



# American Nuclear Society University of Illinois

## SAMUEL GLASSTONE AWARD SUBMISSION

University of Illinois American Nuclear Society Student Section

2015-2016

**Assembled by the 2015-2016 Executive Board:**

Kathryn Mummah, President  
Jeremy Mettler, Vice President  
Steven Stemmley, Treasurer  
Aristidis Loumis, Secretary  
Cory Markham, Social Chair

**Special Thanks to:**

James Stubbins, Department Head  
Clair Sullivan, ANS Student Section Advisor  
Rizwan Uddin, Associate Head of Academic Programs & former Student Section Advisor  
Becky Meline, Coordinator of Academic Programs  
Susan Mumm, Media Specialist



ILLINOIS  
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

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## 1. INTRODUCTION

The University of Illinois student section of the American Nuclear Society has had one of our most successful years in recent history. While the number of entering freshmen in the department of Nuclear, Plasma, and Radiological Engineering (NPRE) has remained constant over the last few years, our students section has still been able to increase chapter participation. We have done this by focusing on (1) building a strong base of freshmen and sophomore students who will continue to participate throughout their entire undergraduate education, (2) providing social events to build a community that people feel comfortable in, and (3) expanding the number and type of off-campus trips and professional development events available for students to attend.

ANS-Illinois was able to add a variety of new events this past year, while still maintaining the traditional events like visiting the ANS Student Conference and participating in the College of Engineering's "Engineering Open House." We have also maintained a strong relationship with the department of Nuclear, Plasma, and Radiological Engineering (NPRE).

In summary, ANS-Illinois has shown an incredible amount of growth in the past year, both in membership and events. We hope you consider our chapter for the honor of winning the Samuel Glasstone Award.

## 2. SECTION MANAGEMENT

At the core of any strong ANS student section is its leadership. This year, ANS-Illinois had an executive board that was extremely dedicated to growing ANS membership and providing more events than recent years. Unlike previous years, the ANS-Illinois executive board cut down to only 5 members to streamline the student section and cut out unnecessary positions.

This section details the leadership of our student section and the interaction we have with the Department of Nuclear, Plasma, and Radiological Engineering and the College of Engineering at the University of Illinois. Without these crucial elements, the student section would not be nearly as successful as it has been this past year.



Figure 1: The 2015-2016 ANS-Illinois executive board

### 2.1 EXECUTIVE BOARD

This year's executive board was made up of five positions. Each position is detailed below, along with the board member that filled that role in the 2015-2016 school year.



#### **Katie Mummah, President:**

Katie is a junior in NPRE with a concentration in Power, Safety and the Environment. She has held a leadership position all three years she has been on campus, starting as the President of the Freshman (now called Underclassmen) Round Table, then the Internal Vice President, and finally as President. Her excitement in all things nuclear has been instrumental in keeping the younger members involved and feeling included. She helped create many of the new events this year, including the trip to the Open Lab day, viewing of a NAYGN Webinar, and the Women in Nuclear committee. She led executive board meetings, general meetings, and oversaw all major ANS events throughout the year.



#### **Jeremy Mettler, Vice President:**

Jeremy is a Sophomore studying Nuclear, Plasma, and Radiological Engineering, with a minor in physics and a concentration in Plasma and Fusion Science. As the youngest member on the board, he brought new ideas including "Open Lab Day", an event aimed at encouraging younger students to become involved in undergraduate research. His primary responsibilities include organizing both outreach events such as Engineering Open House as well as professional development trips to nuclear power plants and National Labs.



#### **Steven Stemmley, Treasurer:**

Steven is a junior studying Nuclear, Plasma, and Radiological Engineering with a concentration in Plasma and Fusion Science. This is his second year serving as the Treasurer for ANS. His responsibilities include creating yearly budgets and appropriately managing funds. More specifically, he is responsible for tracking all expenditures and acquiring funding for events. Aside from money handling, Steven likes to help coordinate and participate in outreach events such as Boy Scout education programs and encourage other students to join and attend ANS events.



#### **Aristidis Loumis, Secretary:**

Aristidis (Aries) is a Senior in the Nuclear, Plasma, and Radiological Engineering with a concentration in Power, Safety, and the Environment. His main academic interests are in environmental sustainability. This is his first year with an ANS Leadership position. Aries is a transfer student in NPRE, and is new to the ANS environment, but has shown great enthusiasm in getting involved. He is looking to improve ANS by optimizing communication, doubling membership and he is always happy to help with new members or questions. Aries conducts executive meetings, is the webmaster for this chapter's website, major contributor to the chapter's Facebook page, has organized multiple events promoting fellowship within the chapter, is a very active member in the NPRE department, self-organized the Valentine's Day fundraiser and is always willing to help pick-up any slack.



### **Cory Markham, Social Chair:**

Cory is a senior in NPRE who is concentrating in power, safety and the environment. He has been an active member since his junior year. His first position was a member of the social committee during his junior year, before becoming the social chair his senior year. He plans social activities within the chapter as well as coordinating event with other student organizations. His enthusiasm to promote a social atmosphere within the chapter has allowed him to organize events such as the beginning of the year barbecue, the Thanksgiving Potluck and many other social events that included other student organizations.

## **2.2 COMMITTEES**

ANS committees exist to allow general members to get more involved with the society than just attending events. The four committees – Underclassmen Round Table, Women in Nuclear, Social, and VP all serve different purposes and often draw from different pools of students.

The Underclassman Round Table (URT) was an initiative started in 2013 to combat low involvement from freshmen. It has since been expanded to include all underclassmen. Other than the executive board member that oversees the committee, the group is entirely underclassmen-lead. Every year, the URT makes an EOH project (see section 7), which gives students hands-on opportunity to build something and an opportunity to teach members of the public about nuclear science and engineering.

The Women in Nuclear (WiN) committee is a new initiative of the 2015-2016 school year. Aimed at increasing participation of women in ANS and encouraging young girls to get interested in science, technology, engineering, and math (STEM) and specifically nuclear science. WiN has held professional events and attended trips. This committee strongly encourages all women in the Nuclear, Plasma, and Radiological Engineering Department to join, but is also welcome to any men (or non-gender conforming people) that are interested in the goals of the committee.

The Social Committee is responsible for planning and coordinating social activities such as cookouts, paintball, rock climbing, and other extracurricular activities that benefit the American Nuclear Society. During the weekly meetings, the Social committee creates new ideas for social events that involve both undergraduate and graduate students from nuclear society as well as other student organizations.

The Vice Presidential committee has played a key role over the past year in making sure each trip and outreach event runs smoothly. Members of the committee volunteer their time helping book hotel rooms for trips, coordinate events with community members, and design presentations for Boy Scouts seminars. Their involvement in the committee has been pivotal in making sure that the Vice President is able to complete his duties effectively. This committee met infrequently in the fall semester and weekly in the spring semester, as large outreach events like Boy Scout merit badges or Engineering Open House (see: Section 7) are all held in the spring semester.

## 2.3 FACULTY ADVISOR & INTERACTION WITH THE UNIVERSITY

ANS-Illinois is lucky to have a fantastic relationship with our department and faculty advisor. Our faculty advisor, Professor Clair Sullivan, stays up to date with our chapter and even attends some of our events. Our students have the opportunity to interact with her often at our weekly happy hour, and her door is always open for questions on section management. We also have a secondary faculty member, Professor Rizwan Uddin, that just transitioned out of the official role, but maintains a strong presence with ANS-Illinois.

We also maintain a strong relationship with the NPRE department at Illinois. Many events are co-hosted with the department, like seminar events (Section 4) and the annual awards banquet (Section 9). A majority of our off-campus events are partially/fully funded by the department, which allows us to bring a larger amount of students than we would normally be able to with our own funds.

Finally, our student section is recognized as an official registered student organization, both at the University level, and the College of Engineering level. At the university level, we are eligible to obtain funds from a pool of money set aside by the Student Organization Resource Fee (SORF), and at the college level we can obtain Engineering Council funding. By being registered at these levels, we are also able to participate in events that allow us to advertise our society at the beginning of the year.

## 3. OPERATIONS & MEETINGS

This section details the administrative details that keep the section running.

### 3.1 WEEKLY EXECUTIVE MEETINGS

Every Sunday our chapter held an executive board meeting. This meeting was used to brainstorm new events, delegate tasks, keep up to date on what each board member is doing, and recap events that happened in the previous week.

An agenda was made and placed in the ANS-Illinois google drive such that every member could pull up the agenda and follow along. An example can be seen to the right.

These agendas were also used by the secretary to take meeting minutes, so any board member could go back to the Agenda folder and see the meetings minutes if they forgot what they needed to do that week.

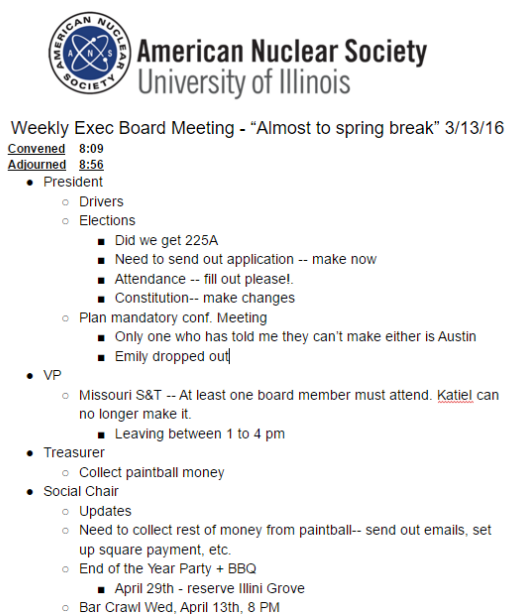


Figure 2: Example of exec meeting agenda



### 3.2 GENERAL MEETINGS

General meetings were held on an irregular basis, depending on the density of upcoming events. Early in the fall semester, general meetings were biweekly or triweekly, but later became about monthly. Outside of email and social media communication, this was used as the most efficient way to communicate information to the general body. All trips and large events were first announced at general meetings, and then were added to newsletters and other communication methods later.

To encourage attendance, the first general meeting had free pizza, and most important meetings had cookies or some other food for members to eat. This was implemented in the previous year, and has likely helped with the spike in attendance that has been seen in this past year.

Meetings always have PowerPoint presentations, which are sent out with the weekly newsletter for people who cannot attend meetings.

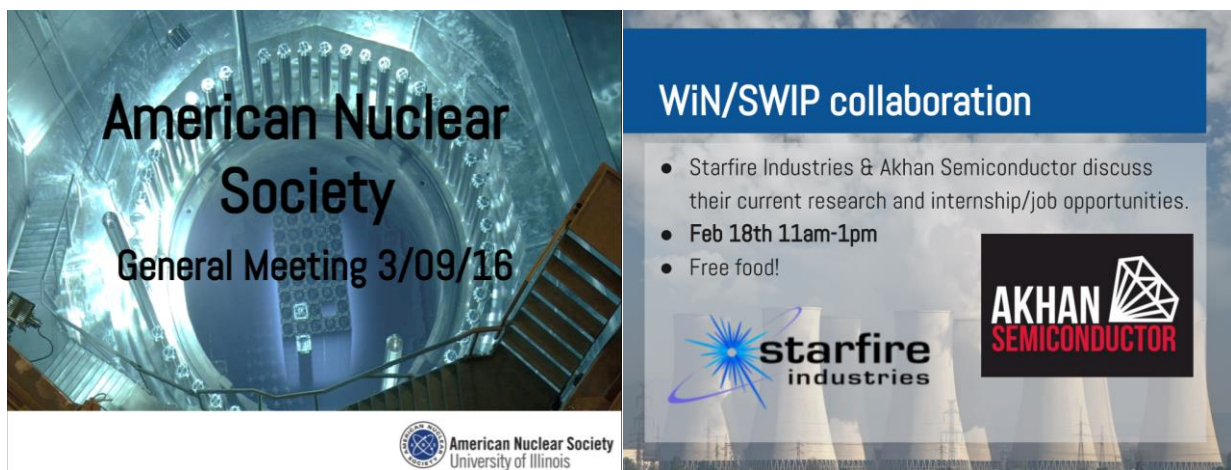


Figure 3: Examples of general meeting slides

### 3.3 COMMUNICATION

One of the goals of the University of Illinois Student chapter of the American Nuclear Society this year was to increase communication and make getting involved a more relaxed and friendly process. ANS uses a weekly email newsletter as the primary form of communication with the general body. Sent out at the beginning of each week, the newsletter notifies members of new opportunities and events hosted by the American Nuclear Society. It contains information on professional development within the nuclear sector, volunteer opportunities, workshops and research. Students can also find information on the ANS-Illinois website at [ANS.npre.illinois.edu](http://ANS.npre.illinois.edu)

Unlike previous years, social media was utilized very heavily in communicating with students. ANS-Illinois runs both a Facebook page and a Facebook group, with all information being posted in both. The group has been around a long time, and communicates with over 200 members, current and alumni. The page was created recently to overcome the shortcomings of a Facebook group, like privacy

and recognizing ANS-member accomplishments. In addition to Facebook, the group also runs a twitter page with the twitter handle @ANS\_UIUC.

Finally, the executive board uses GroupMe for all internal communications. GroupMe is an effective tool for quick and immediate communication and has significantly increased the effectiveness and speed over email communication.

### 3.4 FUNDING & FINANCIAL PLANNING

Our ANS Student Chapter is closely intertwined with the Nuclear, Plasma, and Radiological Department (NPRED) at the University of Illinois. Due to this relationship, the majority of our trips and events are supported by the department. NPRED has contributed over \$10,000 to transportation and lodging for trips such as the 2016 ANS Student Conference, Clinton Generating Station, and Argonne National Laboratory. In addition to this, we are able to apply for other on-campus funding sources like the Student Organization Resource Fee (SORF) or Engineering Council (EC), which provides funding for Student Organizations. Over this past year, we have received around \$600 from these sources, which was put towards our trips. Our final source of funding is from member dues, which consists of a \$10 payment per semester to remain an active member, which generates around \$2000 a year.

Table 1: Summary of Yearly Budget for 2015-2016	
Total Income	\$14,428.41
Total Expenditures	\$13,368.84
Balance For Next Year's Board	\$1059.57

Many of our chapter's events are annual, such as our opening social events and Engineering Open House (EOH). Events like these allow for immediate allocation of funds. For other events that are planned on a monthly or semester time frame, the funding is considered on a case-by-case basis. This process allows for principal events, like professional events, to be considered first. This year, we can proudly say, none of our events had any major funding issues.

Shirts are another way that our chapter raises money. For example, the shirts shown in Appendix B are usually sold a few dollars above cost which provides some extra funding for events.



#### 4. PROFESSIONAL EVENTS

One of the most important foundations of a student section is having professional development opportunities available for students. These events are usually aimed at helping students learn more about internships and jobs in the nuclear, plasma, and radiological engineering (NPRE) fields.

Two of these professional events were really aimed at all engineers interested in NPRE fields, not just ANS members. First, ANS-Illinois gave a showing of a webinar given by North American Young Generation in Nuclear (NAYGN) called “Careers in the Nuclear Industry.” This event was advertised across the College of Engineering and specially encouraged mechanical and electrical engineers to attend. Although the webinar briefly touched the careers aimed at nuclear engineers, the main focus was aimed at mechanical, electrical, and other types of engineering that make up a majority of the nuclear utility workforce.



The second event aimed at the entire College of Engineering was the Open Lab Day, held on October 28<sup>th</sup>, 2015. Co-hosted with Engineering Council, Open Lab Day was an opportunity for anyone around the College to stop by any of the NPRE department labs and learn about the type of research being done. The NPRE research labs only employ a handful of undergraduate research assistants from other departments, mostly because it is harder for a student to learn about research groups outside their home department. With 9 different majors attending, this event was extremely successful. This event was repeated on April 22<sup>nd</sup>, 2016, along with a student poster session running at the same time.

Many of the other professional events were aimed at helping students better prepare to be future professionals in the Nuclear, Plasma, and Radiological engineering fields. The simplest event was the resume reviews held by President Katie. She held at least five different sessions throughout the year for students to get walk-in resume advice. Many students preferred the informal resume reviews Katie gave over formal ones from Engineering Career Services, since all of the students knew Katie and she was able to give advice that was specific to nuclear engineers and not just for engineers in general.

Students also had the opportunity to interact with companies at seminars held throughout the year. Seminars were given by companies like Exelon Generation, LAM Research, Bechtel Marine Propulsion Corporation, and the Nuclear Navy. In addition to a presentation given by the companies, there was often time for students to interact with the representatives, hand out their resumes, and ask questions.

An internship info panel was held in the fall before most companies had closed their internship deadlines. A variety of students sat on the panel, including students that had interned at utilities, national labs, research, and in the field of nuclear security. The purpose was to encourage students, and relieve the pressure of finding internships through showing them that anyone can do it. The event mainly revolved around questions and informal discussion about how to apply to internships, what students actually did, and whether or not they liked their respective experiences.

Finally, there were two professional events held by the Women in Nuclear committee. First, the Women in Nuclear committee hosted an event with the Limited where representatives from the Champaign Limited store came in to teach about professional clothing for women. The Limited representatives even brought in an entire rack of professional clothing to demonstrate the differences between business casual and business professional. Students said this was especially helpful, since the definition of professional clothing is less clear-cut for women than it is for men.

The second event hosted by the Women in Nuclear group was a company presentation for all students interested in plasma and semiconductor engineering (not limited to Women in Nuclear members). This event was also co-hosted with the Society of Women in Physics (SWIP) group at Illinois. As Starfire Industries and Akhan Semiconductor are two of the only plasma engineering companies in Illinois, both draw significant interest when they come by campus, especially since both were hiring. Since this event was co-hosted with a physics society, there were also Physics students in attendance.



## 5. TRIPS AND CONFERENCES

A core pillar of the ANS student section is the opportunities available to students to take off-campus trips. These trips help students develop a better understanding of the opportunities available in the nuclear industry, and often help students develop a better understanding of their future career interests.

### 5.1 VISIT TO ARGONNE NATIONAL LAB

ANS-Illinois had their first trip of the year at Argonne National Lab. It had been almost 3 years since the section had visited Argonne, and since Argonne is the national lab with the highest level of interest from our students, it provided the perfect opportunity for a trip at the beginning of the year. In addition to the professional opportunities provided, ANS-Illinois also paired with the UW-Madison chapter of ANS to do the tour jointly and make the event a networking opportunity as well. This worked perfectly, as Wisconsin had also planned on visiting Argonne, and the two schools are of approximately equal distance from the lab.

Recognizing the importance of getting to know students from other Universities, the two student sections first met for lunch before the tour, giving students time to meet and mingle in an informal setting before the actual tour.



Figure 4: Illinois and Wisconsin ANS students meet for lunch before touring Argonne National Lab

After lunch, both groups headed to Argonne to tour the Argonne Tandem Linac Accelerator System (ATLAS), the Advanced Photon Source, and the Nuclear Energy Exhibit. Knowing that many students had an interest in interning/working at the lab, the tour guides also gave an overview of other experiments at the lab that are relevant to nuclear engineering in addition to the experiments that the students got to tour.



Figure 5: University of Illinois ANS students pose at the Advanced Photon Source with the tour guides

## 5.2 CLINTON POWER STATION

Another trip that always gains a lot of interest is the yearly trip to a commercial nuclear power plant. Last year ANS-Illinois toured Braidwood, a Pressurized Water Reactor, so this year our chapter

decided to tour Clinton Power Station, a Boiling Water Reactor. Clinton is also the closest commercial reactor to the University of Illinois.



Figure 6: ANS-Illinois students learning about Clinton Power Station before the plant tour

In addition to the trip to Clinton, ANS-Illinois also set up a professional event with Clinton's North American Young Generation in Nuclear (NAYGN) chapter to learn more about internships/jobs available at nuclear utilities (Exelon specifically) and to give insight on what it's like to work at a commercial plant. This event was held in Champaign, which made it much easier for students to attend



than having to go off campus.



Figure 7: Clinton NAYGN members talk about their experiences working at Clinton Power Station

### 5.3 ANS WINTER MEETING

As expected of student sections, ANS-Illinois sent a representative to the ANS Winter Meeting to represent the University of Illinois at the Student Sections Committee (SSC) meeting. President Katie was sent as a representative. Due to an ANS scholarship she held, she didn't require any additional funding to attend the conference, adding no additional financial commitment from the section. In addition to attending the SSC meeting and technical sessions, Katie also presented her summer research at the student poster session. Katie also did some networking with other students involved with ANS national

and had the opportunity to interact with Presidents from other Universities, gaining valuable ideas from them.



Figure 8: President Katie Mummah presenting her 2015 summer internship results at the 2015 ANS Winter Meeting

Katie will also be representing ANS-Illinois at the 2016 ANS Annual Meeting, along with Shanna Bobbins, the incoming Internal Vice-President.

#### 5.4 ANS STUDENT CONFERENCE

ANS-Illinois' largest event of the year was attending the 2016 ANS Student Conference in at the University of Wisconsin-Madison. The executive board encouraged anyone and everyone to go, and really advertised the event much more than in previous years. The result was 53 members of ANS-Illinois attended the conference, up from 25 in 2015 (Texas A&M) and 13 in 2014 (Penn State). Since attendees were required to become national members, this also gave the University of Illinois a large bump in national members.

While many attendees were among the most involved members, almost half of the attendees were students that had not been very involved in the chapter. In addition to this, over 20% of the attendees were



freshmen/sophomores. This is very encouraging, since young members are often the least involved and often have very low participation in the student conference.



Figure 9: Some of the young (freshmen/sophomores) attending the student conference

Our chapter also participated heavily in the technical program at the conference. With 9 podium presentations (in 8 different tracks), 3 posters, and 1 innovation competition, Illinois did a great job showcasing our great students. Not only that, but we won 4 technical tracks, 2<sup>nd</sup> and 3<sup>rd</sup> place in the poster session, and a commendation for service and leadership. Overall this was an amazing experience for all 53 students that participated, and also increased section active membership for the last few months of the school year.





Figure 10/10: (left) Shanna Bobbins with her award for Best Presentation in Fuel Cycle & Waste Management (she presented for her senior design team). (Right) Jake McLain with his award for Best Presentation in Materials Science & Technology

## 5.5 EXELON'S CORPORATE HEADQUARTERS

The final ANS trip of the year was to Exelon's regional corporate headquarters (Cantera). This trip was planned from within the WiN group, and was planned with the Women in Nuclear group at Cantera. This trip was aimed at educating WiN members on the job and internship possibilities available at the corporate headquarters of a plant. Often times, students overlook utilities because they are not interested in working at a plant and don't realize that corporate jobs are also available. Corporate headquarters of utilities (at least in the case of Exelon Generation) also have much higher percentages of women. Nuclear Fuels at Cantera has approximately 35% women, compared with well less than 10% at pretty much any Exelon plant.

The trip had three main parts: first, the "lectures," where women with various jobs around Cantera came in to speak about their job path and give any advice for the attendees. This involved Core Designers, Emergency Protection Planners, the Innovation Director, and more. Second, there was plenty of time for a round table, where over a dozen Cantera WiN members came in to talk to the students in an informal setting and eat lunch. Finally, students had a chance to tour the Emergency Operations Facility (EOF), which is always on standby in case an emergency occurs at any of the Exelon plants in Illinois. Overall, this was an amazing opportunity that had extremely high feedback from participants on both sides.

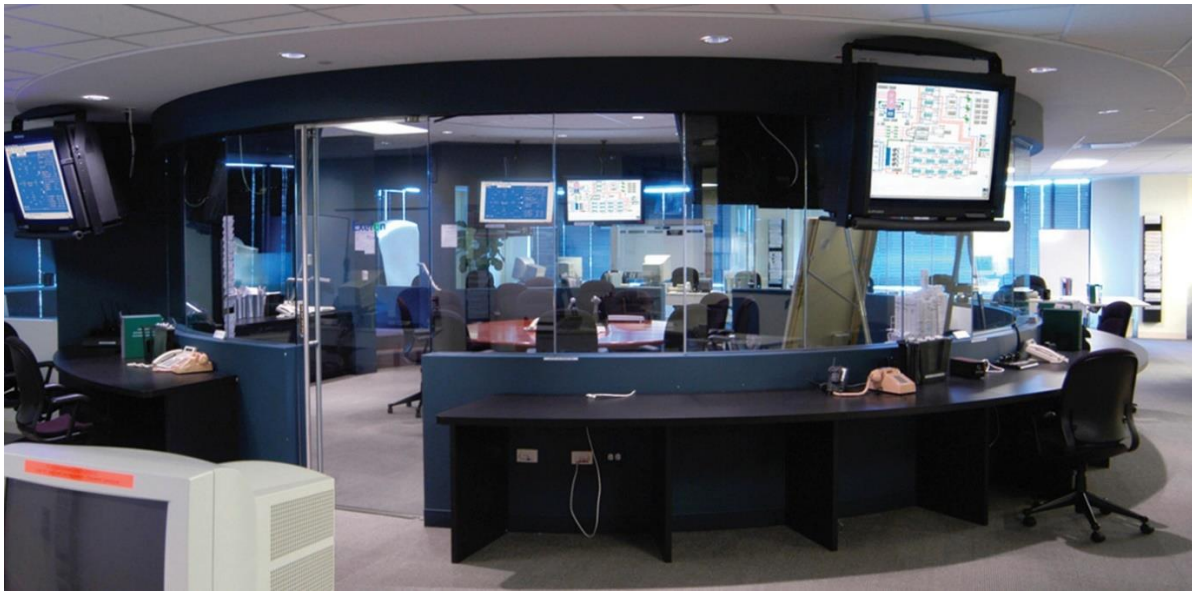


Figure 12: Emergency Operations Facility at Cantera. Picture from conorcommercial.com

## 6. VALENTINE'S DAY CHARITY

This year for Valentine's Day ANS formed a Valentine's day charity. For two weeks prior to the holiday, ANS reached out to the student body of Nuclear, Plasma & Radiological Engineering and held a drive in order to collect condoms. At the University of Illinois, one of the perks of being a student is that they are allotted a sealed pack of a dozen free condoms from the local McKinley Health Center. The condoms collected were used in order to create condom roses, (See figure 13) which are both usable condoms and usable pens.



Figure 13: Condom Roses

The student body was encouraged to donate them to ANS, with the promise that they would receive a condom rose themselves for participating. After they were collected, ANS chapter Secretary Aries Loumis along with member ANS Jonathon Helck, and other volunteers went to the local bars Brothers and Joe's, with permission. See figure 13. They were able to sell patrons of the bar the condom roses in order to raise money for V-Day, a California based 501(C)(3) public charity; dedicated to the global movement to end violence against women. Thanks to the efforts of both the student body of Nuclear, Plasma & Radiological Engineering, local volunteers, and ANS they were able to sell one hundred percent of the produced condom roses, and raised a total-net of two hundred dollars for V-Day.



Figure 14: Volunteers put together condom roses. (From left to right) ANS Chapter Secretary Aries Loumis, and member Jon helck, along with local volunteers Michael Lorimer, and Megan Walusiak.

#### Facebook Post:

“Did you know that 1 in 3 women around the world will experience sexual or physical violence in their lifetime? Do something small, and make a world of difference! Right now, If you get a pack of RED lifestyle condoms from the Union and donate them to the American Nuclear Society we will take that and turn it into love! Accepting condoms until Thursday! Monetary donations are always welcome! Here's our 4 step process.”

See Appendix B for the flyer and 4-step process used for this charity event.

## 7. OUTREACH EVENTS

With a lot of misinformation out there about nuclear science and engineering, outreach is one of the most essential parts of an ANS student section.

### 7.1 BOY SCOUT MERIT BADGE

Public outreach is a key part of our chapter's commitment to nuclear education and understanding. Key to our ability to achieve this goal each year is the Holy Cross merit badge session.



This year, our chapter sent volunteers to instruct over 40 boy scouts of various ages on a variety of nuclear related topics. Each student attended one of two 4-hour merit badge sessions, and had the opportunity to learn about subjects including the structure of the atom, radiation detection, and the safety of nuclear power. This informative session allowed us to dispel some of the most common myths regarding nuclear energy, while also inspiring youth to become more involved in science of all kinds. Not only did we have the opportunity to instruct youth, but a number of parent volunteers in attendance were thoroughly impressed as well. Several parents approached our instructors this year to express their surprise at learning just how safe nuclear power is, helping to change their minds regarding a topic on which they had held negative opinions for years. This is a great example of our chapter's commitment to public outreach and education.

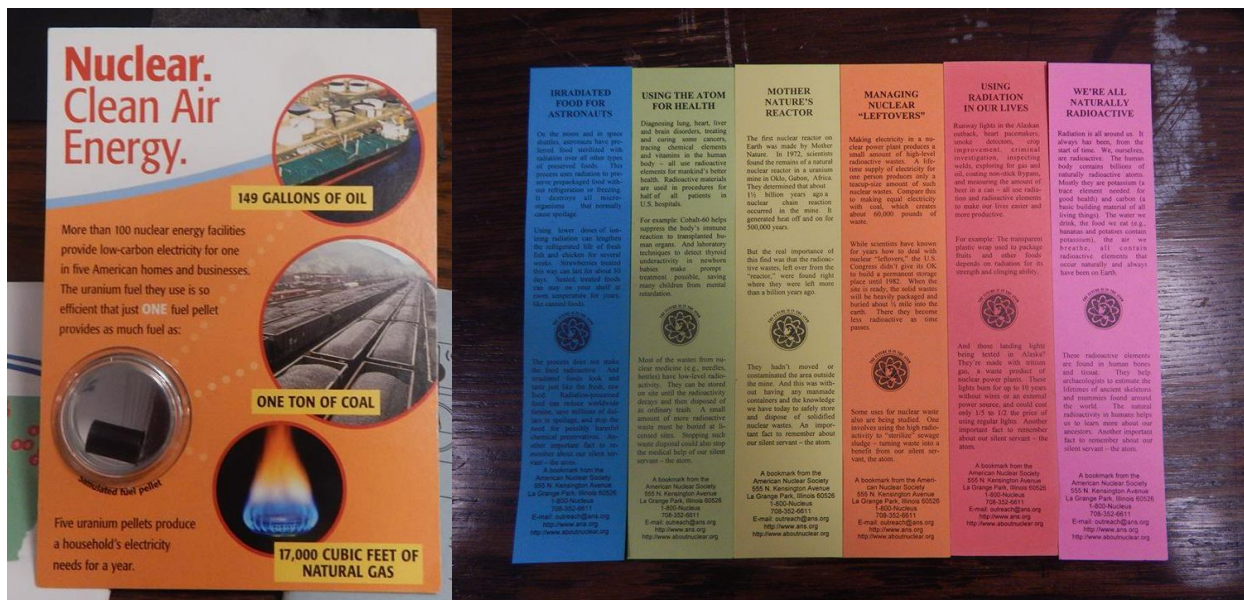


Figure 15/16: Examples of bookmarks/handouts to Boy scouts as they learned about nuclear science and radiation.

## 7.2 ENGINEERING OPEN HOUSE (EOH)

Engineering Open House (EOH) each year serves as a key opportunity for our Chapter to inform the public about just what it is we do as nuclear engineers. EOH is one of the largest events of the year for the University of Illinois, with tens of thousands of outside visitors coming to Champaign to learn about all types of engineering. With 250+ exhibits from every engineering discipline, this is a huge event, which also boots being completely student-run. ANS always has an exhibit, and this year held two. The main ANS booth was awarded third place for best presentation by a society, the third year in a row that booth has placed in that division.



Figure 17: A group of EOH volunteers poses with the award for 3rd place in Presentation of Society

Our exhibit this year included demonstrations related to both nuclear fission and fusion, along with radiological engineers. The most popular demonstration with younger visitors was the mouse trap reactor, which demonstrates the chain reaction aspect of nuclear fission. ANS volunteers place dozens of live mousetraps down, each with 1-3 ping pong balls set on top. Then, a plastic cover is placed over all the mousetraps. Finally, a small child in the audience gets to throw a ping pong ball into the small hole in the top to see off the chain reaction. ANS-Illinois volunteers then explain how this is similar to the chain reaction in a nuclear reactor, where each “mousetrap” uranium is set off by one “ping pong ball” neutron, but can produce more than one neutron as it fissions.



Figure 18: ANS volunteers set up the mousetrap reactor, which takes a lot of time--and nimble fingers!

Other demonstrations included a DC Glow chamber for demonstrating plasma confinement, as well as another crowd favorite: The Magnetic Can Crusher. The can crusher is a demonstration of the power that magnetic fields can have. It consists of a capacitor which, once fully charged, is discharged through several loops of wire wrapped around a can, this sudden discharge causes a magnetic field which interacts with currents that are induced in the metal of the can. This interaction causes a strong inward force to crush the can. While it may not be the most efficient way to dispose of cans, it is an excellent demonstration of magnetic fields and just how powerful they can be.



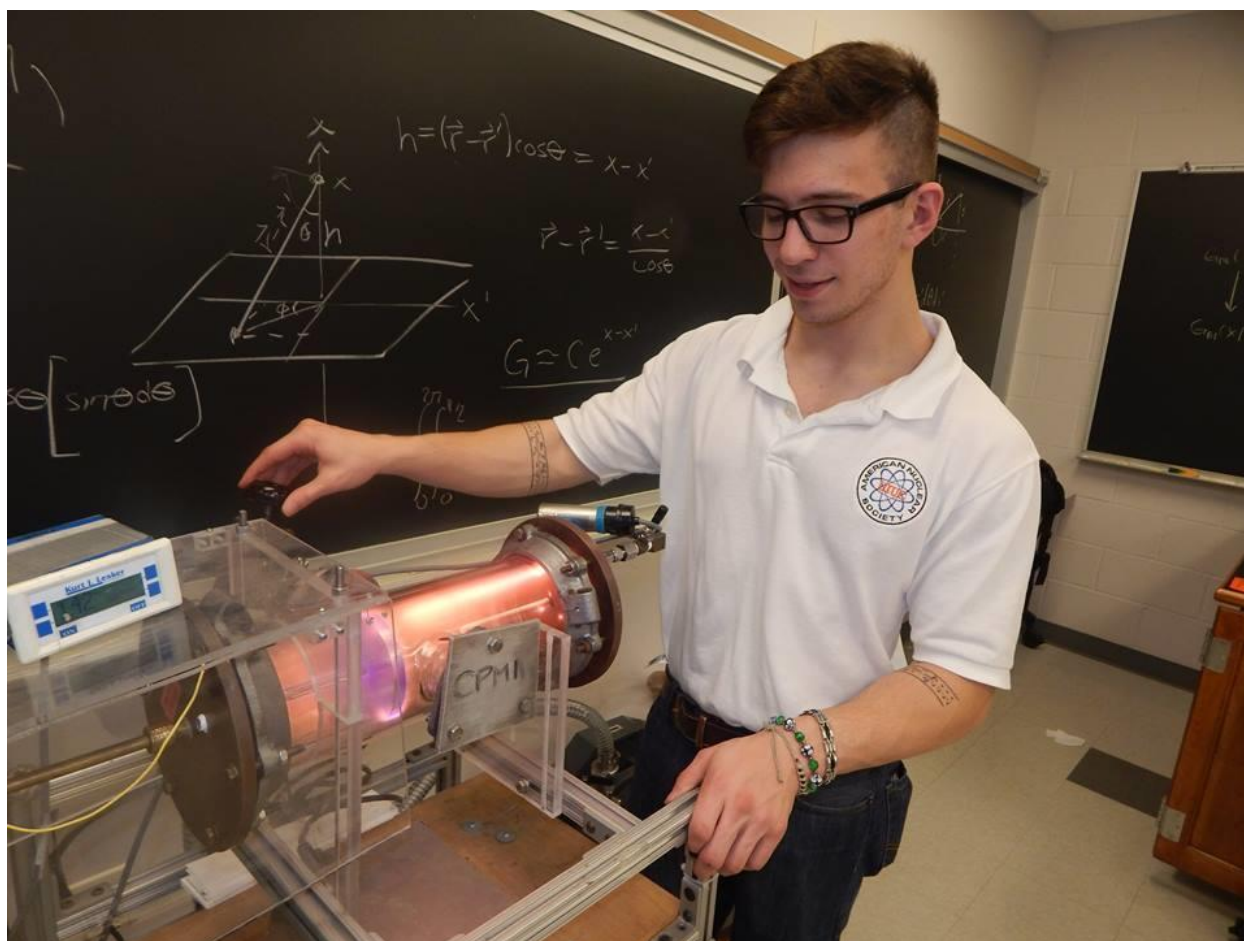


Figure 19: ANS-Illinois volunteer Daniel Martin demonstrates the DC glow chamber, which uses Argon plasma

This year we also added a demonstration of 3D printer applications for radiation detection. In addition to the demonstrations, our exhibit also included a poster designed to address common nuclear myths, as well as 1950s era Geiger Counters and Photo-multiplier tubes from a disassembled MRI machine. Many visitors were greatly surprised by the number of positive applications of nuclear engineering and nuclear energy, and even the most staunchly anti-nuclear attendees left with a new perspective.

The second booth was held by the Women in Nuclear group, called Nuclear Heritage. This booth presented the small “nuclear museum” created by the department of Nuclear, Plasma, and Radiological Engineering, along with other historical nuclear artifacts. Old Fiestaware plates (with a Uranium oxide glaze) were used to demonstrate the principle of shielding, amazing volunteers that only a bit of plastic was needed to shield the majority of the alpha radiation coming from the plate.





Figure 20/21 (Left) Katie Mummah demonstrates the principle of shielding with a young volunteer. (Right) WiN volunteer Alec explains the principle of radioactivity to some guests. In the background is the Nuclear Heritage exhibit.

### 7.3 LOW CARBON PORTFOLIO STANDARD

Last summer, ANS put together a letter to representative Gordon-Booth encouraging the passage of the Illinois Low Carbon Portfolio Standard (LCPS) (HB 3293/SB 1585). This was done in conjunction with Nuclear Powers Illinois, a campaign to create awareness about the importance of nuclear power in the state of Illinois. This letter was signed by the 2015-2016 ANS-Illinois executive board and can be found in Appendix B.

## 8. SOCIAL EVENTS

With such a small industry, the students in ANS today will be peers tomorrow, so ANS-Illinois puts a lot of weight on social events so the students can get to know each other.

### 8.1 BBQ

Because the Nuclear, Plasma, and Radiological department is one of the smallest here at the University of Illinois, it is extremely beneficial for incoming students to take part in the beginning of the year cookout. This event allows newly admitted students in the department a chance to talk and mingle with other students who have been in the department as well as faculty members. This event takes place the second week of classes, so the workload is not overbearing and many research opportunities are still available. The cookout provides an opportunity to also interact with professor in a more casual and laid back environment. Bags, Frisbee, and other outdoor activities are typically played during the event to promote social activity between the students. Figure 22 shows a small portion of the turn out the cookout.



Figure 22: ANS members have fun at the ANS fall BBQ.

In the spring, an end of the year BBQ is also held for all members of ANS. This event winds down the academic year in the same fashion that the first cookout started the year. A local area, Illini Grove, is rented out for the festivities. Illini Grove is a nice relaxing location that has basketball courts, a sand volleyball court, and plenty of space for cooking out. This cookout is a chance for students to talk more about plans over the summer with one another along with blowing off steam with professors.



Figure 23/24: (Left) Students at the Spring End-of-the-Year BBQ. (Right) Incoming social chair Erik (in the tree) throws a football to incoming secretary Austin.

## 8.2 ARCHERY

Archery was an event that was requested by many of the members of the organization. Most of the participants had to rent equipment from the facility, while the more experienced students brought their own bows. While most of the students that went on the trip had little to no experience with



archery, they were successful on the event due to the more seasoned students walking them through what to do.



Figure 25: An ANS member teaches his friend how to properly use the bow & arrow

After the team building and all the basics were taught, a friendly competition broke out. Accuracy and speed games were implemented to add a new twist and teach more in-depth on shooting.

### 8.3 PAINTBALL

During general meetings the student body was asked what events they would like to see throughout the semester. Paintball was always the number one choice amongst active members. This paintball event was hosted by one of the professors in our department. Twelve members went out to Dr. Ruzic's house where games like capture the flag, one in the chamber, and standard paintball were played.

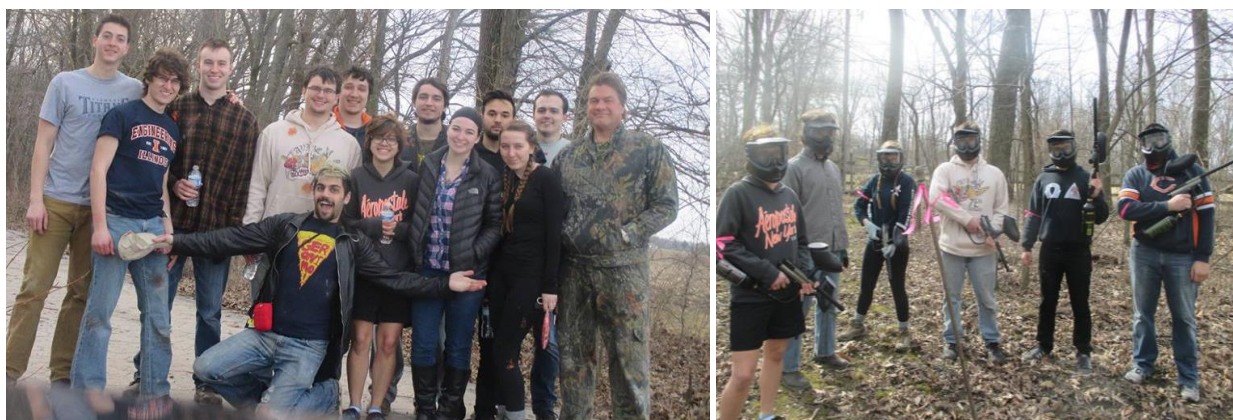


Figure 26/27: (Left) ANS members play paintball with Professor Ruzic (far right of picture). (Right): The pink team gets ready to beat the green team.

## 8.4 THANKSGIVING POTLUCK

Students come to the University of Illinois from all of the United States, because of this, many do not have the opportunity to make it home for the holidays. This was the driving force behind this year's potluck. Student who were not able to make it home and have a Thanksgiving dinner with their families were encouraged to come the event. Every attendant was required to bring a dish that they could share with friends.

## 8.5 HAPPY HOURS

Every week on Friday the chapter hosted happy hour at a local area. Every week students and faculty alike would get together and talk about what had happened during the week. This is a great way for students and faculty to co-mingle, and get acquainted. Many times these events led to students learning more about professors, their research and the many research opportunities that they offer. At least one faculty member was in attendance almost every week, with frequent appearances from ANS faculty advisor Clair Sullivan.



Figure 28: Students attending an ANS-Illinois happy hour at Legends, a popular local bar

## 8.6 21 AND OVER EVENTS

While most members are younger than 21 years old, the chapter does have some older students. Some events that were targeted for the older crowd were apartment crawls and bar crawls, and the end of the year Game of Thrones themed party, which was the same day as the end of the year BBQ.

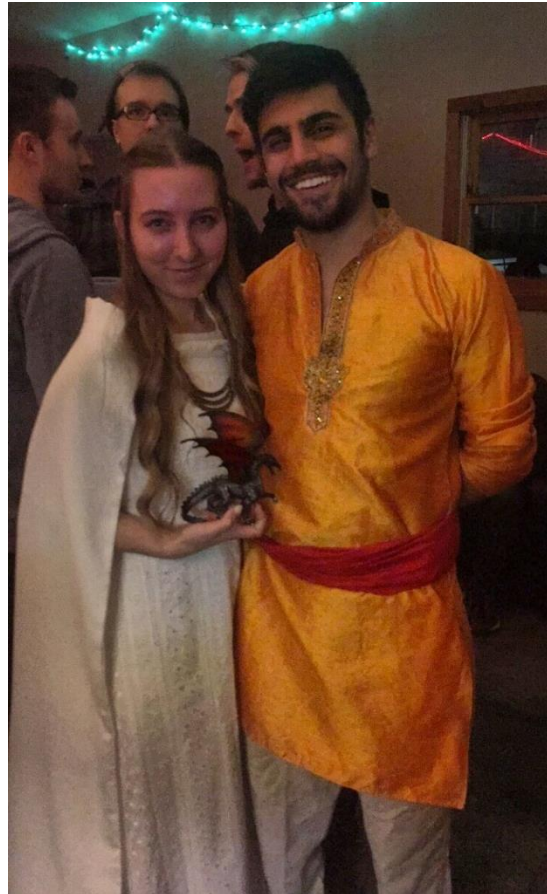


Figure 29: Incoming IVP Shanna and Incoming President Aries dressed up for the ANS-Illinois Game of Thrones party

## 9. ELECTIONS & AWARD BANQUET

### 9.1 ELECTIONS

In April, it came time to elect the new board for the 2016-2017 school year. With this came the opening of a new position, Internal Vice President (and renaming Vice President to be External Vice President). Internal Vice President, or IVP, is a position that was open in previous years but had been closed due to lack of interest. The duties of the new IVP will be to hold all the professional events and do all the networking within the university (previously duties of the President.)

This election demonstrated the excitement and strong participation characteristic of this year. Previous years had most executive board positions running uncontested, with an average of only 1-2



positions being contested. This year, 15 separate people ran for the 6 positions, with 4 people running for 2 or more positions. This resulted in no uncontested positions and some positions with 4 people running for it (see flyer in Appendix B for full list). The new ANS-Illinois board is listed below:

President: Aries Loumis  
 External Vice President: Jeremy Mettler  
 Internal Vice President: Shanna Bobbins  
 Treasurer: Siobhan Fox  
 Secretary: Austin Enfinger  
 Social Chair: Erik Medhurst

## 9.2 AWARDS BANQUET

At the end of the year, ANS-Illinois pairs up with the department of Nuclear, Plasma, and Radiological Engineering (NPRE) to host an awards banquet honoring students in the department and the student section. This year, over 40 scholarships or awards were recognized, along with the incoming ANS board. The annual banquet provides a great opportunity for ANS and the NPRE department to honor the amazing students that make the section and department so great. This event is also open to alumni, and alumni/professors who make significant contributions to fields of nuclear science and technology are also honored.

This year, ANS-Illinois got to play a role in ANS National honoring the decommissioned TRIGA reactor as a National Nuclear Historic Site, and hosting President Eugene Grecheck for the evening of the banquet and the next day during the ceremony (see part of Section 11).

## 10. ATTENDANCE

ANS-Illinois tracks attendance to see how members are participating in events. This year, 100 students participated in at least one event. ANS-Illinois also tracks students using a points system, which weighs different events differently. The points system is listed in table 2, below.

Table 2: Points system for attendance points	
<b>General Meeting</b>	1 point
<b>Social event (excluding happy hour &amp; parties)</b>	1 point
<b>Committee Meeting</b>	½ point
<b>Professional Event</b>	2 points
<b>Trip</b>	4 points
<b>Miscellaneous</b>	½ point was added for those that helped run an event like Open Lab Day

Keeping track of attendance allowed ANS-Illinois to reward the most active members at the end of each semester. At the end of the fall semester, the student (not including executive members) with the most points was given a free ANS shirt (see Appendix B), and the student with the 2<sup>nd</sup> most points was given an ANS poster. At the end of the year, the 3 students with the highest attendance (none were graduating) were given a free membership to ANS for the following year, and the student with the highest spring attendance was given a small gift (they were graduating.) Figure 30, below, shows an example of some of the most active students and the events they participated in.

Name	TOTAL	Total spring	Argonne (4 pts)	WIN 10/1 (1/2)	GM (10/8) (1 pt)	URT 10/8 (1/2)	WIN 10/8 (1/2)	Webinar (2 pts)	URT 10/15 (1/2)	Apt Crawl (1)	URT Social 10/17	The Limited (2)	URT 10/22 (1/2)	Internship Info (2)	Intern. Info presenters (1/2)	Open Lab Day (2)	Lab Day Helpers (1/2)	URT 10/29 (1/2)	Clinton (4)	NAYGN dinner (2)
Blair Anderson	38	14.5	x	x	x	x	x	x		x		x		x	x	x	x	x	x	x
Michael Winkler	27	11	x		x	x	x			x						x			x	x
Michael Winkler	22	12.5			x	x			x	x	x		x	x		x			x	x
Michael Winkler	19.5	10.5	x		x	x				x	x		x							
Michael Winkler	19	9	x							x				x	x	x	x			
Michael Winkler	18	4.5	x		x	x	x					x	x	x		x		x		
Michael Winkler	18	10	x	x						x				x	x					
Michael Winkler	16	8			x					x				x					x	
Michael Winkler	15	7.5	x		x	x				x			x							
Michael Winkler	13.5	5	x			x			x	x	x		x					x		
Michael Winkler	13	10						x		x										
Michael Winkler	11.5	7.5			x					x						x				
Michael Winkler	10.5	3	x		x	x				x			x							

Figure 30: ANS-Illinois attendance sheet with some of the most active ANS members

## 11. LOOKING FORWARD: ANS-ILLINOIS IN 2016-17 AND BEYOND

The success of the ANS-Illinois chapter of 2015-2016 has been unmatched compared to previous years. Previously, there has not been a very large archive outside of the Glass Stone reports as references to previous accomplishments, and in order to guarantee continued success for future ANS-Illinois chapters, an executive board guideline and manual will be created. Previously, explanations of duties have been carried out by word-to-mouth down each previous generation of chapters to the next. This system will make sure to give each officer every opportunity to be as successful as the previous one. Other plans outside of this include forming a committee dedicated to promoting Nuclear Advocacy. Some efforts have already been made through the production of a video, where students are asked why they chose nuclear, and why they feel nuclear power is important. During the meeting with ANS-National President Eugene Grecheck, President Elect Aries Loumis and incoming Internal Vice-President Shanna Bobbins discussed plans with how student chapters can participate in promoting Nuclear Energy.





Figure 31: Students from ANS-Illinois and Nuclear, Plasma, and Radiological Engineering meet with ANS president Eugene Grecheck

The chapter also plans to increase involvement from the graduate students, and have met with them on ways to include them more in the coming years. In order to give more incentive for future board members to do well. The chapter will begin archiving previous boards, and their accomplishments on the ANS-Illinois website. Also, since there was such an increase in involvement this year two new executive board positions have been created, including Outreach and Public Relations. ANS-Illinois hopes that with the increase in communication and public outreach that involvement, will lead to further successes in the future.

## 12. APPENDICES

### APPENDIX A: LETTERS OF SUPPORT

# UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

**Department of Nuclear, Plasma,  
and Radiological Engineering**

216 Talbot Laboratory  
104 South Wright Street  
Urbana, IL 61801-2984



27 April 2016

Student Sections Committee  
American Nuclear Society

Dear Student Section Committee Members,

This is to express my strong support for the University of Illinois ANS Student Section for the Samuel Glasstone Award. The Student Section at Illinois has had a full and rich set of activities this year which have been well beyond the normal yearly activities of ANS student sections. This is due to a very strong group of leaders for our Student Section and their commitment to engage other students in our program in the Illinois Section's activities.

As a group, they have engaged over 50 new student member in ANS through their activities which have included Section trips to Argonne National Lab, Clinton Nuclear Power Station and a Women in Engineering trip to Exelon Headquarters. They also took a group of more than 50 of our students to the ANS Student Conference this year at the University of Wisconsin. These students put together a powerful display of their talents and the activities going on at Illinois: they received the largest number of best paper, best poster and leadership awards of any school attending the ANS Student Conference.

They have also put on a number of professional development events here on Campus including nearly weekly 5 pm seminars with industry and national lab guests to familiarize students with outside professional opportunities. They have also put on resume and internship information sessions to help students polish their application skills and help them find summer internship opportunities for summer employment and professional development.

They have also held external activities for the benefit of the community. They held their annual Boy Scout Merit Badge event at one of the local schools on a recent Saturday. This event attracts Boy Scouts from the community and is a major way to teach them about the potential of nuclear power along with activities demonstrating radiation measurement techniques and other nuclear power-related activities. They also ran a very successful set of events at our annual Engineering Open House where outside community members visit Campus to learn about major engineering activities. The ANS Student Section always puts on one of the most popular events which is aimed primarily at high school students.

This year's Student Section leaders also made special efforts to attract even the newest Freshmen students into their activities. The new students were invited to and involved in all of the major Section activities. This helps to engage students from the earliest time in college and provides a major student-based mentoring system for them.

Finally, the students also had several major social events, including beginning of the year and end of the year barbeques, an archery event, a paintball activity, a Thanksgiving potluck event, and weekly Friday afternoon happy hours to keep all of their members involved and engaged.

This year's ANS Student Section and their superb group of leaders are truly deserving of the recognition of the ANS Samuel Glasstone Award for Best Student Section.

With kindest regards,

James F. Stubbins  
Willett Professor of Engineering, and  
Head, Department of Nuclear, Plasma and  
Radiological Engineering

telephone 217.333.2295 • fax 217.333.2906

UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

Department of Nuclear, Plasma,  
and Radiological Engineering

216 Talbot Lab., 104 S. Wright St  
Urbana, IL 61801-2894, USA



April 28, 2016

**TO WHOM IT MAY CONCERN**

As Associate Head of Academic Programs, I would like to take this opportunity to most strongly support the nomination of the student section of the American Nuclear Society at the University of Illinois at Urbana-Champaign (UIUC ANS) for the American Nuclear Society Samuel Glasstone Award.

I have also served as the faculty advisor to the student chapter for many years, and I can confidently state that the current chapter has been the most active chapter in our department going back at least two decades. List of activities this chapter has organized is very long. These range from “boy scouts merit badge” to numerous tours and other outreach activities. I will not itemize them here. It is their efforts in bringing many more students—from nuclear engineering as well as other departments—to participate in ANS activities that I think is their single most important accomplishment. This effort has then directly impacted almost everything else that the chapter has organized. As a result of this intensive effort, this chapter has managed to—twice—double the number of student participation from the University of Illinois at the student ANS meetings. Our participation went from 13 at PSU to 26 at TAMU, and then to 53 who attended the most recent meeting at UW-Madison. This I believe is an unmatched accomplishment.

Student chapter of the ANS at the University of Illinois has been an extremely valuable presence in the nuclear engineering program. Current leadership of the student chapter has made it even more so this year. I most strongly recommend our student chapter for this year’s Samuel Glasstone Award.

Sincerely,

A handwritten signature in black ink, appearing to read 'Rizwan Uddin', with a long, sweeping horizontal line extending to the right.

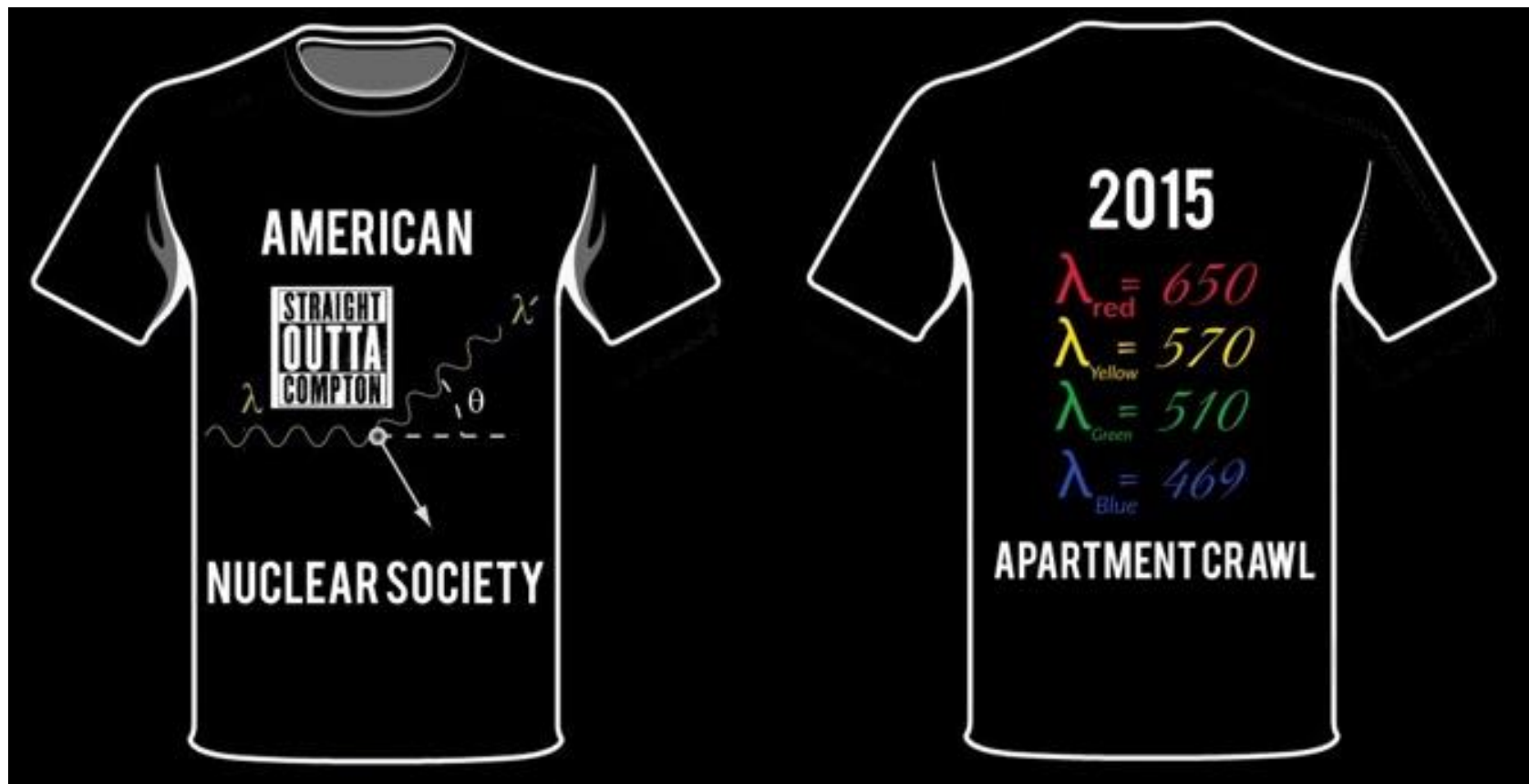
Rizwan Uddin  
Professor and Associate Head of Academic Programs

## APPENDIX B: SHIRTS, FLYERS, MISCELLANEOUS

### ANS T-shirts









Sample of flyers from the year. Note: student addresses are blurred out for privacy

A flyer with a background of overlapping blue, orange, and light blue squares. The text is centered and reads:

**Attend our EXPO Info Session with**  
**BECHTEL MARINE PROPULSION CORP**


**Date:** MONDAY SEPTEMBER 21<sup>ST</sup>  
**Time:** 7:00-8:00 PM  
**Location:** 218 MECHANICAL ENGINEERING BUILDING

**Pizza and drinks will be provided!**



**ANS** University of Illinois





Did you know that the  
typical nuclear energy  
facility employs 400-700  
workers?

<http://www.nei.org/Why-Nuclear-Energy>

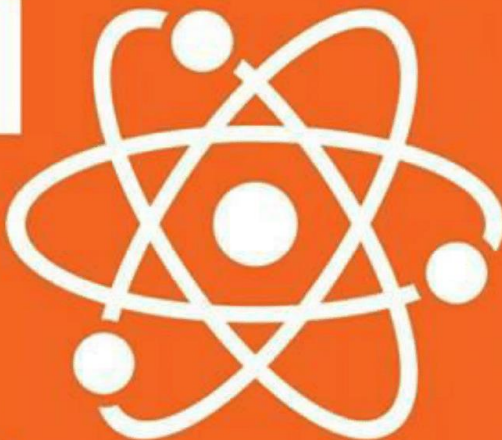
## Want to know more?

*Join us to learn about the opportunities the  
nuclear industry has for YOU!*

**“Careers in Nuclear” Webinar**

**October 14<sup>th</sup> at 5:30 – 7 pm in MEB 335**

**Free food!**







# ANS Holiday Party!

December 4<sup>th</sup> from 8 pm – 12 pm

Located at 

## **\$10 White Elephant:**

Bring a gift → get a gift! \$10 maximum

## **Ugly sweater contest:**

Winner gets a Starbucks gift card!



**American Nuclear Society**  
University of Illinois



## How to Donate Condoms to V-Day

1. I-Card >
2. Illini Union Health >
3. Aries Loumis Mailbox >
4. Stop Violence against women.

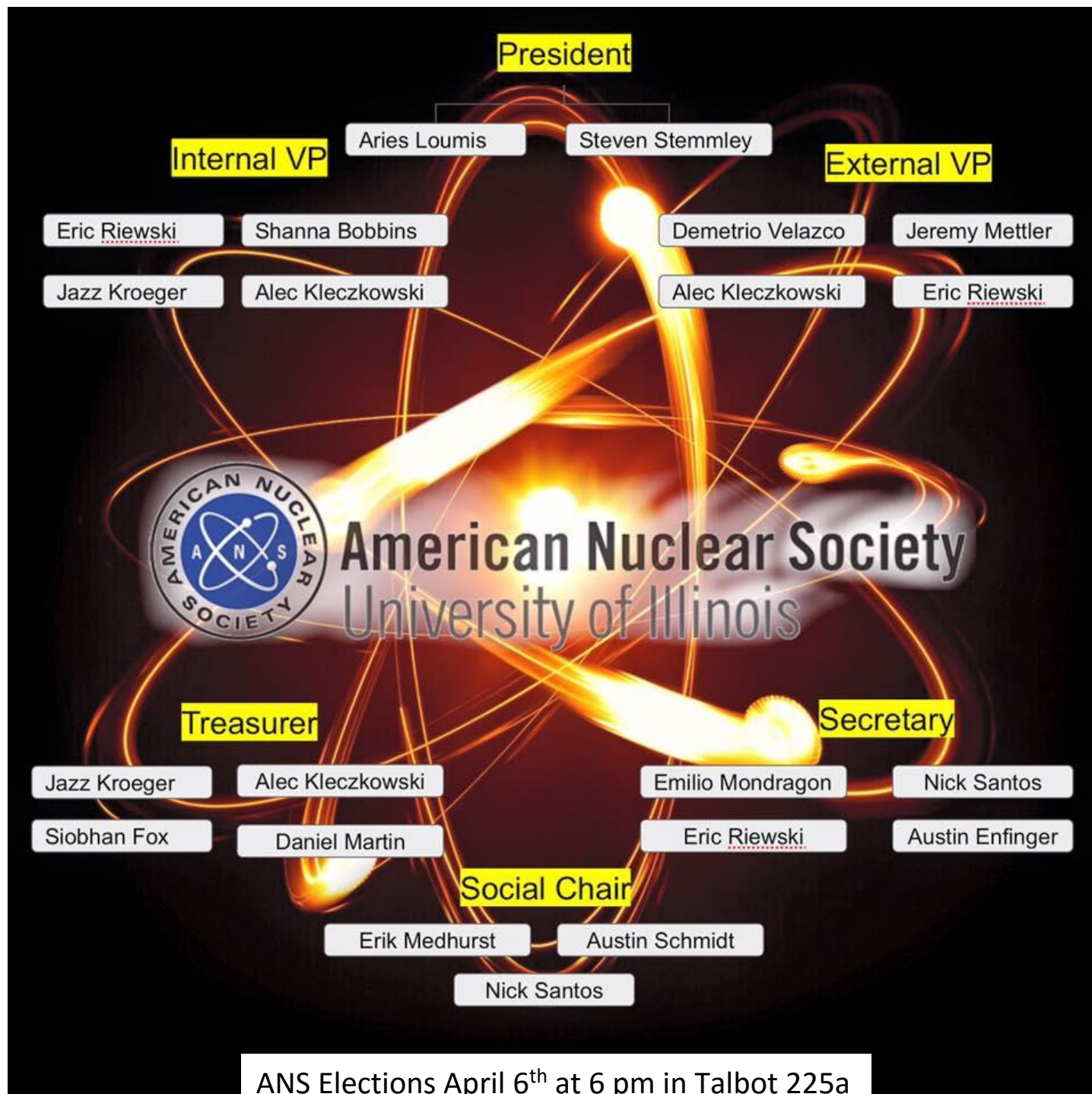


Mailbox Located in Talbot Laboratory Student Lounge  
**DONATIONS BEING ACCEPTED UNTIL THURSDAY NIGHT!!!**

**Condom Roses  
to be sold at Joe's  
this weekend!**

**Usable pencils AND  
usable condoms!!**









**CRITICALITY REACHED**  
**YOUR ATTENTION IS  $K=1$**   
**FOR THE ANS APARTMENT CRAWL!**



**Your RSVP cannot be confirmed until you pay \$20 for your t-shirt, which is your ticket into the crawl.**



**DEADLINE TO PAY IS THIS FRIDAY, OCT. 2ND!!**  
**GET YOUR SHIRT NOW BEFORE THEY RUN OUT!**



# American Nuclear Society

## University of Illinois



# NUCLEAR WINTER IS COMING

After the BBQ come join ANS as we have a our end of the year party. T-Shirts will be provided, or you can dress up as your favorite game of thrones characters!

We will be having a costume contest with a prize to the person with the best costume!

BBQ 5 PM, ILLINI GROVE

NUCLEAR WINTER IS COMING: 9:00 PM  
[REDACTED] Champaign, IL 61820