general meetings in which professionals from the nuclear industry were invited as speakers, various ANS national and student conferences, and career fairs put on by the College of Engineering in which ANS helped facilitate.

On the social front, UW-ANS continued with many of its time honored traditions. The bi-annual department picnic “Pic-Nuke” was hosted by ANS, turning out around 150 attendees. ANS members met throughout the year for social events that included movie nights and games nights. Students networked with professors and amongst themselves at the coffee and donuts event every Wednesday morning. And as they have for over ten years, ANS students, alumni, and professors showed up at Mickie’s Dairy Bar at 7 A.M. every Friday morning for breakfast.

In addition to the events traditionally organized by UW-ANS, several other events and programs were implemented this year. Public Outreach was expanded to include participation in additional science and engineering fairs compared to previous years. In addition to its usual coordination of Boy Scouts Workshops, UW-ANS was invited to participate in a Boy Scouts Jamboree in recognition of its commitment to the program. ANS offered new professional development opportunities in the form of seminars; two seminars, a Financial Planning Seminar and a Python Bootcamp, were available to students this. On the socials front, the Engineering Physics Department, as organized by ANS, began playing basketball faithfully two or three times a week.

Another important addition to the UW-ANS’s efforts included its anti-nuclear rebuttal. In years past, ANS has played a role in educating state representatives as well as the general public, but its

participation has been intermittent. This year, UW-ANS and the University of Wisconsin chapter of Women in Nuclear (UW-WiN) organized workshops in which a member showed participants how to write a letter to their representatives urging them to relax the moratorium against building new nuclear plants in Wisconsin. Furthermore, as the State of Wisconsin debated its new energy bill, UW-ANS expressed its views by attending a hearing, and one of the members even testified about the benefits of nuclear power.

Although ANS has traditionally hosted many events in cooperation with WiN and the University of Wisconsin chapter of the American Institute of Aeronautics and Astronautics (UW-AIAA), UW-ANS made a special effort to coordinate with other student organizations across campus. ANS jointly hosted events with the Environmental Law Society (ELS), the Society for Women Engineers (SWE), the American Society of Materials (ASM), Triangle Fraternity, the Biomedical Engineering Society (BMES), The Hacker Within (THW), Energy Hub, and the Center for Business, Environment and Social Responsibility (BESR) as well as WIN and AIAA. Participating in event planning with these student organizations expanded ANS's involvement with the university as well as provided excellent networking opportunities for its members and the members of the other student organizations.

In summary, UW-ANS continued with many of its traditional programs and events but made a concerted effort to expand and grow. Despite the challenges of maintaining all the events and programs in which ANS currently participates, the current executive committee is confident that next year's officers and members will be able to uphold and possibly develop new traditions for UW-ANS and the Department of Engineering Physics at the University of Wisconsin-Madison.

## **2 Section Management**

The success of the UW-Madison section of ANS is due in large part to the commitment and competency of the executive board, its chairs, and other positions that provide support to the section. The efforts and duties of those students (and in one case, faculty member) are described herein.

### **2.1 Executive Officers**

The executive committee consisted of seven officers: the President, the Vice-President, the Public Information Officer, the Treasurer, the Communications Officer, and two Governor positions. Four of these positions, namely the President, Vice-President, Public Information Officer, and Treasurer, are elected positions that last one year in length. The Communications Officer and two Governor positions are one semester appointments.

#### **2.1.1 President**

The President this year was Amy Laspe. Her responsibilities included moderating general member and executive committee meetings, scheduling speakers for general meetings, organizing tours and conferences, managing the section's schedule, appointing the Webmaster and Mentoring Chair, and acting as the liaison and representative for the section both professionally and among other student organizations. Next year's President will be Casey Anderson.

#### **2.1.2 Vice-President**

The Vice-President this year was Evan Western. He was responsible for organizing the section's social activities, bookkeeping active membership status of students, acting as President in the President's absence, and providing support for the President. Other duties that Evan undertook this year that are not necessarily among the responsibilities of the Vice-President included designing and ordering ANS t-shirts and organizing Engineering Physics department informal basketball games. Next year's Vice-President will be Brian Strebel.

#### **2.1.3 Public Information**

The Public Information (PI) Officer this year was Royal Elmore. He devoted his time to developing, organizing, scheduling, and executing the section's public outreach efforts as well as to appoint and oversee the work of the Boy Scouts, Science Olympiad, and Essay Contest Chairs. To



complete these tasks, Roy was responsible for inventorying public outreach supplies, writing and designing presentations to be used at public outreach events, coordinating with teachers and scout leaders to organize events such as Boy Scouts and the Essay Contest, and providing support to the UW-Madison Women in Nuclear (WiN) section as they developed their Girl Scouts program. The Public Information Officer will be Amir Jaber next year.

#### **2.1.4 Treasurer**

The Treasurer this year was Kathryn Huff. Her responsibilities included drafting budgets for each semester and for the entire year, keeping track of all transactions completed by the organization, writing grant proposals, acting as liaison between ANS and the UW-Madison Student Leadership Center (an organization that oversees the donated funds of College of Engineering student organizations), and advising the other executive officers on how best to spend the section's funds. Patrick Snouffer will be the Treasurer next year.

#### **2.1.5 Communications**

The Communications Officer position is a one semester term. However, our Communications Officer this year, Casey Anderson, was elected for both terms. Casey's various job duties were to take minutes at executive committee meetings, to send out weekly announcements, to advertise for upcoming events (usually by flyer, by chalking information on sidewalks, or via email), and to maintain and update the ANS announcement mailing list. Next semester's Communications Officer will be Stuart Slattery.

#### **2.1.6 Governors**

Like the Communications Officer position, the two Governors are elected for one semester terms. The Governors for both fall 2009 and spring 2010 were Sean Martin and Sarah Van Oosten. The main purpose of the Governor position is to get acquainted with the workings and dealings of the ANS executive committee and to develop their leadership skills. To accomplish these tasks, Governors are charged with planning and facilitating special events throughout the semester, such as Adopt-A-Highway and E-Week. David Adam and Stephanie Zwolinski have been elected as next semester's Governors.

## **2.2 Chairs**

The chairs of the UW-Madison ANS section are appointed by either the President or the Public Communications Officer and are therefore non-elected positions. As such, chairs are not required to attend executive committee meetings and are more committed to a more focused set of responsibilities. All chair positions are yearlong appointments.

### **2.2.1 Boy Scouts Chair**

The Boy Scouts Chair this year was Kevin Robb. The main responsibility of the Boy Scouts chair is facilitating and organizing UW-ANS's Boy Scouts Merit Badger Workshops. Because a lot of the resources and materials are used at other public outreach events, Kevin also commonly helped out with these science fairs, workshops, and other events. This year, UW-ANS was invited to attend a Boy Scouts Jamboree in Oshkosh, WI, another event that the Boy Scout Chair was responsible for managing.

### **2.2.2 Science Olympiad Chair**

As appointed by the Public Information Officer, the Science Olympiad chair this year was Ahmad Ibrahim. The Science Olympiad Chair is charged with coordinating UW-ANS members to coach students at Waunakee Middle School as they construct projects.

### **2.2.3 Essay Contest Chair**

The Essay Contest Chair, responsible for coordinating and executing the Essay Contest, was Eric Alderson this year. Each year, the Essay Contest Chair is appointed by the Public Information Officer.

### **2.2.4 Mentoring Chair**

The Mentoring Chair this year was Greg Lucas. Greg's main duty was to manage UW-ANS's mentoring program in which underclassmen are paired up with upperclassmen. Although not a requirement, most of the students who participated in this program were majoring in Nuclear Engineering.

## **2.3 Other Positions**

In addition to our executive and chair positions, there were several other ANS members that provided support to the UW-Madison chapter.

### **2.3.1 Webmaster**

The Webmaster this year was Troy Haskin. The two main responsibilities of the Webmaster are to maintain the UW-ANS website and to provide support for the use of Google. Tasks included in maintaining the website are syncing the website's forms with Google Docs, updating pictures and presentations, and ensuring that the website continues to function as intended. To aid the executives in using Google (email, calendar, and docs), the Webmaster organizes information, aids in turnover between administrations, and teaches current users the capabilities of using Google.

### **2.3.2 Polygon Representative**

This year's Polygon Representative was Ahmad Ibrahim. Polygon is the student council for all the student organizations of the College of Engineering. As the ANS representative, Ahmad attended Polygon meetings, informed the ANS executive board of its decisions, advocated for ANS in student council meetings, and made ANS eligible for funding opportunities from Polygon.

### **2.3.3 Faculty Advisor**

Paul Wilson was our Faculty Advisor this year. Paul provided the chapter with advice and acted as liaison between the organization and the department. Because he has been the faculty advisor for UW-ANS for years as well as a student at the university, his experience and insights were valuable contributions to the section.

## **3 Operations**

In addition to the contributions of the executive committee and its general members, UW-ANS attributes its success to the administrative procedures and processes that kept it organized. Furthermore, these processes made it possible for turnover to be carried out with relative ease between last year's executive committee and this year's, and this year's executive board is confident that the same success will be realized next year.

### **3.1 Office Hours**

This year, UW-ANS hosted office hours in which members of the executive board were available at the ANS office located in the Engineering Centers Building on UW-Madison campus. For ten hours every week, ANS executives were available for questions, t-shirt sales, and even informal tutoring.

One hour each week of these office hours included the weekly executive meetings in which the executive board discussed current issues, upcoming events and their logistics, and other items of interest regarding the section. Chairs, the Webmaster, the Polygon Representative, and general members were welcome and sometimes were present at these meetings to provide input for the executive board.

### **3.2 Active Membership**

Active membership is a distinguished title that UW-ANS awards to members who demonstrate a strong commitment to the continuation and improvement of ANS and its programs. To attain active membership status, members were required to acquire a certain number of active membership points across four categories: ANS Service, Professional Development, Community Service/Public Outreach, and Wild Card. In addition to accumulating points, active members also paid their dues, which were \$10 per semester or \$15 for the entire year (except for freshmen, in which case dues were not collected). This system is similar to what was used from 2005-2008.

Active members were required to accumulate either at least one active membership point in each of the above categories OR at least six active membership points across any category or combination of categories each semester. The following table provides examples of different ways in which students could earn active membership points:

<b>ANS Service</b>	<b>Professional Development</b>	<b>Community Service</b>
Planning an event	Submitting an article to the ANS blog	Participating in Science Olympiad
Driving members during socials, tours, or conferences	Attending a workshop hosted by ANS, such as the Python Bootcamp or the Financial Planning Seminar	Participating in Community Service events, such as Adopt-A-Highway or Trick-or-Treat for Canned Goods
Helping run an event (setup, cleanup, etc.)	Attending a workshop hosted by the College of Engineering	Participating in Boy Scouts Workshop
Being an officer (executive, chair, Webmaster, etc.)	Participating in the Student Sections Committee	Participating in Girl Scouts Workshop with WIN
Volunteering at Career Connections (run by the College of Engineering)	Writing to a local representative (i.e., writing to urge overturning the moratorium in Wisconsin)	Helping out at a science fair
Participating in E-Week	Presenting at an ANS conference	Presenting for the Essay Contest

A Wild Card active membership point is simply a second point awarded in any category.

Members submitted their active membership points via the UW-ANS website ([atomicbadger.org](http://atomicbadger.org)). Included on the website is a form that upon electronic submission, the data is updated and reflected in a Google document that can be accessed by the executives. The executive committee was then able to easily check which members were active. Benefits of being an active member included that ANS would cover hotel rooms at conferences and provide reduced prices at socials (food, fees, etc.).

### **3.3 Captain Neutron**

Every month, ANS honored those students who demonstrated true dedication to the section by awarding them the title “Captain Neutron”. Members of the executive committee were not eligible but chairs and other positions are. Students named Captain Neutron were given an ANS t-shirt. The following members were Captain Neutron this past year (note that December and January

were combined due to limited activity during winter break):

<b>Month</b>	<b>Recipient</b>
Sept. 2009	Ahmad Ibrahim
Oct. 2009	Greg Lucas
Nov. 2009	Rachel Slaybaugh
Dec. 2009 / Jan. 2010	Kevin Robb
Feb. 2010	Amir Jaber
March 2010	Tae Ahn

### **3.4 Financial Planning**

Spending money and obtaining funds is always a challenge for any student organization. UW-ANS applied principles that have worked in previous years in conjunction with lessons learned to allocate funds appropriately and ensure that sufficient funds would be available for next year's administration.

#### **3.4.1 Budget**

As the school year commenced, each member of the executive board submitted a budget detailing the costs and earnings that their respective position could predict for the year. Some activities, such as supporting local Science Olympiad groups, earn money for our section, while other activities, such as food for unfunded meetings and supplies for outreach activities, entail a cost. This meeting enabled a discussion both to determine the way in which the money could best be allocated and to highlight distribution of events for which each officer in our organization should take responsibility. This year, the budget compiled from this meeting was made available in our Google Docs account. Thus, members of the executive board had access to the agreed-upon budgets for the events under their supervision and could make appropriate appeals if unexpected expenses arose. This year, our section stayed well within our budget, having generously predicted possible expenses for our events.

This year the UW ANS section spent approximately \$11,000. To balance our spending, we solicited donations from many companies and organizations in the nuclear field and associated with

the University of Wisconsin. By relying on materials from past years and applying lessons learned, our spending this year was slightly lower than previous years', but no events were cut.

### **3.4.2 Administration**

The student section has two spending accounts. We have a checking account with Associated Bank and an account through the Student Leadership Center (SLC) in the engineering department. The SLC requires us to maintain an account with them to apply for certain grants. This account is also used to pay for large events such as conferences. The checking account is used to reimburse members and smaller items due to the ease of use. All checks written must be signed by two members of authorized signers which include: the President, Vice-President, Treasurer and Faculty Advisor. This method ensures more responsibility when spending and works well.

This year, in our enthusiastic adoption of Google Docs to communicate, a Google Form was created for executive members to make check requests to the check signers. This system alerted the treasurer immediately when a check needed to be written for an item, and kept track of the checks written, their amounts, and their purposes in a Google Spreadsheet that was available to the executive board. This system increased efficiency, organization, and transparency in the purchasing system, alleviating confusion created by many checkbooks and signers.

### **3.4.3 Funding**

A significant fund-raising effort was put forth to account for the large amount of money spent. The treasurer put many requests out to nuclear and energy companies for general funding, and several other members put in requests for their individual events. Although not all of these requests received responses, we were pleased to receive support from both Dominion and Areva.

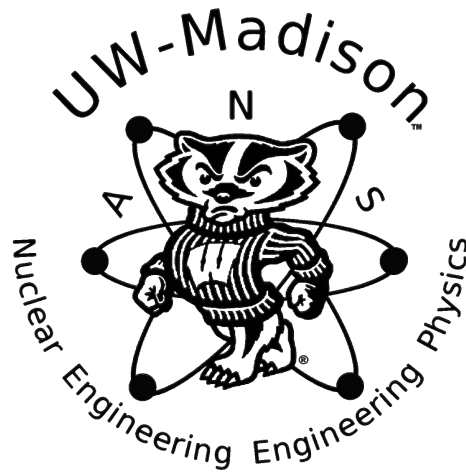
Dominion, a consistent supporter of the University of Wisconsin ANS section, provided funds for coffee and donuts as well as \$75 per student to attend the student conference. Grant money that we received came from the University's engineering government (Polygon) each semester and also from the Engineering Physics Department. This money was applied to conference hotels and the Essay Contest. Other sources of funding came from Science Olympiad volunteering, Boy Scouts Merit Badge Workshops, and the selling of our student section t-shirts. The money received from these sources was used for our semi-annual picnic (Pic-Nuke), food for meetings, and outreach supplies.

### 3.4.4 T-Shirts

Another opportunity that ANS undertook this year to raise money was by selling t-shirts. Vice-President Evan Western designed and ordered 100 t-shirts in various sizes. UW-ANS sold these t-shirts for \$10 to active members and \$15 to everyone else. These t-shirt sales were very successful, especially at Boy Scouts Workshops.



*Front*



*Back*

*UW-ANS T-Shirt decals.*

### 3.5 Google

UW-ANS has now been using [The AtomicBadger](#) domain and [Google Apps](#) for more than two years. While the use of Google Calendar, Google Sites, and GMail were quickly adopted (and are still heavily used) by us, one service was very under-utilized. Thankfully, this year saw a strong push against that neglect, and now Google Docs has officially become the primary communication tool for the UW-ANS organization. The word processor, spreadsheet, and presentation software are all used to assemble, coordinate, and disseminate organizational activities and proceedings. A non-exhaustive list of these uses follows:

- executive committee meeting agendas and minutes
- budgetary planning
- membership roster



- conference and tour sign-ups
- general meeting introductions
- guest speaker presentations
- descriptive source inventory
- chapter logo storage

In addition to these “standard” document abilities, Google Docs also offers Forms. Forms is a simple tool that allows executives to quickly create surveys or applications that can be embedded in a website. When filled out and submitted, the Form sends the information to a spreadsheet and creates summary statistics for all of the submissions. This service from Docs is an important part of the current website, and its use is discussed in more detailed below.

Two recent additions to Google Docs hold a lot of promise for the near future. The first is the inclusion of Shared Folders. All of the aforementioned Google Docs content is not only shared with all of the executive committee but also placed into a folder structure that clearly labels the document’s purpose. We firmly believe future executives and UW-ANS overall will benefit greatly from this new organizational paradigm. Secondly, on the technical side, Google Docs now offers Google Apps Script as a means to read, process, and write data between all the services of Google Apps (Sites, Calendar, Docs, etc.). For example, our Webmaster wrote a program to automatically determine active from non-active members on our roster using this tool. Holding untapped potential, this is the newest feature added to Docs (January 2010) and is, therefore, the least explored. We will be continuing to develop proficiency in and explore new uses for Google Apps Script throughout the year.

This year saw UW-ANS commit firmly to communication in the digital age through full utilization of the Google Apps suite of services. Building upon the previous years’ careful trek into new ground, we now consider Google Apps as a natural and effective means for efficient collaboration amongst current UW-ANS officers and members while providing a steady and promising base for the future.

### **3.6 Website**

While communication and collaboration amongst the executives is important, a well-informed and productive membership forms the core of a truly strong organization; the primary tool ensuring this was [The AtomicBadger](#) website.

An up-to-date spreadsheet of our members is automatically published to the site via Google Spreadsheets to ensure members are aware of their current standing and to bring to light errors that may be present. Also, a list of the year's presenters and their presentations (when available) is listed for those who may have missed a meeting and for future considerations. Lastly, an enthusiastic adoption of Google Forms by the executives permeated the year. The current uses of the forms are:

- internship directory submissions
- Boy Scout registration and homework submissions
- blog post submissions
- active membership point submissions
- reimbursement requests
- general executive contact

Anyone can fill out these forms on the website and receive a quick and clear response from the appropriate officer. All of these aspects and abilities are used to increase efficiency and promote greater communication among the members of UW-ANS.

## 4 General Meetings and Events

UW-ANS strives to supply professional development options to its members. The chapter continued to provide a wide variety of speakers, opportunities to attend conferences, tours of nuclear facilities, and seminars as it has in past years.

### 4.1 ANS General Meetings

During this past academic year, UW-ANS scheduled, organized, and hosted eleven general meetings, five information sessions, and two elections meetings. General meetings typically included a brief presentation by the President detailing upcoming ANS events followed by a distinguished speaker. The information sessions were short informal presentations given by recruiters to the ANS membership. In addition to these meetings, ANS held two elections meetings in which members elected new executives; the first meeting was on December 10<sup>th</sup> in which the Communications Officer and Governors for the spring semester were elected, and the second was on April 22<sup>nd</sup> to elect the new executive committee for the next academic year.



*ANS members listen to John Dewes of Savannah River National Laboratory as he presents about his work.*

### 4.1.1 General Meeting Speakers

To facilitate interaction between UW-Madison and the nuclear industry, national labs, vendors, and other employers, UW-ANS hosted speakers at each of the eleven general meetings. Hosting these speakers allowed ANS members to network with potential employers, learn about the projects and goals of the organizations that the speakers represented, and discover the opportunities available to them after graduation. These meetings therefore provided invaluable professional development opportunities to the ANS members that attended. The speakers this year represented an especially diverse set of organizations as detailed below.

<b>Date</b>	<b>Speaker</b>	<b>Organization</b>
September 16, 2009	Scott Luchau, Andrew Kelliher	Dominion
September 22, 2009	Scott Vance	Pacific Northwest National Laboratory
October 6, 2009	Keith Bradley	Lawrence Livermore National Laboratory
October 14, 2009	Representative James Soletski	State of Wisconsin
October 28, 2009	Kenneth O'Brien	Nuclear Regulatory Commission
November 12, 2009	Shirley Johnson	International Atomic Energy Agency
February 2, 2010	John Dewes	Savannah River National Laboratory
March 9, 2010	Joseph Shuster	Author of Beyond Fossil Fools
March 23, 2010	Christopher Miles	United States Navy
April 14, 2010	Greg Piefer	Phoenix Nuclear Labs
April 26, 2010	Professor Robert Jeraj	Medical Physics Department, UW-Madison

### 4.1.2 Information Sessions

In addition to our general meetings, UW-ANS hosted several information sessions. These sessions were presentations given by recruiters representing companies that were at the Career Fair sponsored by Engineering Career Services (ECS). These information sessions were an excellent opportunity for both the employers and the students; students were able to interact and network with representatives from companies, and the recruiters were able to promote their companies more effectively. The ECS Career Fair was held twice this year: September 16-17 and February 2-3.

<b>Date</b>	<b>Speaker</b>	<b>Organization</b>
Sept. 15, 2009 (evening)	Thomas Steele	Idaho National Laboratory
Sept. 16, 2009 (afternoon)	Ross Radel	Sandia National Laboratory
Sept. 17, 2009 (afternoon)	Ryan Boscow	Pacific Northwest National Laboratory
Sept. 17, 2009 (evening)	Julie Tucker, Mark Boehle, Cary Luken	Bechtel Marine Propulsion Corporation
Feb. 1, 2010 (evening)	Thomas Steele	Idaho National Laboratory

In addition to these information sessions, UW-ANS in some cases helped facilitate interviews between students and recruiters. For example, Dominion requested that ANS set up interviews the day after they were hosted at an ANS general meeting.

### 4.1.3 Coordination with Student Organizations

UW-ANS especially strove to coordinate with other student organizations of UW-Madison this year. As in the past, ANS coordinated events with the Women in Nuclear (WIN) and the American Institute of Aeronautics and Astronautics (AIAA) chapters of UW-Madison. However, ANS held joint events with the Environmental Law Society (ELS), the Society for Women Engineers (SWE), the Biomedical Engineering Society (BMES), The Hacker Within (THW), Energy Hub, and the Center for Business, Environment and Social Responsibility (BESR). In addition to coordinating with these groups, another student organization, the Society for Industrial and Applied Mathematics (SIAM), was initiated into the UW-Madison campus this year.

**4.1.3.1 Women in Nuclear (WiN)** WiN and ANS jointly hosted several events, including a Financial Planning Seminar and a volleyball social. In addition, ANS helped WiN start up their Girls Scout Workshops as ANS has been hosting Boy Scout Workshops for years and possesses the knowledge, resources, and materials necessary to execute a successful program. Because ANS and WiN are within the same department and share members, cooperation between ANS and WiN will undoubtedly continue next year.

**4.1.3.2 American Institute of Aeronautics and Astronautics (AIAA)** The Engineering Mechanics/Engineering Mechanics and Astronautics (EM/EMA) program is within the same department (Engineering Physics) as the Nuclear Engineering program at UW-Madison. As such, the student organization associated with the EM/EMA degree, AIAA, and ANS commonly coordinate events together.

As in past years, ANS and AIAA organized two advising sessions (one each semester) for students and a meeting to brainstorm recommendations for the Industrial Liaison Committee from the students in the department. Moreover, AIAA and ANS jointly hosted the March 23<sup>rd</sup> meeting with the U.S. Navy and also the September 17<sup>th</sup> information session with Bechtel Marine Propulsion Corporation (in conjunction with the Society of Women Engineers as well).

**4.1.3.3 Environmental Law Society (ELS)** ANS jointly hosted a general meeting with the ELS on October 14<sup>th</sup>. Representative James Soletski of 88<sup>th</sup> Assembly District of the State of Wisconsin spoke to ANS and ELS about the political aspects of nuclear engineering. As a former employee of Kewaunee Nuclear Power Station, a chair of the Committee on Energy and Utilities, and a chairperson at a hearing regarding relaxing the moratorium in Wisconsin, Representative Soletski was an ideal speaker for a co-hosted event between a nuclear engineering student organization and a politically-oriented environmental advocacy group.

**4.1.3.4 Society for Women Engineers (SWE)** ANS and SWE coordinated two events together this semester. The first was the information session with Bechtel Marine Propulsion Corporation (with AIAA), and the second was Day on Campus.

**4.1.3.5 American Society of Materials (ASM)** ANS, SWE, and ASM jointly provided volunteers at the Capital Science and Engineering Fair. Although students who volunteered at this event did not necessarily coordinate the event together, it was still an excellent opportunity for ANS, SWE, and ASM to network.

**4.1.3.6 Triangle Fraternity** This year, ANS teamed up with Triangle Fraternity, a science and engineering fraternity on UW-Madison campus, to teach students about engineering at Rusch Elementary School. The Science Outreach Day hosted by the school was an excellent opportunity to not only expose students to engineering, but also to coordinate an event with a non-traditional partner.

**4.1.3.7 Biomedical Engineering Society (BMES)** ANS and BMES jointly hosted Professor Jeraj of the Medical Physics Department of UW-Madison to speak about his research. Since his research is mainly radiography, medical imaging, and health physics, Professor Jeraj's talk was of interest to both student organizations.

**4.1.3.8 The Hacker Within (THW)** THW is a relatively new student organization on UW-Madison's campus. As many ANS members are themselves very computer savvy, it seemed only natural that ANS and THW would jointly host an event. This year, ANS and THW coordinated a Python Bootcamp together.

**4.1.3.9 Energy Hub and the Center for Business, Environment and Society Responsibility (BESR)** ANS, Energy Hub, and BESR organized and sponsored Joseph Shuster, author of *Beyond Fossil Fools*, to give a lecture entitled "Energy Foolishness to Energy Independence". This event was advertised to the public via flyer distribution around campus and by an ad in the Badger Herald, a UW-Madison student-run newspaper. The lecture was a huge success as over 150 people from across campus were in attendance. The Badger Herald (a student newspaper) covered the event both in print and [online](#).

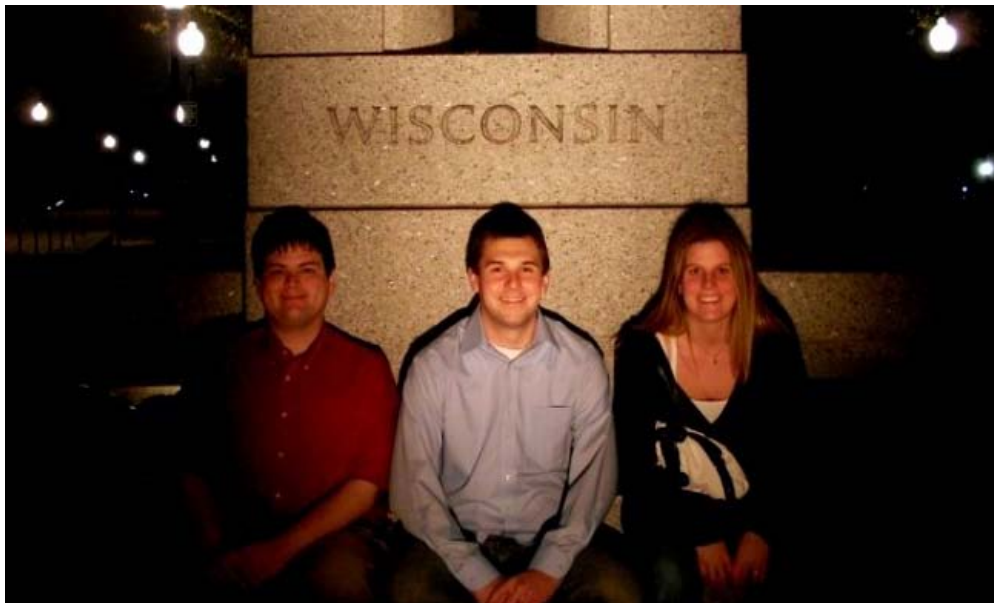


*Joe Shuster giving his talk  
"Energy Foolishness to Energy Independence".*

**4.1.3.10 Society for Industrial and Applied Mathematics (SIAM)** This year, SIAM made its appearance at UW-Madison. The program's President and chapter founder Lewis Lloyd is also an ANS member, and as such, Lewis used many of UW-ANS's principles and policies as an example for his organization. For example, SIAM's charter is strongly based on UW-ANS's charter, as are its budgets, funding letters, and other miscellaneous administrative forms.

## 4.2 ANS Conferences

UW-ANS was once again in attendance at the ANS Summer, Winter, and Student Conferences this year. These conferences provide excellent opportunities for students to present their research and projects to other professionals, network with other professionals and students, and talk with recruiters at the career fairs.



*Students (from left to right) Troy Haskin, Scott Weber, and Amy Laspe sitting in front of the Wisconsin section of the WWII memorial at the ANS Winter Conference in Washington, D.C. The students' schedules were so packed with conference events that they had to do their touring at night.*

### 4.2.1 2009 ANS Summer Conference

Five UW students attend the ANS Summer Conference in Atlanta, GA. One student, Ahmad Ibrahim, presented at the conference on "Improving the Mesh Generation Capabilities in the SCALE Hybrid Shielding Analysis Sequence."



#### 4.2.2 2009 ANS Winter Conference

Nine UW students attended the ANS Winter Conference in Washington, D.C. Two of these students, Royal Elmore and Katy Huff, each presented on their work developing GENIUSv2, a discrete facilities and materials modeling program for analyzing the nuclear fuel cycle. Most of the UW-Madison students that attended the conference helped as student assistants.



*Group picture of ANS Student Conference attendees while in the simulator of the Donald C. Cook Nuclear Power Plant. From left to right: Our tour guide Vincent, Vincent's son, Troy Haskin, Brian Strebel, Stephanie Zwolinski, Katy Huff, Patrick Snouffer, Jon Evans, Ahmad Ibrahim, Tae Ahn, Shane Swager, Amir Jaber, Paul Wilson, and sitting in front is Scott Weber*

#### 4.2.3 2010 ANS Student Conference

Because the ANS Student Conference was held at the University of Michigan, UW-ANS was able to send twenty-two students, four of which presented and one of which presented twice, to the conference. ANS coordinated the logistics for all the students and the faculty advisor due to Ann Arbor being within driving distance of Madison. Through a grant from Polygon, the College of Engineering Student Council, UW-ANS organized and funded transportation via van for all of its members. Included in the conference was the opportunity to tour the Donald C. Cook Nuclear Power Plant located in Bridgman, MI, which was conveniently located on the way back to Madison; therefore, about two thirds of the UW-Madison students were able to attend.

### 4.3 Python Bootcamp

The Python Bootcamp was a peer taught scientific computing workshop led by a student organization at the University of Wisconsin called The Hacker Within. A group of eight graduate students (many of them also members of ANS) taught a three day workshop on the Python programming language to an audience of 80 undergraduates, graduates, and faculty. ANS co-sponsored this



*UW-Madison students decked out in radiation worker attire while on the Donald C. Cook Nuclear Power Plant tour. Back row from left to right: Shane Swager, Amir Jaber, Paul Wilson, Ahmad Ibrahim. Front row from left to right: Troy Haskin, Amy Laspe.*

event by helping to reserve the space and providing advertisement support. Many ANS members were also essential volunteers to the bootcamp.

#### **4.4 Financial Planning Seminar**

This year, ANS, in cooperation with WIN, hosted Ryan Keshemberg, a financial advisor of North Star Resource Group. Mr Keshemberg talked with our members about financial planning on March 4<sup>th</sup>, 2010. Attendees learned the importance of investing, the different types of retirement plans, disability insurance policies, and how to file taxes. The seminar was a valuable professional development experience as well as a good opportunity for students to start thinking about their futures and planning how to manage their finances.

#### **4.5 Argonne National Laboratory Tour**

UW-ANS strives to provide its members with the opportunity to tour nuclear facilities. This year, ANS coordinated and organized a tour of Argonne National Laboratory (ANL) located in Argonne, IL on April 30<sup>th</sup>. The tour was open to ANS members as well as members of the public. Nineteen people participated on the tour, including a student majoring in Art and Psychology. ANS provided transportation and planned a tour of ANL's facilities, including the Advanced Photon Source (APS), the Argonne Tandem Linac Accelerator System (ATLAS), a Nuclear Engineering Exhibit, and the Argonne Information Center.



*The ANL tour group posing at the Advanced Photon Source.*

## **5 Public Information and Outreach Events**

As an important part of our mission, ANS jumped at any opportunity to reach the wider community on topics about nuclear engineering, nuclear energy, radiation sciences, or energy policy. Thus, one of the major goals of the ANS Public Information (PI) program was recapitalization of its outreach equipment because our equipment had simply atrophied over time. Particular emphasis was placed on the Cloud Chambers and Counters used for Boy Scouts and science outreach events.

For the Cloud Chambers, the natural uranium ore rocks had been used for years and broken up to make more smaller sources. Eventually, most of the uranium ore rocks were small enough that they were easily covered by the methanol collecting at the bottom of the cloud chambers. The small rocks meant the Cloud Chambers could not remain operational more than 20 minutes before needing to be aired out for an hour so that the methanol could evaporate. A new, large uranium ore rock was purchased and broken apart. The two largest pieces of the uranium ore rock had enough surface area to supply sufficient alpha particle emissions with enough energy to operate in a normally lighted room.

The Counters required a bit more capital investment. One of the Geiger-Mueller detectors (Counters) needed to be repaired, several new power cords were needed, and new alpha sources were a must. The vendor Spectrum Techniques was able to handle the entirety of the order for repairing and obtaining new equipment. The additional Counters and sources meant that during demonstrations we could provide more hands on exercises for Boy Scouts and the public.

### **5.1 Boy Scouts**

At Wisconsin, there is a strong partnership between ANS and the Boy Scouts organization, and that was continued in the 2009-2010 school year. UW-ANS attended the Boy Scouts Great Lakes Centennial Jamboree in September 2009 and hosted five Boy Scout Nuclear Science Merit Badge Workshops at the University of Wisconsin-Madison campus. Each of these events allowed ANS to reach out to some next generation scientists, engineers, and leaders while they are still developing.

#### **5.1.1 Boy Scouts Jamboree**

The positive feedback and respect UW-ANS built up in the Boy Scouts community led to an invitation to participate in the Great Lakes Centennial Jamboree (GLCJ) in September 2009. The scope of the GLCJ drew approximately 8000 people from all over Wisconsin, Illinois, Minnesota, and other Midwestern states. ANS members were placed in a large indoor hangar with several

other booths and showcased new ANS events like the traveling M&M radioactivity game and the natural light Cloud Chambers. At the Boy Scouts Jamboree, several hundred scouts, scout leaders, and scouts' families stopped by the ANS booth.

Out of the Boy Scouts and Scout Leaders who visited UW-ANS at the GLCJ, several of them came to the UW-ANS Boy Scout workshops that UW-ANS facilitated later during the academic year. The demand for more ANS interaction was prevalent at the GLCJ. Several Illinois Scout leaders asked if we could help them get the Argonne National Labs Nuclear Science Merit Badge started up again.

### **5.1.2 Workshops**

UW-ANS hosted approximately 230 Scouts and 75 Scout leaders at the two Fall and three Spring semester Boy Scout Nuclear Science Merit Badge Workshops. Workshops were filled to capacity weeks in advance. The workshops were all day events that lasted six hours on Saturdays. To ensure the scouts were prepared for the modules, they were asked to complete several pages of homework before attending the workshop. The homework encompassed nuclear science basics by asking such as "What are electrons, protons, and neutrons?" In previous years, printed homework was turned-in the day of the workshop. An improvement to this year's workshops included an online method of collecting and reviewing the pre-workshop homework the scouts completed.

The workshops all began with a large group discussion on nuclear and atomic structure models with pipe cleaners and colored cotton balls as visual aids. This was followed by an overview of stochastic and deterministic events as they relate to radiation and radiation hazard symbol identification. The groups then spread up into groups for the five modules. The modules were Cloud Chambers, Radiation Shielding with Counters, Inertial Electrostatic Confinement (IEC) lab tour, Pegasus Fusion Experiment demonstration, and Nuclear Careers and Myths. The University of Wisconsin Nuclear Reactor laboratory was unable to provide tours for the scouts this academic year; however, the Pegasus fusion and plasma research facility stepped in and provided engaging tours for the scouts.

After completing all five modules, the Scouts and Scout leaders reassembled back into one large group. The Scouts then found out if they passed the homework requirements and received their Nuclear Science Merit Badges. Those with insufficient homework scores were given an opportunity to resubmit the homework and have the Nuclear Science Merit Badge mailed to them.

One or two UW-ANS volunteers were needed to staff each module. Despite the significant time commitment, ANS has always had enough volunteers for each Workshop. Several UW-ANS members were involved in Boy Scouts when they were younger, and members enjoy the opportunity

to talk with youth who are motivated and interested in nuclear science. One of the newly elected Governors, freshman David Adam, was heavily engaged in Boy Scouts as an initial venture into volunteering for UW-ANS.

## 5.2 Girl Scouts with WiN

The University of Wisconsin Women in Nuclear (WiN) chapter hosted two Girl Scouts Nuclear Science Workshops this year. Uw-ANS members volunteered to run some of the modules which were similar in nature to those offered at the Boy Scouts Workshop. The Girl Scouts were generally younger than the Boy Scouts attending the Nuclear Science Merit Badge Workshop. Experience has shown how revamping the way information about nuclear science needed to be changed for a younger audience with a different method of learning. About fifty Girl Scouts and Girl Scout leaders attended each workshop.

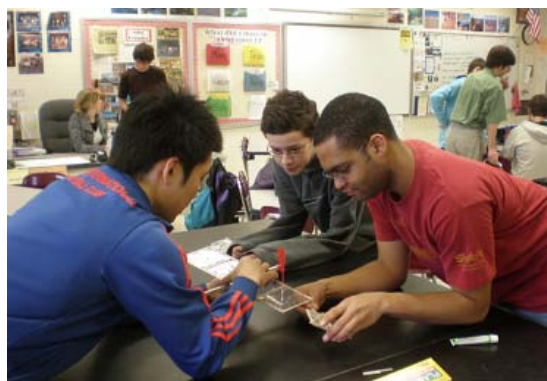
## 5.3 Science Olympiad

Over the past seven years, UW-ANS has developed a strong relationship with the Wisconsin Young Scientists of America (YSA) Science Olympiad (SO) program. The two main pillars of the relationship are the UW-ANS mentoring partnership with Waunakee Middle School and the workshops ANS facilitates at the State Tournament when it is hosted in Madison.

### 5.3.1 Mentoring

The partnership with Waunakee Middle School continued this year as UW-ANS members served as mentors for the Wright Stuff, Elevated Bridge, Junkyard Challenge, Battery Buggy, and Trajectory events. These are termed the “building events” by the Waunakee Middle School Coach and are more time intensive. Middle school students working on the building events benefited from having UW-ANS students available to offer suggestions and guidance when requested.

The mentorship took place from late October to



*Science Olympiad volunteers Tae Ahn (far left) and Roy Elmore (far right) help students in their event “Wright Stuff”.*

early April. Initially for the Fall 2009 semester,

UW-ANS was consistently able to get five or six volunteers to Waunakee on Tuesdays for two hour sessions. The transition to the Spring 2010 semester saw a rough turnover as four of the regulars had class conflicts. Science Olympiad Chair Ahmad Ibrahim was able to find four new volunteers to take over the roles. By the middle of February, UW-ANS was back to having five or six consistent volunteers each week.

At the March 2010 regional tournament, the Waunakee SO team received a shock in several building events, including Wright Stuff, with particularly lower than expected scores. This led to a renewed effort on the part of the students and mentors to improve the designs. In the end, this paid off with events such Elevated Bridge and Wright Stuff, which received 4<sup>th</sup> and 7<sup>th</sup> place at the Wisconsin State SO Tournament, respectively. Overall, the Waunakee Middle School SO team placed 5<sup>th</sup> at the State YSA SO Tournament. Some of the praise UW-ANS received for its efforts is provided below.

At semester time . . . attempted to recruit new members to come out and help. When he finally did, they were the most consistent UW mentors we've had. A couple of them even stayed until 5:00 or later when the others left. . . . For that last month to 6 weeks, the UW students that were consistently coming did a great job in helping the kids – and some definitely went above and beyond, as I mentioned earlier. Roy is one of those.

— Jessica Geissler, Head Coach of Waunakee Middle School

Your group came through and Waunakee did a good job at the state competition. You can take pride in that as well.

— Van Valesky, YSA Advisor to Engineering Dean Paul Percy

Again, thank you for taking the initiative to solve the problems which occur frequently in this outreach program. The university semester break is a formidable problem with the relationship between student organizations and coaches, as is good communication to keep the relationship going. It shows your dedication to success that you as a volunteer did not just ignore the tough problem but rather took steps to solve it.

— Van Valesky, YSA Advisor to Engineering Dean Paul Percy

The SO mentoring does fulfill another important role for ANS. It is a major source of funding for the chapter and allows us to purchase supplies for other ANS service project and outreach events. This year ANS raised over \$1350 dollars due to the dedication of the mentors. UW-ANS was recognized for its Science Olympiad efforts in the March/April 2010 issue of Nuclear News. We were featured on page 7.



*Amir Jaber (to the right in the red sweatshirt) helps three students assemble their equipment for “Trajectory”.*

### **5.3.2 State Competition Workshops**

UW-ANS has developed a reputation as being a student organization that is active in educating youth in the surrounding community about science and engineering. This led to us being asked to once again host at least one workshop on April 9<sup>th</sup>, which was the day before the State SO Competition. The students, parents, and chaperones coming to participate in or watch the competitions were our anticipated audience. This therefore meant that the caliber of the workshops needed to be higher because these attendees would probably have strong scientific and mathematical backgrounds.

Both a middle school and a high school workshop were offered by UW-ANS to cater to different education levels. The State YSA SO middle school and high school workshops descriptions in the program are included below:



**Nuclear Science Basics (Middle School):** Learn about some basics needed in nuclear science. A general description about radiation types and radioactive decay will start the session. You will then do a hands-on activity which simulates radioactive decay, where you will learn about half-life and the statistical nature of decay. Finally, you will do an experiment where you will learn concepts needed for radiation safety.

**Nuclear Science Advanced Level (High School):** Learn the basics and then gain a more advanced understanding of important aspects in nuclear science. A quick overview of radiation and nuclear decay will be followed by a simulation on radioactive decay. Next, you will learn about radiation detection and perform an activity to determine the best shielding material for different radiation types. Lastly, you will visit a nuclear fusion laboratory to see ongoing fusion research activities.

The workshops were each divided into three modules of roughly thirty minutes each. The middle school students were given a basic nuclear science overview and then played the M&Ms radioactive decay game. In the M&M's radioactive decay game, the students shook up ten M&Ms in disposable bath cups and then dump them out on disposable plates. The students were asked to separate out the M&Ms with the M's facing up after telling the ANS coordinator how many they had sectioned off. From a statistics standpoint, over a large population size the average number of M&Ms with the M's facing up should be about 50%. The students were allowed to eat the M&Ms with the M's facing up, and then they put the others back into the cup. This was repeated three additional times with the ANS coordinator keeping track of the total number of M&Ms that had decayed away.

For the hands-on activity, the middle school students learned more about radioactive particles with the Cloud Chambers experiment. At the Cloud Chambers experiment, more information about the different types of radioactive particles was explained. The final middle school station involved a guided experiment set using the Counters. With the Counters, the students could see how effective different types of shields were at stopping radioactive particles. This then led to discussions about practical uses of radiation shields, such as lead bibs for dental X-rays, that people may encounter in their own lives.

The high school workshop started at the Cloud Chambers experiment and was followed by a more advanced nuclear science discussion in preparation for the radiation shielding and detectors module. The Counters experiment for the high school students was more akin to a competition in which each group was challenged to find the "best" shield for each source. "Best" was defined as thinnest shield possible using the cheapest material with plastic, then aluminum, and then lead being progressively more expensive. Finally, there was a tour of the Inertial Electrostatic Confinement (IEC)

lab. At the IEC lab the students learned what being an experimentalist entailed in terms of setting up, building, and collecting data from an experiment.

The workshops took place during the ANS Student Conference at the University of Michigan, and this meant that some of the most stalwart ANS volunteers were not available. Despite this difficulty, Kevin Robb, Eric Alderson, David Adam, Logan Campbell, and Royal Elmore were able to step forward.

## **5.4 Essay Contest**

The Essay contest is a way to reach a broad audience of high students by discussing nuclear science and engineering and motivating them to take the next learning step by offering monetary awards to students who write the best essays. Each year, the essay topic switches between nuclear power and radiation sciences issues. The essay topic this year from radiation sciences was:

Does irradiated food provide safety benefits to humans equivalent to other food preservation methods?

Several hundred Wisconsin students attended presentations from UW-ANS students regarding the Essay Contest. The best method for drawing interest was to have ANS members present at their local high schools. As a result, the high school teachers and students tended to be more receptive to the ANS presenters.

Traditionally, participation has been harder during the years with radiation science emphasis despite the essays being capped at 1,000 words. This year was no different, and as a result, the submission deadline was pushed back from April 17, 2010 to May 8, 2010 to allow more time for students to submit essays.

The top three students were awarded \$500 for the first place essay, \$250 for the second place essay, and \$125 for the third place essay. The UW-Madison Nuclear Engineering Department was supportive and provided the scholarship donation to fund the Essay Contest.

## **5.5 Science and Engineering Outreach**

ANS was able to attend local events that supported students learning about science and technology. These included several elementary school nights / fairs. It is always a great opportunity for ANS to attend these events because they allow us to reach children who are already expressing an interest

in science and engineering.

### **5.5.1 Glenn Stephens Annual Science Night**

ANS was approached again this year to participate in the annual Science Night at Glenn Stephen Elementary School. From past experience, it was known that the kids did not want to listen to anything that took more than five minutes in total to explain. Thus, ANS took the traveling M&Ms radioactive decay game and the Cloud Chambers experiments to showcase. The result was a success with the exception that ANS members had to repeatedly stop the kids from trying to eat all the M&Ms right away.

Approximately 200 elementary school children, and about as many parents and teachers, were at the Science Night. We even had a University Physics Professor, who was a Nuclear Engineering alumnus, of Wisconsin stop by and chat with us. The two ANS volunteers who attended the event were Eric Alderson and Royal Elmore.

### **5.5.2 Sunset Elementary School**

The UW-Madison Engineering Student Leadership Center (SLC) was approached by the Middleton-Cross Plains school district to provide science related displays for two elementary school science fairs. With the experience from the Glenn Stephen Science Night, the M&Ms radioactive decay game and Cloud Chambers demonstrations were selected for showcasing at the Sunset Ridge Elementary School. Several hundred students and parents attended the Sunset Ridge Science Fair. The two ANS volunteers who attended the event were Stephanie Zwolinski and Royal Elmore. Below is a general comment about the quality of the displays at the Science Fair:

First of all, I would like to thank all of you who were at Sunset Ridge last night. I have gotten numerous comments and e-mails from staff and families commenting on how much they enjoyed your presentations. We are all very appreciative of your willingness to help bring science to our students. It was fabulous.

— Donna Cutler-Landsman, Sunset Ridge/Park Schools Gifted and Talented Resource Coordinator

### **5.5.3 Park Elementary School Science Fair**

The other Middleton-Cross Plains Science Fair for which ANS provided displays was Park Elementary School. Again, the M&Ms radioactive decay game and Cloud Chambers were used to explain nuclear science to several hundred attendees. As always, the M&Ms game was the more effective teaching tool because it seemed the kids wanted to participate repeatedly and learn about radioactive decay. The two ANS volunteers who attended the event were Kevin Robb and Royal Elmore.

### **5.5.4 Capital Science and Engineering Fair**

ANS jointly provided the student volunteers needed to run the Capital Science and Engineering Fair (CSEF) with the Society of Women Engineers (SWE) and the American Society of Materials (ASM). The job of the student volunteers was to support the judges and volunteers as needed. This included printing and organizing the brochures, serving as chaperones during the campus research lab tours, and arranging the display areas to suit CSEF needs. Since the CSEF is part of the Wisconsin State Science Fair, it was a perfect opportunity for ANS members to encourage and support local high school students in math and science. The ANS volunteers who helped with this event were Logan Campbell, David Adam, and Royal Elmore.

### **5.5.5 Rusch Elementary School Science Outreach Day**

Triangle Fraternity and ANS partnered together for an opportunity to explain to Rusch Elementary School students the benefits of pursuing careers in engineering. This event occurred on the Wednesday of spring break. The Triangle and ANS members spent time in 3rd-6th grade classrooms discussing several topic areas with the students. These included their chosen area of study, what an engineer is, how to be successful in school, what it takes to be an engineer, and why elementary school students should work hard in reading, science, and math at all levels of K-12 education. The volunteers fielded many questions from students and gave wise advice for such young men.

In addition, the students worked for 90 minutes with all 60 of the 4th graders creating various “capsules” to protect a raw egg that would be dropped from our balcony in the gym and then from a third floor window. All they could use was paper and masking tape. Three eggs survived!



*ANS and Triangle Members pose with Rusch Elementary School Students after Egg Drop. Front row from left to right: Madeline Berger (ANS), Justin Zingshiem (Triangle), Logan Campbell (ANS), Roy Elmore (ANS), Matt Kvalo (Triangle), Suraj Kurian (Triangle), Alex Carpenter (Triangle).*



*Group Discussion Panel with (from left to right): Suraj Kurian (Triangle), Matt Kvalo (Triangle), Roy Elmore (ANS), Logan Campbell (ANS), and Justin Zingsheim (Triangle).*



*Roy Elmore (ANS) helps students with their Egg Design Project.*

Some positive commentary and feedback from the Rusch Elementary School engineering day is provided below. These comments went to the Dean of the UW-Madison College of Engineering, Paul Percy, courtesy of the Rusch Elementary School Principal.

My highlight was when my class came back to the room and we had a follow up discussion on what they had just heard from the engineering presentation. One of my students said (he is one of my top students), “I definitely know what I want to do when I grow up.” He was like a light bulb. He just glowed. Having these engineering students come in, explain what engineering is, telling students how they can do it, and have fun with it was the ‘hook’ my student needed to get motivated. The seed was planted. Awesome!

— 5th Grade Elementary Teacher at Rusch Elementary School

You should be proud of the example these young [people] set. I really believe they “lit a spark” in many of my students about engineering. I believe that we should expose our young students to as many opportunities like this in order to help them focused on a direction they may want to go. I look forward to our future work together.

— Robin Kvalo, Principal of Rusch Elementary School

## **5.6 Camp Badger**

Camp Badger is a program that allows talented Wisconsin middle school students to visit UW-Madison for a week to learn about science and technology over the summer. A donor provided a sizable grant to Camp Badger so that it could incorporate a module on nuclear science to attending students. Thus, ANS was asked by John Murphy of the Nuclear Engineering Department to provide a series of modules to teach the students about nuclear science after he gave them an overview presentation. ANS agreed to host three modules for all five Camp Badger sessions.

The modules for Camp Badger were also used as test runs for activities that would become staples at other ANS outreach activities, such as the stationary M&Ms radioactive decay game. The other primary modules were the Cloud Chamber demonstration and Counters experiment. Overall, about 250 middle school students attended the ANS Camp Badger modules.

## **5.7 People Program**

The Pre-College Enrichment Opportunity Program for Learning Excellence (PEOPLE) Program hosted groups of entering high students on campus at the same time as two of the Camp Badger sessions. ANS was asked if it could help the PEOPLE Program by showing “students of color and/or those from low-income families” about science and engineering to help encourage them to prepare for those fields at an early age. There were no problems gathering the extra ANS volunteers necessary to help with expanding the Camp Badger modules to accommodate the PEOPLE Program students.

## **5.8 Chicago Charter School Outreach**

The UNOCharter School in Chicago’s mostly Latino/Latina Little Village neighborhood brought several students to Madison to learn about the careers available to scientists and engineers. About

fifty UNOCharter school students attended the careers event. As part of the program, ANS hosted a half day module discussing nuclear science and engineering and showed them several modules based off the Boy Scouts Nuclear Science Merit Badge Workshops. One of the most successful modules was the walk through of the IEC laboratory.

## 5.9 Energy Bill Debate at the State Capitol

On January 27<sup>th</sup>, a public hearing was held at the Wisconsin State Capitol to discuss Wisconsin's proposed energy bill. ANS organized a group of eight members to attend the hearing and show their support of nuclear power. Royal Elmore, UW-ANS's Public Information Officer, testified at the hearing and outlined the benefits of nuclear power. Prior to his testimony, Royal talked with nuclear expert Frank Jablonski. Mr. Jablonski described how best to address some of the legislative concerns that would be of interest to particular representatives and their constituencies on the nuclear legislation. Besides participating in an excellent outreach opportunity, ANS members that attended gained valuable insight as to the proceedings and political aspects of lobbying for nuclear power.



*ANS Members sit patiently waiting for the hearing on Wisconsin's energy bill. Front row: Casey Anderson. Second row from left to right: Eric Alderson, Evan Western, Amy Laspe, Jason Holzmann. Third row on left: Brian Strebel. Not pictured: Roy Elmore, Troy Haskin.*

## **5.10 Moratorium Outreach**

The State of Wisconsin currently has a moratorium that restricts construction of nuclear power plants in Wisconsin until a permanent long term fuel storage facility is in place. This year, a number of ANS members wrote letters to their local representative(s) urging that the moratorium be lifted. Included in these letters were reasons why nuclear power plays a vital role in Wisconsin's energy plan and how it may help Wisconsin create more jobs. To make it easier for students to write letters, Rachel Slaybaugh organized letter writing sessions, wrote letter templates, showed students how to look up who their local representatives were and their respective addresses, and even provided envelopes and stamps as needed. For her efforts, Rachel was awarded Captain Neutron in November.



## 6 Community Service

UW-ANS continued its tradition in actively participating in events to maintain and improve the Madison, WI community. The section accomplished this by participating in programs offered in the area as well as by reaching out to the area's youth to promote science and engineering.

### 6.1 Adopt-A-Highway

ANS participated in Adopt-A-Highway for the seventh consecutive year. Members cleaned a two mile stretch of University Avenue between county highway Q and Old Middleton Road. Per the requirements of the program, participants are required to clean the highway a minimum of three times between March and December of every year. Following clean up, participants are typically rewarded with food; on one occasion this past academic year, a joint volleyball social with WIN was hosted directly after Adopt-A-Highway.

### 6.2 Trick-or-Treat for Canned Goods

For the fifth consecutive year, ANS participated in Trick-or-Treat for Canned Goods. Trick-or-Treat for Canned Goods is a program in which student organizations of the College of Engineering collect food. This food is then donated to Second Harvest, a local food pantry. Eight student organizations collected 5,194 pounds of food this year. Of those 5,000+ pounds, ANS collected 1,056, the most of any other organization.



*Students help unload all of the collected canned goods for weighing at Engineering Hall.*

## **7 University Service**

UW-ANS maintains a close relationship with the Department of Engineering Physics, the Polygon Engineering Student Council, Engineering Career Services, and other UW-Madison student organizations. These relationships help keep the UW-ANS community diverse and involved at UW-Madison. Despite the fact that our department is one of the smallest engineering majors at UW-Madison, the chapter makes its presence known in the activities organized by the College of Engineering as well as in the Engineering Student Council.

### **7.1 UW-Madison College of Engineering Student Council**

Polygon is the UW Engineering Student Council. Their responsibilities include allocating funds to the engineering student organizations, organizing and facilitating E-Week, helping Engineering Career Services (ECS) execute a career fair each semester, and providing cohesion between the student organizations. Each student organization is allowed one representative to attend Polygon meetings and provide input. This year, Ahmad Ibrahim represented ANS at these meetings. His main duties were to act as liaison between the ANS executive committee and Polygon and to advocate for ANS, especially for funding. Eligibility for funding through Polygon requires that a representative (Ahmad for ANS) be present at Polygon's meetings and that the organization help at the ECS Career Fair. ANS rose to the occasion, especially for the spring semester career fair, in which helpers filled eleven volunteer time slots (the minimum required is three), which was far more than any other student organization.

### **7.2 Engineers' Week (E-Week)**

During E-Week (February 15<sup>th</sup> through 19<sup>th</sup>), members of the student organizations of the College of Engineering compete against one another in a series of events hosted by participating organizations. UW-ANS is always a strong contender, and this year, ANS came in second place to Polygon out of thirteen engineering organizations. The section was able to pull off this victory by participating and placing in several events, such as Pitch 'n Chip and E-Weekopoly, and by hosting three events: the Scrambler Eating Contest, the Energy Game, and a Euchre Tournament.

The Scrambler Eating Contest is an event in which participants eat as many scramblers from Mickie's Dairy Bar as they can throughout the entire week. This event is also an excellent community service activity, as Mickie's donates \$1 for every scrambler eaten to the American Heart Association. This was the sixth year that ANS has hosted and won this event during E-Week.

The Energy Game was another event that ANS hosted, and it was an excellent public outreach opportunity as well. The game consists of having student organization teams answer engineering and energy related questions; upon answering these questions correctly, that team can then buy power plants (whether nuclear, solar, wind, coal, etc.) to generate electricity. As ANS makes up all the questions, the organization was not allowed to compete in the game itself; however, hosting the event still helped ANS's standing in E-Week and gave ANS the opportunity to teach other student organizations about electricity generation and review some engineering trivia.

The final event that ANS hosted during E-Week was a Euchre Tournament. This was ANS's first year hosting this event, and it had resounding success. Vice-President Evan Western and ANS member Scott Weber won the tournament with relative ease. It is very likely that this event will make an appearance at next year's E-Week.

### **7.3 ECB Open House**

The Engineering Centers Building on campus is a central hub for creative spaces, student organizations, and events in the engineering community. This year, in order to introduce students to the resources available in this space, the Student Services group on campus organized an alcohol-free Friday night alternative for which ANS was invited to volunteer to advertise our student section to the undergraduate population, assist with running games, and other activities.

### **7.4 Student Advising**

Both semesters, UW-ANS and UW-AIAA (American Institute of Aeronautics and Astronautics) organized advising sessions. At these sessions, senior ANS and AIAA students inform undergrads of opportunities within the Engineering Physics Department, of classes to take for the upcoming semester, of good professors versus not so good professors, and how to plan ahead to ensure that students can graduate on time with all of their prerequisites.

### **7.5 Day on Campus**

Every year, the Society of Women Engineers (SWE) host Day on Campus, an event in which women high school students and their parents visit UW-Madison and learn about the College of Engineering. This year, SWE requested that ANS help at the event. President Amy Laspe gave a presentation to the young ladies about nuclear engineering at UW-Madison and the opportunities in the workforce upon graduation. Included in the presentation was a video of the University of

Wisconsin Nuclear Reactor (UWNR) pulsing, which was of great interest to the students and their parents.

## **7.6 Industrial Liaison Committee**

The Engineering Physics Department hosts a group of high ranking alumni from across the nuclear and aeronautics career fields every year. These alumni form the Industrial Liaison Committee, and the purpose for their visit is to provide the department with advice on how to improve. Part of the time spent at the department is with the students, where the students are given the opportunity to anonymously voice concerns to the committee. Prior to the ILC's visit, ANS and AIAA organize a meeting with their members to brainstorm comments, and the Presidents of the two organizations write up a report detailing those comments.

This year, the ILC visited the department on April 22<sup>nd</sup> and 23<sup>rd</sup>. On the evening of April 22<sup>nd</sup>, the ILC met with undergraduate and graduate students of the Engineering Physics Department over dinner. ANS President Amy Laspe and AIAA President Ben Conrad presented their report of the students concerns, and other students present at the meeting added to and brought up other concerns and improvements.

## **7.7 ANS Mentoring Program**

ANS continued with its mentoring program this year. Mentoring Chair Greg Lucas organized and managed the program, pairing up underclassmen with upperclassmen. Students were paired up based on their specific interests, such as fusion, fission, materials science, and thermal hydraulics. To start the year off, Greg coordinated a general mentoring meeting to introduce mentors and their mentees and to answer general questions that mentees may have about the department. It was an excellent opportunity for all the mentors to share their experience with the mentees. As a result of the program, mentees were able to seek advice and guidance from their mentors throughout the year, to learn more about and become more involved in ANS, and to learn more about the opportunities available in the Nuclear Engineering Department.

## 8 Socials

UW-ANS traditionally organizes and coordinates many social events for its members throughout the year. These events range from watching movies and playing games to more physical activities such as basketball. By providing a wide variety of activities, UW-ANS is able to appeal to a wide range of interests while giving students the ability to network and relax in a social setting.

### 8.1 Pic-Nuke

Twice annually, UW-ANS hosts a picnic for the UW Engineering Physics department's members, friends, and family. "Pic-Nuke" is traditionally held in scenic Vilas Park on the first Friday afternoon of the fall semester and the last Friday afternoon of the spring semester. We provide and prepare a wide variety of food and beverages for the attendees to enjoy, along with music and activities such as volleyball, softball, and card games. The Fall Pic-Nuke is especially useful for new or prospective members to talk with current ANS officers or members and professors of the department in a social setting and get a feel for what to expect from the section and from their classes in the coming year.

The spring Pic-Nuke provides a fun evening for members to relax and socialize for a few hours before final exams begin. As the student population and interest in the department increases, attendance at Pic-Nuke has increased as well. Typically, around 150 people attend every semester. The upcoming spring Pic-Nuke will be held on Friday, May 7<sup>th</sup>.

### 8.2 Ale Asylum Brewery Tour

On Saturday, December 12<sup>th</sup>, UW-ANS organized a trip to Ale Asylum, one of Madison's fastest growing microbreweries, for a tour of their brewing facilities. ANS members learned about the brewing process and the brewery's unique equipment and attitude. Attendees were impressed by the brewery's flexibility, as it has



*Sean Martin and Graham Bradford raise their glasses at the Ale Asylum Brewery Tour.*

grown from a small, two-man operation to a true regional brewery.

### 8.3 Games Night

On Thursday, December 3<sup>rd</sup>, UW-ANS hosted Games Night. ANS members played video games such as Rock Band and Wii Sports on large video projection screens while others played Apples to Apples and other board games. UW-ANS provided food for its members, who enjoyed an evening of fun and camaraderie while taking a few hours to relax.



*Wii rockers Kevin Robb (far left), Eric Howell (second from left), Scott Weber (fourth from left), Evan Western (fifth from left), and Greg Lucas (sixth from left) get critiqued by Sarah Van Oosten (third from left) on their Wii Rock Band skills.*



*ANS members play a friendly game of Apples to Apples. From left corner to right: Troy Haskin, Greg Lucas, Sarah Van Oosten, Scott Weber, Katy Huff, Evan Western, Graham Bradford*

An event focused on just card games was held during the spring semester on Monday, March

15<sup>th</sup>. Many ANS members took part in a Texas Hold 'Em poker tournament, while others played Euchre, Cribbage, or other card games. Scott Weber won the grand prize, a gift card for Best Buy, for winning the poker tournament.

## 8.4 Laser Tag

Each semester this year, UW-ANS organized a team for a laser tag tournament hosted by a fellow engineering student organization. At each event, the ten person ANS team tested its strategy and teamwork in a series of games against other organizations while enjoying pizza provided by the hosts. The ten person teams struggled mightily in the fall semester's tournament but were able to use their experience to finish in second place in the spring.



*ANS's laser tag team for the fall semester tournament. From left to right: Greg Lucas, Lucas Wilson, Amy Laspe, Sarah Van Oosten, Sean Martin, Evan Western, Tony Schulte, Ahmad Ibrahim, Scott Weber, Casey Anderson, Troy Haskin.*

## 8.5 Movie Night

To help give members a bit of a break from projects in April, UW-ANS hosted Movie Night. This event consisted of food catered from a local sandwich shop and a showing of the film adaptation of Tom Clancy's submarine thriller "The Hunt for Red October".

## 8.6 Volleyball Game With WiN

On Friday, October 23<sup>rd</sup>, ANS, in cooperation with WIN, hosted a social in which members attended a UW-Madison Women's Volleyball home game. ANS and WIN provided concession stand tickets to approximately ten attendees. This event took place just after ANS completed one of its Adopt-A-Highway commitments; therefore, the social was a nice reward for helpers and other members.

## 8.7 Basketball

UW-ANS has organized weekly basketball games through this school year at the Camp Randall Sports Center near engineering campus. Both students and faculty are regular players in the games, which are open to participants of all skill levels.

## 8.8 Coffee and Doughnuts

On Wednesdays throughout the year, UW-ANS makes coffee and provides donuts from nearby Greenbush Bakery for its members and friends. Ahmed Ibrahim has been instrumental in helping to pick up and set up these morning snacks for the group.

## 8.9 Breakfast at Mickie's

On Friday mornings at 7 A.M., UW-ANS student members, faculty, and alumni meet at Mickie's Dairy Bar for a social breakfast. All in attendance find that it is a great way to start off the last day of the week. Breakfast at Mickie's is a UW-ANS tradition that dates back more than a decade.



*A group at Mickie's waiting to order.*



## 9 Conclusion

The continued success of UW-ANS has not been without challenges. As always, the sheer volume of events in which UW-ANS participates can be difficult to maintain, and adding to those programs and events has most certainly been a challenge. Retaining membership can also be slightly tricky, especially for younger members as the core nuclear engineering courses do not begin until junior year (therefore making it hard for underclassmen to get involved in ANS).

Despite these potential pitfalls, UW-ANS has persevered and even prospered. In fact, UW-ANS's programs have greatly expanded these past years, and the chapter has created an increasing number of chairs to handle the workload, especially for the Public Information Officer. As the chapter continues to increase in number, it may be necessary to add more chair positions as some of the members of the executive committee are at times a bit overwhelmed with fulfilling their duties to maintain the section.

Overall, the achievements and accomplishments of UW-ANS this year were significant and impressive. Next year's executive committee has been elected and shows great promise and determination, despite any hardships that they may encounter. Hopefully, the exploits of this year will serve as an excellent foundation for next year and for years to come.