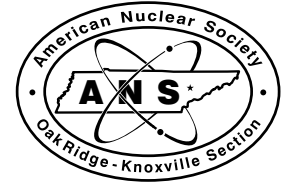


# THE ACORN

Newsletter of the American Nuclear Society  
Oak Ridge/Knoxville Section



Volume 2000-2

December 2000

## A NOTE FROM THE CHAIR

As we enter into a new year, I can report that the Oak Ridge/Knoxville Section of the American Nuclear Society is in excellent condition. We have a consistent membership base of approximately 150-200 professionals; additionally, our financial base is secure, which allows us to budget approximately \$11,000 per year to pursue our goals of: (1) advancing science and engineering relating to the atomic nucleus, (2) allying the arts and sciences, and (3) the integration of the scientific disciplines comprising the broad field of nuclear science and technology. These goals are achieved through our support of Topicals such as DD&R, Spectrum, etc; our outreach activities, such as SHADES; our Home Page and Teachers' Workshops; and our interactions with UT, such as supporting student conference expenses and the scholarship program. Our Dinner Meetings provide a forum for speakers to enhance our knowledge of our profession and consistently meet attendance goals. In short, a lot of good work is performed by Local Section members to keep us healthy and successful.

At times, one finds that when you take stock of your condition, you learn you're standing on the shoulders of others who went before you. In our case, we have benefitted from the leadership and work of many others. A bit of history:

On May 16, 1979, nine individuals met at TEC to re-initiate the Oak Ridge/Knoxville local section of ANS. These were: Bert Ackerman, Pete Patriarca, Ira Merrit, Don Steiner, Pete Pasqua, Bud Perry, Mel Feldman, Jack Cunningham, and Lee Dodds. In the ensuing years many dedicated professionals volunteered their time to build and operate the section into what it is today. Of

special note are those who served as Officers of the section (listed in the sidebar on page 3). To all of you and the many, many volunteers who have performed the work of this Section - Thanks for a job well done.

Finally, please continue to support Section activities by attending Dinner Meetings, working with a Committee, or otherwise advancing our goals. Our Home Page on the web, <http://www.engr.utk.edu/org/ans>, lists Committee Chairs that you may contact if you wish to assist with an activity. Our Board Meetings are held on the third Tuesday of each month in Building 6025 at ORNL. Dinner Meetings are normally held on the fourth Tuesday of each month and will be either at Fox Den or the Garden Plaza. I encourage you to attend.

— Bill Hill

## DINNER MEETING SCHEDULE -- BE THERE!

January 23 -- Garden Plaza  
February 27 -- Fox Den  
March 27 -- Fox Den  
April 24 -- Garden Plaza  
May 22 -- Fox Den (tentative)

**January program: Dr. Alvin Weinberg  
speaking on "The Manhattan Project"**

Social starts at 6:00 p.m.  
Dinner at 6:45 p.m.

Contact Larry Miller, UTK, to make  
reservations: [lfmiller@utk.edu](mailto:lfmiller@utk.edu) (974-5048)

## 2000-2001 Officers

### Chair:

Bill Hill  
*hillwe@ornl.gov*

### Vice Chair/Chair-Elect:

Bernadette Kirk  
*kirkbl@ornl.gov*

### Secretary:

Don Spellman  
*spellmandj@ornl.gov*

### Treasurer:

Fred Peretz  
*peretzfj@ornl.gov*

### Immediate Past Chair:

Larry Townsend  
*ltownsen@utk.edu*

### Board Members at Large:

Ron Pevey  
 John Bigelow  
 Dennis Tollefson  
 Julie Ezold  
 Maria LeTellier  
 Lien Nguyen

## Standing Committees

**Arrangements:** Larry Miller and  
 Julie Ezold

**Education:** Julie Ezold

**Honors&Awards:** Larry Townsend

**Membership:** Norb Grant

**Newsletter:** Dan Ingersoll

**Program:** Bernadette Kirk

**Publicity:** Bill Hill

**Web Site:** Hanna Shapira

**Scholarship:** Maria LeTellier

**Shades:** Peggy Emmett

**Topicals:** Kevin Reynolds

**Bylaws:** Peggy Emmett

## Local Section to Host M&C Topical in 2003

The Oak Ridge/Knoxville Section has been selected as the host for the 2003 Topical Conference for the ANS Mathematics and Computations Division. The conference will be held at the Park Vista Hotel in Gatlinburg in early April of 2003. Bernadette Kirk will be General Chair and Yousry Azmy will be Technical Program Chair. The conference, entitled "Bringing Nuclear Science to Life" will focus on the many applications of computational nuclear science and engineering. So plan now to attend this topical, or better yet, volunteer to help with the arrangements!

## Madame Curie Exhibit at AMSE

A special exhibit "Madame Curie: One Hundred Years Of Science Innovation" will be at the American Museum of Science and Energy in Oak Ridge from March 26 through May 4, 2001. The exhibit will examine the work of Madame Curie, the discovery of radioactivity, and the subsequent contributions of other women scientists.



As part of the exhibit, students will be able to explore 100 years of innovations in medicine, oil and gas exploration, power generation, pharmacology, astronomy, agriculture, archaeology, and geography -- all based on the atom. The exhibition is organized by the J. Wayne Stark Galleries at Texas A&M University. It is sponsored by COEGEMA, TXU Electric & Gas, the ANS, the U.S. Department of Energy, the Nuclear Energy Institute, FRAMATOME, and Texas A&M University.

The ASME has issued a request to the local ANS section for volunteer speakers for either auditorium presentations or classroom instruction. If you have interest in volunteering for this important outreach opportunity, please contact Bill Hill ([hillwe@ornl.gov](mailto:hillwe@ornl.gov)) and let him know which topics you are willing to cover.



## Spectrum 2000 Conference

by Steve Bowman

The Spectrum 2000 International Conference on Nuclear and Hazardous Waste Management was held at the Chattanooga Trade and Convention Center on Sept. 24-28, 2000. The meeting was sponsored by the ANS Fuel Cycle and Waste Management and the Decommissioning, Decontamination, and Reutilization Divisions in cooperation with the U.S. Department of Energy. It was organized and hosted by the ANS Oak Ridge/Knoxville Section. Larry Miller served as

the General Chair and Jeff Chapman as the Technical Program Chair.

The meeting was very successful, with over 225 papers presented and nearly 350 people attending. Plenary speakers included: U.S. Congressman Zach Wamp; Dr. Frank Harris, Associate Director, Oak Ridge National Laboratory; Mr. Gerald Boyd, DOE Deputy Assistant Secretary, Science and Technology; Dr. Carolyn Huntoon, DOE Assistant Secretary, Environmental Management; Mr. Ambrose Schwallie, President, Washington Group International; Mr. Houston Hawkins, Director Nonproliferation and International Security, Los Alamos National Laboratory. There were seven concurrent technical sessions each day and two technical tours to Oak Ridge and to the TVA Bellefonte Nuclear Site.

In addition to the technical program, the meeting included an opening reception on Sunday evening, a luncheon, and a special reception at the Tennessee Aquarium on Tuesday evening.

### Past Officers of the Oak Ridge/Knoxville Section

*(Chair, Vice Chair, Secretary, Treasurer)*

1979 - Pete Pasqua, Mel Feldman, Don Steiner, Lee Dodds  
 1980 - Mel Feldman, Lee Dodds, Ted Bessman,  
 1981 - Lee Dodds, George Flanagan, E Beasley, Ted Bessman  
 1982 - George Flangan, Gray Beasley, Larry Miller  
 1983 - Gray Beasley, Anthony Buhl, Mike Westfall, Marcia Katz  
 1984 - Anthony Buhl, Doug Selby, Bill Rhyne, Terry Price  
 1985 - Doug Selby, John Mashburn, Larry Masters, Tom Baer  
 1986 - John Mashburn, Ted Bessman, Bob Olson, Dwight Patterson  
 1987 - Ted Bessman, Marcia Katz, Bob Hottel, Dwight Patterson  
 1988 - Marcia Katz, Mike Westfall, Jim Maile, David Moses  
 1989 - Mike Westfall, Henry Piper, Peggy Emmett, David Moses  
 1990 - Henry Piper, Peggy Emmett, John Lyons, Trent Primm  
 1991 - Peggy Emmett, Gerry Palau, Bernadette Kirk, Trent Primm  
 1992 - Gerry Palau, Trent Primm, Robert Brown, Larry Miller  
 1993 - Trent Primm, David Moses, Lisa Hill, Larry Miller  
 1994 - David Moses, John Gunning, Lisa Hill, Ernie Elliott/Mayme Crowell  
 1995 - John Gunning, Larry Miller, Vlad Georgevich, Mayme Crowell  
 1996 - Larry Miller, Harold Denton, Kevin Reynolds, Mayme Crowell  
 1997 - Harold Denton, Dennis Tollefson, Robert McBroom, John DeClue  
 1998 - Dennis Tollefson/Dan Ingersoll, Larry Townsend, Maria LeTellier, John DeClue  
 1999 - Larry Townsend, William Hill, Maria LeTellier, Kevin Reynolds



### **Nashville Teachers' Workshop** *by Bill Hill*

In early December, the Local Section presented a Teachers' Workshop at the annual Tennessee Science Teachers Association (TSTA) Convention in Nashville. Presenters lectured on nuclear-related topics for 90+ minutes. In addition to the lectures, each attendee received an operable gieger counter and instructions on how to use it. The Workshop was attended by a roomful of 24 teachers. Local Section members Dick Rothrock, Ken Eger, and Bill Hill were the presenters. Viewgraphs associated with this and past TSTA Workshops are in the Education Section of our website. The website also contains an excellent presentation on nuclear power plants which was contributed by TVA at the July Teachers' Workshop at Watts Bar NPP.

**VISITED OUR  
WEB SITE LATELY?**

[www.engr.utk.edu/org/ans](http://www.engr.utk.edu/org/ans)

*Web site created and maintained by  
Hanna Shapira. Comments and suggestions  
should be directed to Hanna at  
hshapira@techno-info.com*

### **Section Member Speaks to 6th Graders - by John Sherwood**

On Friday, October 20, 2000, ANS Local Section member John Sherwood gave a presentation to the combined 6th grade classes at West Valley Middle School in West Knoxville. Ms. Mindy Dasher, the science teacher requesting the presentation, was present along with Ms. Compton (math) and Ms. Bodwell (social studies). All four of the four 6th grade classes attended -- approximately 100 children in total.

The talk covered basic nuclear science and a demonstration of a detector with various radiation sources. Also, a brief description of a commercial power reactor was provided with diagrams and posters. The talk finished with a discussion of nuclear safety and future prospects for new reactors. A complementary copy of the Chart of the Nuclides was presented to Ms. Dasher.

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### **\$\$ Money, Money, Money! \$\$** *by Maria LeTellier*

The local section has hosted several very successful topical meetings recently and now finds itself in the rather pleasant situation of having a budget surplus. Last May, a committee was formed to investigate options and to make recommendation about how to best manage our growing assets. We met with a financial planner from Greenbriar Capital Management to help us assess what we should do.

The committee made several recommendations, which were all approved by the Executive Committee. These include: (1) spend five percent of the student scholarship money each year on scholarships or other student activities, (2) set up a money market account for normal operating expenses and transfer money from it into checking as needed during the year, and (3) put all other money into a variety of stock and bond funds, under management by Greenbriar. Greenbriar has agreed to manage these funds and review our situation annually at no cost.

## Nuclear Fundamentals Workshop

by Julie Ezold

On July 10, 2000, the University of Tennessee Nuclear Engineering Department, the Oak Ridge/Knoxville Section of the American Nuclear Society, and the Tennessee Valley Authority sponsored a Teachers' workshop. The workshop was held at TVA's Watts Bar Nuclear Plant in Spring City, Tennessee. Approximately fifty teachers from across the state participated in the daylong event. This workshop included technical sessions, an informational display board of the beneficial uses of nuclear technology, the distribution and use of Geiger-Mueller (GM) counters, and a tour of the Watts Bar Nuclear Plant. All costs for the workshop were paid for by the sponsoring organizations. There were no costs to the teachers. The workshop attendees were also eligible to receive continuing education units.



Four technical sessions were presented in the first half of the day. These sessions included Nuclear Basics, the Chart of Radionuclides, Check Sources, and Nuclear Power-Fission and Fusion. These sessions were presented by various local ANS section members from the Oak Ridge National Laboratory, The University of Tennessee, and other contractors in the area. As part of the sessions, information packets were given to all of the teachers.

After the technical sessions, the teachers each received two Geiger-Mueller counters, complete with batteries. Several useful experiments applying the GM counters were discussed with the teachers. Also, the teachers were instructed



as to the operations of the GM counters. Information was provided for ordering an audio adapter for the GM counters. In addition to the GM counters, each attendee received a Chart of the Nuclides and a nuclear-related textbook.

A catered lunch was provided for all the participants. After lunch, representatives from the Watts Bar Nuclear Power Plant gave a lecture about the plant and its fantastic operating record. The teachers were divided into small groups to participate on the tour. The areas toured included the Turbine Building, the Simulator, and the actual Control Room. While at the Simulator, several accident scenarios were played through and the resulting reactions of the "plant" were explained.

A survey was conducted at the end of the day to determine the effectiveness of this workshop. The overwhelming results of this survey were excellent. The teachers really seemed to appreciate the workshop, the tour of an operating nuclear power plant, and the hands-on session with the GM counters.



## Fall 2000 Dinner Speakers

by Bernadette Kirk

**September 26, 2000:** Sherrell Green, Manager of the ORNL Fissile Materials Disposition Program (FMDP) spoke on "The Joint U.S./Russian Plutonium Disposition Program." This program was formed by the U.S. DOE in 1994 to identify, assess, and implement disposition options for surplus fissile materials (primarily weapons-grade plutonium and enriched uranium) from the U.S. and the former Soviet Union. The goal of the program is to ensure that these materials can never again be used in weapons. ORNL is DOE's Lead Laboratory for collaboration with Russia on reactor-based plutonium disposition. Sherrell reviewed the history of the U.S./Russian collaboration, the status of ongoing activities, and bilateral issues associated with implementation of the plutonium disposition mission.

**October 24, 2000:** Ed Temple, Project Director for the Spallation Neutron Source (SNS) reviewed the status of the SNS project. Ed has been involved in establishing the technical, cost, and schedule baselines for the SNS and in developing and implementing formal project management systems. He has overseen staffing of the SNS Oak Ridge Project Office and led the project through critical reviews in response to Congressionally mandated requirements prior to release of the FY 2000 project funding. Ed has also worked together with the Los Alamos National Laboratory Director to establish a new SNS Linac Project Division at LANL.

**November 28, 2000:** Mike Westfall, ORNL Section Head for Nuclear Engineering Applications, spoke on the DOE Nuclear Criticality Safety Program (NCSP). The NCSP was formed in 1997 in response to Recommendation 97-2 of the Defense Nuclear Facilities Safety Board and addresses needs in both the operational and technology development elements of nuclear criticality safety. The entire DOE complex participates in the NCSP. Leadership is centered primarily with four institutions: ORNL, LANL, ANL, and INEEL.

ORNL performs the lead role for three of the tasks: Analytical Methods (managed by Mike), Nuclear Data (managed by Bob Roussin), and Applicable Ranges of Bounding Curves and Data (managed by Calvin Hopper). The presentation described the overall organization of the program and gave highlights from each of the ten NCSP major tasks.

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## SNS Gets Full Funding in FY 2001



Due in part to the concerted efforts of the six DOE laboratories participating in the Spallation Neutron Source (SNS) project, the project received the full \$278M of requested funding for FY 2001. From the very outset of the project, it has been a multilab effort shared by Oak Ridge, Berkley, Los Alamos, Brookhaven, and Argonne National Laboratories. Thomas Jefferson Laboratory was added last year as the sixth lab. Although the geographically and culturally diverse laboratory consortium poses significant integration challenges, the strategy has contributed to a broad base of Congressional support for the project. Headed by Dave Moncton, the SNS Laboratory is functionally separate from ORNL but shares many resources.

The FY 2001 funding level is sufficient for the project to begin significant construction work, which is already in progress on the Chestnut Ridge site immediately north of the main ORNL site. A substantial amount of the site has been cleared and micropiles, which will support the enormous weight of the target station shield monolith, are being drilled and poured.

When completed in 2006, the SNS will have a projected price tag of \$1.4 billion, but will be the premiere neutron source in the world for neutron scattering research.

## Several DOE Decisions Give a Boost to ORNL Nuclear Programs

### Plutonium-238 Production:

The U.S. DOE has announced its preferred alternative for the Final Nuclear Infrastructure Programmatic Environmental Impact Statement (NI-PEIS). The NI-PEIS was developed to help the department prepare for future missions, including nuclear technology research and development, medical isotope production, and production of Pu-238 to support future U.S. space exploration. A record of decision will be issued in January 2001.

DOE's preferred alternative consists of the following three major components.

- DOE will use its existing facilities to the extent possible and consider opportunities to enhance its current infrastructure to maximize the agency's ability to address future mission needs.
- The department will develop a conceptual design and a research program for an Advanced Accelerator Applications facility to perform future research and testing, for which Congress has provided funding in FY 2001.
- The preferred alternative anticipates permanent deactivation of the Fast Flux Test Facility (FFTF) at the Hanford Site, near Richland, WA. Commitments from the private and public sectors were not sufficient to justify restarting FFTF or building new facilities at this time.

The preferred alternative anticipates resumption of domestic production of Pu-238 using the Advanced Test Reactor in Idaho and the High Flux Isotope Reactor in Tennessee. The preferred alternative includes processing of the Pu-238 targets at the Oak Ridge National Laboratory.

DOE also will continue its efforts to make the current infrastructure available for medical research isotope production. DOE will continue to work with the private sector to respond to emerging medical isotope needs.

### Bismuth-213 Processing:

As a result of an announcement by DOE Secretary Bill Richardson, ORNL's supply of uranium-233 will be processed to produce bismuth-213, which will be tested for its effectiveness in treating cancer. Research in the use of Bi-213 is already in progress at a number of institutions such as New York's Memorial Sloan-Kettering Cancer Center and Seattle's Fred Hutchinson Center, as well as at ORNL.

ORNL will be responsible for separating thorium-229 from the U-233 and then separating actinium-225 from the Th-229. Since Bi-213 has only a 45-minute half-life, the final separation of the Bi-213 from the Ac-225 will be performed by the receiving research institute. The pilot program is expected to run for up to two years.

### Gas Centrifuge Pilot Project:

The U.S. DOE has decided to revitalize the Portsmouth Gaseous Diffusion Plant with a pilot project to develop advanced gas centrifuge technology. The announcement came only a few months after the U.S. Enrichment Corporation told Portsmouth employees that the plant would be closed in favor of consolidating work at the Paducah plant in Kentucky.

ORNL will manage the centrifuge project and develop the technology, which will be an extension of the research performed earlier at the K-25 site before being canceled in favor of laser isotope production technology. Doug Craig, former Division Director for the ORNL Metals and Ceramics Division will lead the program for ORNL. As part of the pilot project, which is expected to last five years, a building at the Portsmouth plant will be refurbished to house the demonstration project. FY 2001 funding is expected to be \$25M with a total project cost of nearly \$250M.