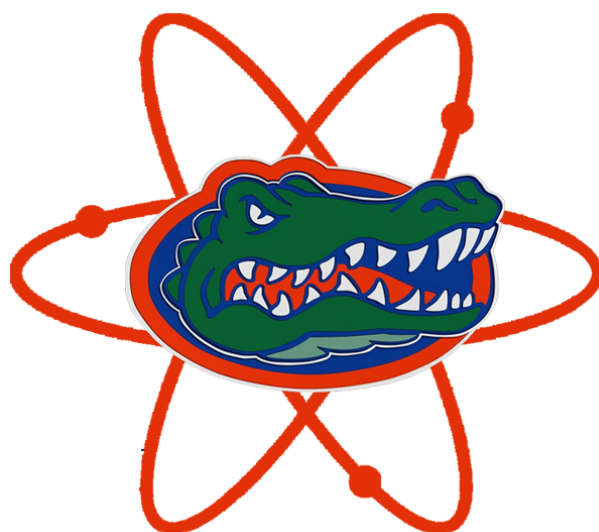


# SAMUEL GLASSTONE AWARD SUBMISSION

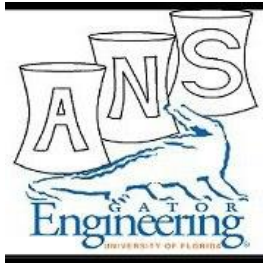
2013 - 2014

University of Florida  
American Nuclear Society Student Section



Assembled by:

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Christopher Greulich  
Paul Johns  
Devin Kelley  
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Hannah Morbach  
Robby Wienmann-Smith  
Nick Yap



## University of Florida American Nuclear Society Student Section



May 7, 2014

To whom it may concern:

I take great pleasure in strongly supporting the application of the University of Florida American Nuclear Society Student Section (UF-ANS) for the Samuel Glasstone Award. As a faculty advisor I have had the pleasure of observing and interacting with the creativity, drive and energy of the officers and members of the UF-ANS. It has been an eventful year, and although I've only recently taken over as faculty advisor I am very impressed with the vitality of the UF-ANS student section and its members in particular.

In the efforts to revitalize and expand the UF-ANS influence and role, the section has partaken in a number of activities in form of conferences, local outreach, study visits, and industry interactions among others. Over 20 UF students participated at the ANS winter meeting as a result of the UF-ANS coordination. Several invited guest speakers have been a part of the general UF-ANS meetings to bolster participation and create connections. The UF-ANS have been very active in coordinating events with at least 6 other local student sections of various affiliations. Tours were arranged at a fuel fabrication plant and a nuclear power plant during the year. Local outreach was also prominent in form of a Boy Scout workshop, movie screening, and participation in a NRC hearing. All while also maintaining a vibrant internal program with retreats, socials, and game related outings.

The effort to revitalize the program amidst faculty turnover, new faculty advisor, and a rigorous educational load speaks to the dedication and commitment of the officers. I have little to do with getting them to their current state of growth and success, nevertheless, I can see how the effort has come to fruition. I hope that the Samuel Glasstone award committee recognizes the outstanding work and accomplishments of this organization when they consider candidates for the 2014 Samuel Glasstone award.

Sincerely yours,

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# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Section Management</b>	<b>1</b>
2.1	Executive Board . . . . .	1
2.1.1	President . . . . .	1
2.1.2	Vice-President Internal . . . . .	1
2.1.3	Vice-President External . . . . .	2
2.1.4	Secretary . . . . .	2
2.1.5	Treasurer . . . . .	2
2.1.6	Board of Governors . . . . .	2
2.2	Chairs . . . . .	2
2.2.1	Social Chair . . . . .	2
2.2.2	Assistant Treasurer . . . . .	2
2.2.3	Boy Scouts Committee Chair . . . . .	3
2.3	Faculty Advisor . . . . .	3
<b>3</b>	<b>Operations</b>	<b>3</b>
3.1	Financial Planning . . . . .	3
3.2	ANS Merchandise . . . . .	3
3.3	ANS Emails and DropBox . . . . .	4
3.4	Newsletter . . . . .	5
3.5	Social Media . . . . .	5
<b>4</b>	<b>General Meetings and Events</b>	<b>5</b>
4.1	ANS General Body Meetings . . . . .	5
4.2	ANS Executive Board Meetings . . . . .	6
4.3	Invited Guest Speakers . . . . .	6
4.4	Coordination with Student Organizations . . . . .	6
4.4.1	College of Engineering . . . . .	6
4.4.2	Women in Nuclear, Material's Advantage, and Society for Biomaterials . . . .	8
4.4.3	Benton Engineering Council . . . . .	8
4.4.4	American Institute of Aeronautics and Astronautics . . . . .	9
4.4.5	Society of Women Engineers . . . . .	10
4.5	ANS Conferences . . . . .	10
4.5.1	ANS Annual Meeting . . . . .	10
4.5.2	ANS Winter Meeting . . . . .	11
4.5.3	ANS Student Conference . . . . .	12
4.6	ANS End of the Year Banquet . . . . .	12
<b>5</b>	<b>Public Information and Outreach Events</b>	<b>13</b>
5.1	Westinghouse Fuel Fabrication Facility Tour . . . . .	13
5.2	Boy Scouts Workshop . . . . .	13
5.3	Plant Vogtle Tour . . . . .	14
5.4	<i>Pandora's Promise</i> Viewing . . . . .	14
5.5	NRC Hearing . . . . .	15
5.6	USA Science and Engineering Festival . . . . .	16

<b>6</b>	<b>Socials</b>	<b>17</b>
6.1	ANS Fall Retreat . . . . .	17
6.2	ANS Bonfire . . . . .	18
6.3	ANS Spring Social . . . . .	19
6.4	ANS Tailgate . . . . .	19
<b>7</b>	<b>Conclusion</b>	<b>20</b>



## 1 Introduction

With the influx of new faculty, students, and funds, the University of Florida (UF) Nuclear Engineering (NE) Program has witnessed tremendous growth over the past year. The revitalization of the program has in-turn led to a revised American Nuclear Society (ANS) student section. The mission of ANS at UF this year was to build upon the work done during 2012-2013 in the resurgence of the chapter and the program. This report details the activities that ANS at UF undertook over 2013-2014. Highlights of ANS at UF's achievements over the past year include:

- Organizing the participation of over 20 UF students to attend the ANS Winter Meeting in Washington, DC.
- Hosting numerous recruitment and information sessions with companies such as AREVA, the Nuclear Regulatory Commission (NRC), Southern Company, and the Navy.
- Planning and orchestrating several social and networking events with other engineering societies at UF, and with the faculty and staff of the NE program.
- Prioritizing reaching out to reconnect with alumni of the program to foster a greater connection between past and current students.

## 2 Section Management

### 2.1 Executive Board

The Executive Board (E-Board) consists of nine officers: the President, Vice-President (VP) Internal, VP External, Secretary, Treasurer, Benton Engineering Council (BEC) Representative, and three members of the Board of Governors. Elections for these positions are held at the last general body meeting of the semester every year, and terms last for one year.

#### 2.1.1 President

The President this year was Chelsea T. Collins, a first year graduate student in the nuclear engineering program. She was instrumental throughout the year in leading the general body and E-Board meetings, hosting guest speakers, ordering and distributing ANS at UF merchandise, organizing the sections participation in the ANS Annual, Winter, and Student Conference meetings, and working with the entire board in the planning of all ANS related activities. Patrick Moo, the current VP External, has been elected as President for the 2014-2015 year.

#### 2.1.2 Vice-President Internal

This year's Vice-President Internal was Jitesh A. Kuntawala, a first year graduate student in the nuclear engineering program. Throughout the year, the VP Internal assisted with the organization of the general body and executive board meetings and with the coordination of the ANS Fall Retreat, a spring football tournament with other engineering societies, the ANS End of the Year Banquet, and the Boy Scouts Nuclear Merit Badge Workshop. Nick Yap, the current Secretary, has been elected as VP Internal for the 2014-2015 year.

### **2.1.3 Vice-President External**

Patrick Moo, a junior in the nuclear engineering program, served as this year's Vice-President External. His duties this year included hosting the ANS Fall and Spring socials, organizing the Westinghouse Fuel Fabrication Facility and Plant Vogtle tours, and coordinating the representation of UF at all three of the ANS National meetings. Hannah Morbach, the current Social Chair, has been elected as VP External for the 2014-2015 year.

### **2.1.4 Secretary**

Nick Yap, a sophomore in the nuclear engineering program, was the 2013-2014 Secretary. Nick assembled the monthly ANS newsletter, "Nuke News", which was distributed by the Materials Science and Engineering (MSE) Department to all students and alumni, and developed the designs for the ANS shirts, magnets, and decals. Mychaela Coyne has been elected as Secretary for the 2014-2015 year.

### **2.1.5 Treasurer**

James Totten, a senior in the nuclear engineering program, served as treasurer for the fall semester, and Tory Graham, a sophomore, was elected to serve for the spring semester. The duties of the Treasurer included organizing the budget and finances for the section and assisting with fundraising. Chelsea T. Collins has been elected as Treasurer for the 2014-2015 year.

### **2.1.6 Board of Governors**

Paul Johns, a senior, and Lucas Rolison, a first year graduate student, served on the Board of Governors. Their duties included advising the executive board members and assisting with the organization of events such as the Society of Women Engineers (SWE) eSwamp event. Paul Johns, Jitesh A. Kuntawala, and Jonathan Rosales have been elected to serve on the Board of Governors for the 2014-2015 year.

## **2.2 Chairs**

The chair positions are determined by the president of the section each year and elections are held at the first general body meeting of each school year; the term for these positions is one year.

### **2.2.1 Social Chair**

The Social Chair reports to the VP Internal and is responsible for the planning of social events and activities. Hannah Morbach, a sophomore, served as Social Chair and assisted with the organization of events such as fall tailgates, the spring Flag Football Tournament, and the fall and spring bonfire socials.

### **2.2.2 Assistant Treasurer**

The position of Assistant Treasurer was held by Tory Graham for the fall semester. The duties of the Assistant Treasurer involved assembling a fundraising packet to be sent to alumni and industry members.

### 2.2.3 Boy Scouts Committee Chair

Chris Greulich held the position of Boy Scouts Committee Chair and was responsible, along with the VP Internal, for organizing and hosting an all-day Boy Scouts Nuclear Science Merit Badge Workshop.

## 2.3 Faculty Advisor

The Faculty Advisor for the section serves as the liaison between the organization and the department, as well as ANS National. Professor DuWayne Schubring, who has been the faculty advisor for the past few years, served as advisor for the fall semester; the position was taken over by Professor Andreas Enqvist, a new addition to the NE program, in the spring.

## 3 Operations

### 3.1 Financial Planning

ANS at UF has one spending account through Student Government (SG), which contains all of the outside revenue that the section has accumulated. The account with SG allows chapter funds to be allocated by the President and Treasurer towards reimbursement of costs, such as conference attendance. The Benton Engineering Council (BEC) is an organization that serves as a liaison between the engineering societies and SG; BEC allocates funds (approximately \$2,000 each year) to ANS at UF for use for the ANS Winter Meeting and Student Conference, and additionally provides around \$300.00 each year for use for programs. Special requests were submitted to the BEC for adjunct funding of events such as the ANS End of the Year Banquet. This year, BEC gave ANS an extra \$450 to use on banquet material. The Materials Science Department (MSE) also provided funding for ANS at UF to encourage students to attend the ANS Annual Meeting. An additional \$1,000 allocation was provided by the MSE administration throughout the year. In addition, the ANS Florida Section assisted with funding. This year the ANS Florida Section provided the funds for the awards given out at the ANS End of the Year Banquet and provided the student award winners with monetary gifts as part of the awards. Sources of ANS funding and the amounts provided for the 2013-2014 year are shown in Table 1.

Table 1: Funding sources and amounts provided for the 2013-2014 year.

Source of Income	Amount
BEC	\$2,310.15
MSE	\$1,000.00
ANS Florida Section	\$200.00

### 3.2 ANS Merchandise

This year, Nick Yap and Chelsea T. Collins designed t-shirts, magnets, and decals to sell to students at the first meeting of the year in August. The t-shirts were \$10 each and the magnets and decals were \$3 each. Sales were extended to students, faculty, staff, alumni, and family and friends of the chapter members. Over 40 t-shirts and 50 each of the magnets and decals were sold. Due to the success of the t-shirt sales, ANS polo shirts were designed and sold during the spring semester. A graphic showing the polo design is shown in Figure 1. The polos were priced at \$25 each, and over 60 were purchased with approximately one-third of the orders coming from alumni.



Figure 1: ANS polo shirts.

### 3.3 ANS Emails and DropBox

To simplify communication between officers, Gmail accounts were created for the majority of the E-Board members this year. These accounts were used for all ANS at UF communication and were created for a smoother transition between board members in the years to come. The email addresses for each of the officer positions are listed in Table 2. For the second year in a row, DropBox was used

Table 2: ANS officer e-mails

Position	Email
President	ufl.ans.president@gmail.com
VP Internal	ufl.ans.vpinternal@gmail.com
VP External	ufl.ans.vpexternal@gmail.com
Secretary	ufl.ans.secretary@gmail.com
Treasurer	ufl.ans.treasurer@gmail.com
BEC Representative	ufl.ans.bec@gmail.com

to store files for the E-Board to use. E-Board meeting notes, agendas for general body meetings, financial planning information, conference and tour sign-ups, and event photographs were some of the items shared via DropBox.

### 3.4 Newsletter

A monthly newsletter, “Nuke News”, was assembled and dispersed via email to students, faculty, staff, and alumni. This newsletter was designed to keep the student and alumni base informed about events that have taken place over the past month. It also contained information on upcoming events and deadlines for scholarship and internship opportunities. This year, ANS was awarded Best Newsletter by the BEC, beating out 21 other engineering societies at UF. The newsletter from September 2013 has been included in Appendix A.

### 3.5 Social Media

Throughout the year a Facebook group was utilized as an efficient and effective tool for communication among members. The Facebook group, ANS at UF, was used to notify members of events, general body meetings, tours, and socials, and to allow members to post interesting facts or questions for the benefit of the group. A screenshot from the group is shown in Figure 2.

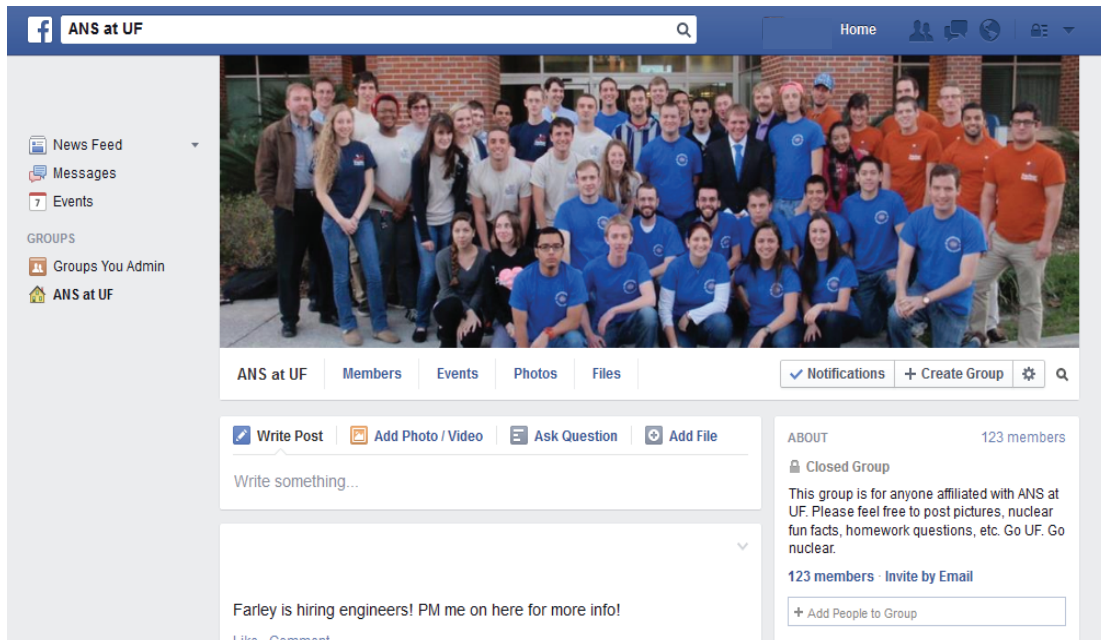


Figure 2: The ANS at UF Facebook page.

## 4 General Meetings and Events

### 4.1 ANS General Body Meetings

ANS at UF hosted several general body meetings (GBM) throughout the semester. These meetings were generally held on the third Wednesday of every month at 5:30 pm. Pizza was served at every meeting, and the president, who presided over the meetings, gave a presentation on upcoming events and activities. Guest speakers were featured at several meetings to speak about career and recruitment opportunities with their companies or organizations. The dates, meeting type, location, and times for the 2013-2014 meetings are shown in Table 3.

Table 3: General body meeting dates, types, locations, and times.

Date	Meeting Type	Location	Time
September 4	Chair Elections	NSC 227	5:30 pm
September 18	Guest Speaker: AREVA	Rhines 125	6:00 pm
October 2	Guest Speaker: NRC	Rhines 125	6:00 pm
October 16	GBM	Rhines 125	6:00 pm
October 30	GBM	Rhines 125	5:30 pm
January 22	Guest Speaker: Navy	Rhines 125	5:30 pm
February 19	GBM	Rhines 125	5:30 pm
March 19	GBM	Rhines 125	5:30 pm
April 16	Elections	Rhines 125	5:30 pm

## 4.2 ANS Executive Board Meetings

ANS E-Board meetings were held the second Wednesday of each month, the week before the GBM, to serve as a point-of-contact for the E-Board members and the faculty advisor in the planning of upcoming events.

## 4.3 Invited Guest Speakers

Representatives from AREVA, the NRC, and the Navy were present at meetings throughout the semester to speak about the employment opportunities and overviews of their companies or programs. Southern Company hosted an Information Session on October 8 for members of ANS, where they provided dinner and the opportunity for students to speak with head recruiters concerning internship, co-op, and employment opportunities.

## 4.4 Coordination with Student Organizations

### 4.4.1 College of Engineering

On August 26, the College of Engineering hosted a New Student Welcome Reception in the Student Union. Every engineering student society was invited to attend and present booths to provide information for new students regarding their organizations. Three ANS at UF members attended the event, where they gave out society information and handed out flyers for the first ANS General Body Meeting. A sign-up sheet was provided for students to join the ANS email list, and NE program t-shirts were available for students interested in the nuclear engineering major. Images from the reception can be seen in Figures 3 and 4.





Figure 3: Mychaela Coyne, Jitesh Kuntawala, and Chelsea T. Collins man the ANS booth at the College of Engineering New Student Welcome Reception.



Figure 4: Jitesh Kuntawala and Chelsea T. Collins speak to a new student in the College of Engineering about ANS and the NE program.

#### 4.4.2 Women in Nuclear, Material's Advantage, and Society for Biomaterials

ANS hosted a Welcome Back Cookout along with Women in Nuclear (WIN), Materials Advantage (MA), and the Society for Biomaterials (SFB) (all societies in the MSE department) on August 22. All students, faculty, and staff were invited, and the four societies provided hotdogs, hamburgers, chips, and refreshments to all who attended. This cookout was an opportunity for students to network and discuss the internships they had over the summer, and allowed for new students interested in joining the societies to sign up for email listservs and gather information about the activities being planned for the upcoming year. Pictures from the event can be seen in Figures 5 and 6.



Figure 5: ANS at UF members networking at the Welcome Back Cookout.



Figure 6: ANS members Jitesh Kuntawala and Pat Moo discussing nuclear engineering and ANS with prospective members.

#### 4.4.3 Benton Engineering Council

On September 8, the BEC held their annual BEC Leadership Retreat for the President and BEC Representative from each student engineering organization. The retreat provided the ANS E-board members in attendance, Chelsea T. Collins and Devin Kelley, with the opportunity to interact and foster collaboration with the executive board members from many of the other student engineering organizations on campus. Budgeting for the upcoming year was discussed, and ideas were tabled for the development of an ANS at UF website.

On April 14, the BEC held their End of Year Ceremony at the Arredondo Café within UF's Student Union. This annual event was BEC's opportunity to acknowledge the accomplishments of its sub-organizations and celebrate a successful year in the College of Engineering. Various awards were presented to the societies who had exhibited exemplary involvement both on-campus and in the community. Of these awards, ANS at UF was the recipient of the Best Newsletter award, and received certificates for being runner-up for Best Social Event (Flag Football Tournament), and Best Outreach Event (Boy Scouts Nuclear Merit Badge Workshop). In addition, Dean Cammy Abernathy and Associate Dean Angela Lindner of the College of Engineering both gave encouraging speeches about the success of the student societies in the College of Engineering. The representatives from ANS at UF who attended the banquet can be seen in Figure 7.





Figure 7: ANS at UF members at the BEC End of the Year Ceremony.

#### 4.4.4 American Institute of Aeronautics and Astronautics

On Sunday January 26, ANS and AIAA (American Institute of Aeronautics and Astronautics) co-hosted a flag football tournament at Flavet Field that started at 1:00 pm and lasted until 6:00 pm. The societies that participated included SHPE, ASME, BMES, Tau Beta Pi, AIChE, IEEE, NOBE, AIAA, FLEG, and ANS at UF. Teams consisted of 5 members each, and each society could have more than one team participate. ANS at UF had two teams compete: the “Bomb Squad” and “PCL (Parker-Cullu Labs)”. Planning began in November, and the tournament was set up with 20 minutes games in a double elimination style event. A team from BMES ended up winning the tournament, following 6 straight wins. The entire event was a huge success, with members of ANS serving as referees and officials; ANS and AIAA are hoping to make this an annual social event for all of the engineering societies. ANS won runner-up for Best Social Event from the Benton Engineering Council for this tournament. Images from the tournament can be seen in Figures 8 and 9 below.



Figure 8: The SHPE flag football team getting prepared to kick-off in their game against FLEG while ANS referees look on.



Figure 9: ANS members reading over the tournament rules to prepare for the games.

#### 4.4.5 Society of Women Engineers

On August 24, the Society of Women Engineers (SWE) hosted their annual eSwamp event. Over 100 students attended the event, which was held off-campus at Lake Wauburg. eSwamp is aimed at allowing freshman females interested in engineering to interact with and get information on all of the different engineering student organizations at UF. ANS had a table at the event and spoke to dozens of interested freshman about nuclear engineering, ANS, and WiN, and answered any questions they had about nuclear energy or UF engineering. Paul Johns, Kyle Keaten, and Enrique Wong represented ANS. A picture of this event can be found on Figure 10.



Figure 10: ANS at UF members Enrique Wong, Kyle Keaten, and Paul Johns letting incoming freshman know what ANS at UF has to offer.

### 4.5 ANS Conferences

Over the past year, ANS at UF sent over 35 students to attend and present at the three ANS National annual conferences. This year ANS at UF provided the opportunity for many students to attend ANS national conferences. ANS at UF is committed to providing its student members with the opportunity to network on a national level, present research, and get involved in the organization of ANS. This opportunity provides value to the student as well as the UF Nuclear Engineering Program as a whole.

#### 4.5.1 ANS Annual Meeting

In June of 2013, eight UF nuclear engineering students made the trip to the ANS Annual Meeting in Atlanta, Georgia. Several of the students participated in the student assistant program where they were given the opportunity to sit in on different technical sessions. While at the conference, many students went to a screening of the film *Pandora's Promise*, which debuted at a local theater. The Program Chair for the meeting was UF nuclear engineering professor Dr. Sedat Goluoglu.



During the conference, UF held its own revitalization reception, which was attended by a majority of the meeting's attendees, including UF College of Engineerings Dean Cammy Abernathy. The national conference was a leap forward for the program's revitalization efforts, as well an achievement on behalf of ANS at UF's commitment to improving student member involvement at national conferences.

#### 4.5.2 ANS Winter Meeting

Over 20 ANS at UF members traveled to Washington, D.C., from November 10 to 14 to attend the ANS National Winter Conference held at the Omni Shoreham hotel. The students stayed in eight rooms at a Days Inn two metro stops from the conference location. The conference started out with a reception for students participating in the Student Assistant Program Sunday night, followed by the President's Reception, which featured a student poster session and a nuclear technology expo with several companies including AREVA, Westinghouse, and ORNL. On Monday, students participated in a Student Sections Committee meeting and attended a Student Social. On Tuesday, students assisted at sessions and attended the Southeastern Reception hosted by UF, Texas A&M, NC State, and the University of Tennessee. Here they met Gwyneth Cravens, from the film *Pandora's Promise*, as shown in Figure 11. The conference also included time for site-seeing around the DC area, and students were able to tour the Capitol building, the Library of Congress, and the Smithsonian museums, among other sites.



Figure 11: ANS at UF members and alumni with Gwyneth Cravens of *Pandora's Promise* at the ANS Winter Meeting.

### 4.5.3 ANS Student Conference

The 2014 Student Conference was held the weekend of April 3rd through April 5th. The conference was hosted by Pennsylvania State University, and featured inspiring presentations from ANS President and EXCEL Services CEO Donald Hoffman, Penn State Dean of Engineering Amr Elnashai, CEO of Exelon Nuclear Partners Amir Shahkarami, and Director of Engineering Excellence at Westinghouse Cindy Peezze. Tours of Three Mile Island, shown in Figure 12, and Penn State's Breezeale Reactor kicked off the conference on Thursday. ANS at UF students enjoyed several workshops on a variety of nuclear subjects ranging from the COBRA-TF thermal hydraulics LOCA simulation to a radiochemistry workshop. A two-day career fair with representatives from 31 organizations allowed ANS at UF members to meet with recruiters. Students in attendance also benefited from topical panels on fusion and medical isotopes. Four students presented research representing the University of Florida. Mehgan Anido and Patrick Moo presented a poster of their research with Dr. Wesley Bolch on computational phantom models of the human anatomy. As shown in Figure 13, Paul Johns presented a poster of his research with Dr. Juan C. Nino on organic photovoltaic materials for radiation detection and radioisotope power generation. Additionally, Robert Weinmann-Smith was featured in a podium presentation on his research with Dr. Yong Yang on hydride migration, precipitation, and re-orientation in nuclear spent fuel cladding in dry storage.



Figure 12: ANS at UF member Patrick Moo touring TMI during the ANS Student Conference.

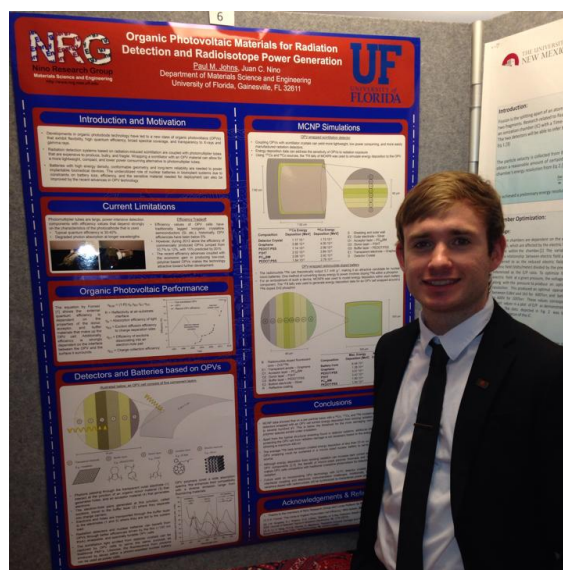


Figure 13: ANS at UF member Paul Johns presenting his research at the Poster Session.

### 4.6 ANS End of the Year Banquet

On April 23, ANS at UF held their annual End of the Year Banquet at the Tioga Town Center Clubhouse, just outside of Gainesville. This was the second year that the banquet was held, and it has become an annual event to recognize all of the hard work of the ANS chapter on campus as well as the individual contributions of the students. As part of the banquet, ANS at UF awarded one undergraduate student, graduate student, and professor with the Outstanding Undergraduate Student Award, Outstanding Graduate Student Award, and the Outstanding Teacher Award. This years recipients were Morgan Byerly, Wei-yang Lo, and Dr. Edward Dugan, respectively. The



banquet also included the transfer of positions between incumbent and newly elected E-board members. Over 45 students attended this year, and program faculty in attendance included Dr. Mack, Dr. Vernetson, Dr. Jordan, Professor Neo, Dr. Goluoglu, and Professor Goluoglu. The banquet was catered from 4Rivers Smokehouse, a Texas-style barbeque restaurant.

## 5 Public Information and Outreach Events

### 5.1 Westinghouse Fuel Fabrication Facility Tour

On October 10, a group of sixteen nuclear engineering students traveled to Columbia, South Carolina, to tour the Westinghouse Fuel Fabrication Facility. This was the second ANS student section sponsored tour of the facility. The day's events were hosted by Bob Buechel, a University of Florida nuclear engineering graduate and current Vice President of Asia Fuels Operations for Westinghouse. The first part of the tour showed the students the process by which uranium hexafluoride gas is converted to uranium dioxide fuel pellets. Students witnessed the sintering process, which was then followed by the loading of the fuel rods. The tour then focused on the fuel assembly production. In this stage, the students were shown the fabrication of the assembly grids and a number of other components. The fuel rods were subjected to a number of quality assurance inspections before being utilized in the final construction of the fuel assemblies. Tours like these are a central activity to our ANS student section because they provide a first time, real-world view into the nuclear industry. A group photo from the tour can be seen in Figure 14.



Figure 14: ANS at UF students following the tour of the Westinghouse Fuel Fabrication Facility in SC in October.

### 5.2 Boy Scouts Workshop

On October 26, from 8:30 am to 4:00 pm, ANS hosted a Boy Scout Nuclear Science Merit Badge Workshop, where boy scouts learned about nuclear science while completing the national requirement for their merit badge. Fourteen scouts attended, mostly aged 12 to 18, with ten adults and nine volunteers from ANS. The day began with an overview of basic definitions and history, with descriptions of radiation and fission, from UF NE students; following the presentations, the Scouts participated in activities including electroscope building and candy isotope building. Lunch was

provided at the all day event, followed by a review of the applications of nuclear energy and career opportunities in the nuclear technology field. The day concluded with tours of the UF Training Reactor and the detection lab, where students participated in a detection lab experiment. The event flyer can be found in Appendix A, and a picture from the event can be seen in Figure 15.



Figure 15: Local boy scouts and ANS student members team up for a nuclear science merit badge workshop.

### 5.3 Plant Vogtle Tour

On January 31, 2014, a group of 18 ANS members toured the facilities at the Vogtle Electric Generating Plant. The day started early as everyone made the drive from Gainesville to the plant, which is about 25 miles outside of Augusta, Georgia. Upon arrival, the students were given a brief overview of the plant and the progress of the two AP1000 reactors which are currently under construction at the site. Everyone was then given the first of two driving tours of the grounds at Vogtle. After the first driving tour, the students were brought to the training facility for reactor operations and were allowed into the AP1000 control room simulator. The touring staff answered several questions and simulated a trip of the reactor. Everyone was then taken on a tour of the Vogtle 3 & 4 construction site. Many students commented on the massive undertaking of the fourteen billion dollar project and what is truly an engineering marvel. The day was then capped off with lunch and a final overview of the plant and personal photo ops in front of the cooling towers. A group photo from the tour can be seen in Figure 16.

### 5.4 *Pandora's Promise* Viewing

On November 19, ANS and WIN hosted a viewing of the film *Pandora's Promise* for students in the COE. Approximately 20 students attended the viewing; refreshments were provided and a brief question and answer session took place afterwards with NE students and faculty.



Figure 16: ANS at UF students in front of the Vogtle 1 & 2 cooling towers during part of the January 31 tour.

## 5.5 NRC Hearing

On November 6, the Nuclear Regulatory Commission held a hearing for public comment on the latest draft of the Waste Confidence Generic Environmental Impact Statement (EIS) in Orlando, Florida. ANS at UF joined experts in the field to provide the commission with Florida-based testimony in support of the pending generic EIS. In attendance were Jitesh Kuntawala, Devin Kelley, Chelsea Collins, Allan Martin, and James Totten. Below is an excerpt of the testimony that was given by Jitesh Kuntawala.

“As students in the state of Florida, we believe that the current and continued use of zero emission nuclear energy is vital to the state, both environmentally and economically. For the many decades in which nuclear energy has been used, spent nuclear fuel has been stored safely and securely on site at Florida’s nuclear power plants. With their environmental assessments, the Nuclear Regulatory Commission has shown that the environmental impact of the storage of spent nuclear fuel is small. In addition, research by major Universities around the nation has shown the safety of the storage of spent nuclear fuel. It is our belief that the Nuclear Regulatory Commission should move promptly to finalize the Waste Confidence Generic Environmental Impact Statement. A delay in this process is detrimental to the future of our state’s long-term energy portfolio. To finalize, the continued storage of spent nuclear fuel on site is not a limiting factor of the operation of Florida’s zero emission nuclear power plants nor is it an environmental or public safety issue. We, as nuclear engineering students, are studying everyday so that we can be a part of our nation’s clean energy, zero emission future.”

Images from the hearing can be seen in Figures 17 and 18 below.





Figure 17: Jitesh Kuntawala testifying before the NRC at the Waste Confidence Hearing in Orlando on November 6.



Figure 18: ANS at UF members Chelsea T. Collins, Devin Kelley, James Totten, Jitesh Kuntawala, and Allan Martin following the hearing.

## 5.6 USA Science and Engineering Festival

ANS members Chelsea T. Collins, Devin Kelley, Tory Graham, and Luci Behar traveled to Washington, DC, April 24 to the 27 to attend the USA Science and Engineering Festival. The UF College of Engineering sponsored a booth and provided travel and lodging arrangements for student representatives from ANS, SHPE, NSBE, and SWE to attend the event, which was a weekend long expo with representatives from Oak Ridge National Lab, NASA, NAYGN, and many more. The four ANS students in attendance set up model towns with sources hidden inside and had expo attendees use Geiger counters to determine the location of the hidden sources; there was also a half-life experiment demo for attendees to participate in and NEI and ANS National provided pamphlets and material on nuclear power generation and radiation to hand out to interested participants. An estimated 325,000 members of the public attended the expo. Images from the event can be seen in Figures 19 through 21 below.



Figure 19: Devin Kelley and Tory Graham explain the Geiger counter demo to expo attendees.



Figure 20: Chelsea T. Collins, Luci Behar, and Tory Graham in front of the UF COE booth.





Figure 21: Interested students participating in the Geiger counter demo.

## 6 Socials

### 6.1 ANS Fall Retreat

The second annual Fall Retreat was again held at a members house on the Ichetucknee River, located about 30 miles from Gainesville. ANS members carpooled to the house, and around 25 members in total attended. The retreat began with numerous icebreaker activities, which gave each attendee the opportunity to introduce themselves and for the students to get to know one another better. Publix subs were provided for lunch, and following lunch the members all took part in floating down the Ichetucknee River. This retreat was very effective in establishing connections between ANS members and set the tone for strong friendships throughout the school year. Images from the retreat can be seen in Figures 22 through 24 below.



Figure 22: ANS at UF students enjoying their picnic-style lunch.



Figure 23: ANS at UF members Joe Cashwell and Devin Kelley help serve lunch.



Figure 24: ANS at UF members Pat Moo, Damian Smith, and Jitesh Kuntawala getting to know each other.



Figure 25: ANS at UF members roasting marshmallows at the second annual ANS Bonfire in November.

## 6.2 ANS Bonfire

On November 22, ANS at UF held its second annual Bonfire. The event took place at VP Pat Moo's house, and was attended by well over 40 ANS at UF members and friends. The night was



highlighted with several games and activities, including UF nuclear engineering Ph.D. student, Haitang Wang, having his first ever s'more! For many students this was an excellent opportunity to get better acquainted with their fellow classmates and ANS members.

### 6.3 ANS Spring Social

Due to the success of the bonfires held over the past year and during the fall semester, ANS held a spring Bonfire social on January 24. The night was a bit on the cold side but there was plenty of hot apple cider and s'more making materials for everyone to enjoy. Overall, around 30 members were in attendance.

### 6.4 ANS Tailgate

On October 5, ANS and WIN hosted a tailgate outside of the Nuclear Sciences Building to raise money for the UF version of the March of Dimes, Gators March for Babies. ANS and WIN provided hotdogs, hamburgers, chips, and sodas for attendees and asked for a \$5 donation towards their "Nuclear Gators" March of Dimes team in return. The goal of the tailgate was to raise \$100; by the end of the day, ANS and WIN had exceeded the goal and raised close to \$200. A group photo taken at the tailgate is shown in Figure 26.



Figure 26: Members of ANS and WIN, along with the two NE program advisors, at the March of Dimes fundraiser tailgate.

## 7 Conclusion

As the UF Nuclear Engineering Program has found new life, so has too the UF ANS student section. For the 2013-2014 school year, the goal of the executive board was to continue the revitalization of our student chapter through reestablishing and developing new traditions, increasing the participation of alumni in the activities of the student section, have a positive impact on the community and the college, and to overall have a robust and active presence at national meetings.



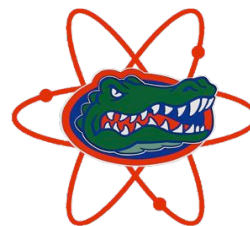
Figure 27: The ANS at UF student members for 2013-2014.



## Appendix A

# NUKE NEWS

Volume 3  
Issue 1  
September 2013



### Inside This Issue

- 1 Fall Retreat
- 2 Student Spotlight
- 3 Research Close-up
- 4 Upcoming Events & Announcements
- 4 About ANS @ UF

### ANS Fall Retreat 2013 by Hannah Morbach

At the annual ANS Fall Retreat, ANS club members gathered at Ichetucknee Springs for a day of fun activities. Chelsea's summer home, situated right on the banks of the Ichetucknee River, was the perfect setting for us to relax and get to know more about new and current members. We played some interesting games, like Two Truths One Lie, to learn more about each other. ANS provided delicious Pub subs, chips, and cookies for lunch. After eating, we were ready to jump in the river. We grabbed floats, noodles, and various other flotation devices to make the journey. It was a relaxing trip until some of the more adventurous swimmers climbed a tree and jumped into the river! All in all, it was the best break from our busy college lives. The summer retreat was an experience that we won't forget. I'm looking forward to the next retreat, and I hope you can join us there!



## When Internships Work—A Journey From Intern to New Hire

It is important to have an intern program. Yes, but why? Internships, when done correctly, create a win-win for all parties - the intern benefits from the experience and the company benefits from the increase in productivity and proactive training. How much better could it be?

Through AREVA's summer intern program, more than 40 students from a variety of colleges across the country were placed in a wide variety of roles and business groups throughout several of AREVA's North American offices. Although the 2013 summer intern program has come to a close, for some interns this is just the beginning of their experience with AREVA. So how exactly does all this work? Meet Devin Kelley (pictured right).



*"As a graduating college senior with graduate school approaching, I knew I wanted to gain experience in the industry during the summer. Having a nuclear engineering background I was immediately sold on AREVA's devotion and commitment to clean, safe, and reliable energy",* said Devin as he reflected on what drew him to the opportunity to work for AREVA.

Over the summer, Devin supported several projects as an intern, including Bellefonte, US EPR, and future prospective ventures. He also contributed to the preparation activities for an NRC inspection and drafted and distributed the monthly Regulatory Environment Assessment. Devin reported to Project Licensing Manager, Jennifer Musgrave (pictured below).



*We hired Devin immediately after he completed the summer intern program because he proved himself to be a vital asset to our team. He couples his nuclear engineering background with an innovative mindset to offer an insightful perspective to our team. We have found that the intern program is a great way to bridge the vast age gap in our industry and continue the critical process of knowledge transfer,"* Jennifer said.

Once completing his internship, Devin was hired on as a Product Licensing could be the poster child for a successful internship and one of the most his ability to now relate to his peers and be an ambassador for AREVA in more talent.

*"Honestly I can't stop talking about AREVA to my friends and family. Since I am back for graduate school at my alma mater, The University of Florida, I have advised all my friends and engineering colleagues to consider a position in the energy industry at AREVA. I am personally blown away by the amazing work environment and benefits at AREVA; it is hard for me to not promote the company at social gatherings."*

This is what a successful internship program looks like. By experiencing day-to-day business and pitching in on projects, interns walk away with valuable experience that leads them to consider pursuing a career with the company and provides the talent pipeline necessary to be successful.

*"AREVA values having an intern program because we see the value in hiring quality students to increase our productivity as well as provide a sourcing structure for our*

*entry level full-time positions. The duration of the internship allows the manager time to assess the interns skills as well as train a high potential candidate for a full-time role,”* said Nikki Harris, Manager, University Relations and Programs.

The intern program will return in May of 2014 but it isn't too early to start considering having an intern in your group. Take it from Jennifer, you will be glad you did!

*“Our customers currently face unique challenges—many of which are unprecedented in our industry. The current generation of young professionals are an energetic and innovative group, and their enthusiastic approach to problem-solving is exactly what our customers need to solve their regulatory issues. Our team chose to have an intern to incorporate a fresh new perspective into the mix. The intern program also ensures that these young professionals will be in constant contact with a large group of their peers. The interns develop both friendships and working relationships, and that helps them to maintain a good work-life balance. I think this is extremely important for retention purposes.”*

**AREVA NP, Inc. is the sole owner of the above article.**

## **Modeling Targeted Alpha Particle Therapy of Cancer: Image-Based Dosimetric Models of Bone and Kidney**

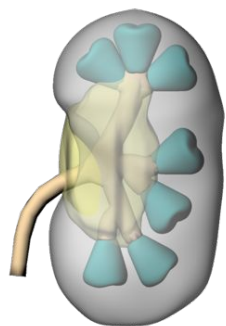
**by Amy Geyer**

The scope of my research is to develop and test specific models for the organs most at risk from alpha-particle radioimmunotherapy at the anatomical or function sub-unit level. These include both active bone marrow and the kidneys. To aid in dose assessments, 3D anatomic models of these structures are used at both the macro- and microscopic levels.

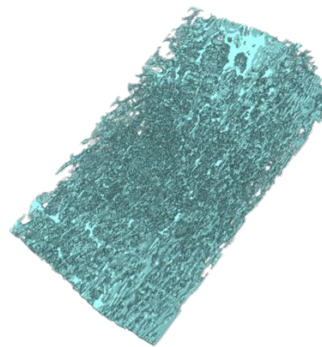
To explore improved methods of assessing mean dose to hematopoietic stem and progenitor cells from internally incorporated alpha-particle emitters in the skeletal tissues, microCT images of several cadaveric bone sites taken from a 40-year male and 45-year female, respectively, are used for radiation transport simulation of monoenergetic alpha particles. Source regions include the trabecular bone volume, trabecular bone surfaces, active marrow, and inactive marrow. Target regions will include active marrow and endosteum. Based upon recent data collected at UF on the depth profile of stem and progenitor cell concentrations in the marrow cavities, absorbed fractions will be assessed as a function of depth from the bone-marrow interface in 50-micrometer increments.

To quantify possible individual variations in skeletal radionuclide S values for several beta-particle and alpha-particle emitters used in radionuclide therapy of cancer, three bone sites taken from the UF 40-year male cadaver will be selected – lumbar vertebra, parietal bone, and ribs – and systematically varied according to three individualized parameters as might be seen in radionuclide therapy patients: (1) overall size (indicative of patient stature), (2) bone marrow volume fraction of spongiosa (indicative of patient bone mineral density status), and (3) bone marrow cellularity (indicative of possible age-related changes in marrow fat fraction). Values of monoenergetic electron and alpha particle absorbed fractions will be calculated through radiation transport simulation, followed by assembly of radionuclide S values. Overall conclusions will be drawn regarding which parameters are important for accurate dosimetry over different energy ranges and particle types.

4



*Computational model of an adult kidney featuring the cortex, medullary pyramids, renal pelvis and fat within the renal sinus.*



*Voxel model of the trabecular bone and marrow volume cavities within the L1 lumbar vertebra.*

A series of 10 to possibly 20 whole-kidney models for dosimetric analysis of beta-particle and photon emitting radionuclides that might localize in the organ during radionuclide therapy will be created. Cadaveric sources of whole-kidney will be imaged by NMR microscopy at either 11 T or 4.7 T with subsequent segmentation of the renal cortex, medullary pyramids, and renal pelvis. Variations in kidney size, fractional volumes of kidney substructures, and number of medullary pyramids will be quantified. A representative reference kidney model will be created in which monoenergetic photons and electrons will be simulated for cortex, medulla, and pelvic sources of emissions. S values will be generated for a variety of radionuclides of interest to radionuclide therapy.

A series of microscopic anatomic models of the nephron to include the Bowman's capsule, proximal convoluted tubules, loop of Henley, distal convoluted tubules, and possibly the collecting ducts will be created. These models will be created through a combination of tissue section, immunohistological staining, and 3D optical microscopy – specific techniques to be determined. Emphasis will be placed on exploring intra-kidney anatomic variations, as well as inter-patient anatomic variations. Cellular level alpha particle absorbed fractions and radionuclide S values will be calculated through radiation transport simulation for a variety of source and target tissue regions.

### Upcoming Events

<b>Tailgate for UF vs. Arkansas (Outside NSC building)</b>	<b>October 5<sup>th</sup></b>
Westinghouse Fuel Fab. Tour (Columbia, SC)	October 10 <sup>th</sup>
<b>ANS Florida Section BBQ Dinner (RSVP by October 16<sup>th</sup>)</b>	<b>October 25<sup>th</sup></b>
ANS Boy Scouts Nuclear Science Merit Badge Workshop	October 26 <sup>th</sup>
<b>Winter Conference (Washington, D.C.)</b>	<b>November 10<sup>th</sup>-14<sup>th</sup></b>

### What is ANS @ UF?

The American Nuclear Society Student Chapter at the University of Florida is an organization of Nuclear and Radiological engineering students dedicated to the promotion of nuclear science and technology for the benefit of humanity. This chapter is instrumental in informing the public of everyday radiological applications.

American Nuclear Society  
202 Nuclear Sciences Building  
Gainesville, FL 32611

If you would like to join ANS or have potential news for the next issue, please contact the Secretary, Nicholas Yap, at [ufl.ans.secretary@gmail.com](mailto:ufl.ans.secretary@gmail.com).





University of Florida  
Student Section of the American Nuclear Society



## Nuclear Science Merit Badge Workshop Permission Form

WHEN: Saturday, October 26<sup>th</sup>, 2013

WHERE: University of Florida Campus, Drop off at the Reitz Union Loop

COST: \$10 Per Scout includes lunch

Registration runs from 8:30 am to 9:00 am (**requires preregistration**)

Event runs from 9:00 am to 4:00 pm

Scouts will have the opportunity to earn their full Nuclear Science Merit Badge in this one-day workshop. The workshop is interactive, fun, and includes a tour of the nuclear science center which houses the University of Florida's Training Reactor.

Registration must be done at least **a week in advance**. Registration is limited to the first 40 Scouts, so register early.

If multiple scouts in troop wish to register please designate a single leader to contact Christopher Greulich.

Individual scouts, who want to participate outside of their troop, can have their guardians contact Christopher Greulich.

If you have any questions contact:

Christopher Greulich

cgreulich@ufl.edu

(561) 542- 6194

OR

Jiteth Kuntawala

jiteshkuntawala@ufl.edu

(850) 566-7364

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(Please cut off the bottom section and bring the day of the event)

I, \_\_\_\_\_, the parent/guardian of \_\_\_\_\_ give permission for my child/ward to attend the UF ANS Student Section Nuclear Science Merit Badge Workshop. I understand that pictures of my child/ward may be taken and possibly used in ANS publications.

Child's Troop Number: T-\_\_\_\_\_ Emergency Contact Number: (    ) \_\_\_\_ - \_\_\_\_\_

Parent/Guardian Signature: \_\_\_\_\_

Student Pick Up and Drop off will take place in the Reitz Union Loop, if parents wish to stay parking is available in the Stephen O'Connell Center Parking Lot.

A UF Nuclear Engineering Student will be located in Reitz Union Loop and escort scouts to the Nuclear Science Center.

