NUCLEAR ENGINEERING RECRUITMENT EFFORT PROGRAM
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TITLE PAGE

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REPORT ON THE NUCLEAR ENGINEERING RECRUITMENT PROGRAM

SUMMARY

The American Nuclear Society received an \$80,000 grant to develop programs that raise awareness and heighten interest in nuclear science and nuclear engineering. The intent is to encourage students to become nuclear engineers and pursue nuclear-related careers. The work stimulated 4 workshops for 78 educators, which were conducted between July 1 and September 30, 2000. Another 10 workshops for 284 educators were held April through June 2000. Attendees at all workshops received instructions and materials to help teach nuclear science in the classroom. The students affected by this training are in 7th through 12th grades throughout the United States. A listing of the workshops is Attachment A.

The major goal for this grant period was to provide opportunities and generate enthusiasm for teachers to enhance the curriculum and become confident in teaching about radiation and nuclear science. It was expected that most workshops would be held during the school year. This goal was met and ground work for further success was laid. For the beginning of the next grant period, there are 21 workshops and exhibits scheduled for conclusion between October 1, 2000 and December 31, 2000. About 20 attendees are expected at each. Two workshops were also scheduled for March 2001 (see Attachment B).

Teachers attending the workshops were given information about the applications of nuclear science while learning about the careers in the field. In addition to workshops, during this grant period, ANS student members at Purdue University participated in the university's campus career days. They distributed information about nuclear engineering and nuclear applications. Student members at Texas A&M made middle school and high school classroom presentations on nuclear careers and discussed the role of nuclear energy. The DOE grant helped subsidize this work and the effort will be expanded during the next grant period.

The ANS free newsletter to educators, "ReActions", became a key communications tool for educators to read for information about the ANS/DOE workshops. More than 23,000 educators receive the newsletter by mail. It is now interactive on the ANS web site, www.ans.org, under the Public Communications bar.

Measuring the success of the workshop program was done through evaluations completed by attendees. The remarks indicate that attendees thought the workshops were presented as advertised and met the goals stated in the announcements. An important survey will be done in February 2001 to determine if the materials are being used in the classroom. Also, the survey will identify the number and grade levels of students who are receiving the instruction. Using a conservative calculation that each middle school and high school teacher instructs about 60

different students per year, the 78 teachers attending the summer workshops may affect more than 4,680 students and the 284 teachers may reach more than 17,000 students. This is a significant impact to increase awareness and heighten interest in nuclear science and engineering.

PROGRAM OUTLINE

A standardized agenda and Teachers Handbook were developed to make it easy to organize and present the workshops. The work on the handbook and agenda outline was done in April, May, and June using various segments at the workshops. The final product is a basic package to attendees that includes a CD-V700 Geiger counter and resource materials such as reference books and non-regulated radiation sources to demonstrate how to detect radiation.

A 90-page Teachers Handbook was used for sessions of 90-minutes while 6-hour workshops used a 120-page handbook that covered more information and applications about nuclear science and technology. The handbooks were organized to cover basic radiation concepts and included hands-on experiments and demonstrations (such as inverse square) to incorporate into the curriculum. Also included were pages to use as overhead transparencies. The basic United States science standards were used as guidance for which things to include. All of the materials produced with grant funds may be reproduced. The handbooks were used to supplement the information teachers are already using. Attendees at the full-day workshops also received a classroom set of four instruments instead of one. All attendees received certificates stating the number of "contact" hours or actual hours of instruction.

ANS is composed of a network of members who live in various communities and belong to local sections and student sections. These ANS groups worked to organize local workshops enabling ANS/DOE workshops to be held in three states in July through September and an additional nine states during the development process. The importance of using the network was in the resource people who facilitated. This network of professionals were and are available to the educators on a routine basis. They can and do partner with the educators and can follow up and encourage the educators. Locations included universities (Texas A&M, University of Wisconsin, University of Tennessee, University of Missouri-Columbia); utilities (River Bend Station, Virginia Power, Florida Power & Light, and Point Beach Visitors Center); and middle schools and high schools. An ANS/DOE Workshop was held in cooperation with the Colorado School of Mines. Most of the ANS/DOE workshops scheduled for the next grant period were coordinated through ANS sections and branches.

Using the standardized agenda, handbook and resource materials, groups hosting and sponsoring the workshops and sessions followed a general outline. The University of Tennessee and University of Missouri-Columbia sponsored week-long programs and used the ANS/DOE materials to enhance their information. The utilities mentioned in the preceding paragraph also used the materials to enhance current programs.

FINANCIAL REPORT

The final request for disbursement was made on December 21, 2000. Unexpended funds were \$3,950. The funds were earmarked for non-ANS staff related travel. The costs for the period of the grant were less due to efficiency and economy of sponsored programs. Teacher facilitators were found in the local communities and did not have to be brought from another location.

PROBLEMS AND RESOLUTIONS

The highest attendance rate occurs when the workshops are held during the school year of September through June. Also, these types of programs take six-months to a year to organize and costs may be spread through that period of time. Both of these issues will be considered as plans are made for the 2001 grant period.

NEXT GRANT PERIOD

Workshops are scheduled for the first six-months of the 2001 grant period. In the next grant period, the funding will continue to support workshops, development of career materials, and the interactive web site for educators and others wanting nuclear science information.

The American Nuclear Society is grateful for the funding assistance from the DOE, Office of Nuclear Energy, Science & Technology. The number of workshops organized during the past year is more than four times the number in any previous year. ANS and its membership are helping to make a difference in awareness about nuclear science and engineering.

ATTACHMENT A

NUCLEAR ENGINEERING RECRUITMENT EFFORT PROGRAM

LIST OF WORKSHOPS DEVELOPED THROUGH GRANT DE-FG02-00NE22797.A000

The program development began in December 1999. In April, May and June 2000, the Teachers Handbooks were being developed and reproduced, resources were being purchased, Geiger counters were checked and kits assembled. A training workshop was held to instruct facilitators of ANS/DOE workshops.

<u>Sponsor</u>	<u>Location</u>	<u>Date</u>	<u>#Attendees</u>
ANS Facilitator Training #1	Chicago, IL	April 2000	35
University of Tennessee,	Knoxville, TN	July 2000	25
Virginia Power,	VA	July 2000	10
Facilitator Training #2	La Grange Prk, IL	August 2000	<u>8</u>
TOTAL ATTENDEES			<u>78</u>

Workshops and Sessions Related to Development of Program

<u>Sponsor</u>	<u>Location</u>	<u>Date</u>	<u>#Attendees</u>
FPL, Turkey Point Nuclear	FL	April 2000	25
Delta College,			
ANS Michigan Section	Bay City, MI	April 2000	15
Eng. Soc. Math Conference	Detroit, MI	May 2000	15
Point Beach Visitor Center,	WI	May 2000	15
ANS Annual Meeting,	San Diego, CA	June 2000	40
University of Missouri-Columbia,	Columbia, MO	June 2000	25
Entergy, River Bend Station	St. Francisville, LA	June 2000	15
Idaho Section ANS	ID	June 2000	21
Los Alamos TOPS	Los Alamos, NM	June 2000	52
Colorado ANS Sec/School of Mines, Denver, CO		June 2000	<u>36</u>
TOTAL ATTENDEES			<u>284</u>

ATTACHMENT B

NUCLEAR ENGINEERING RECRUITMENT EFFORT PROGRAM

LIST OF WORKSHOPS OCTOBER 2000 THROUGH MARCH 2001

At the end of the original grant period, 21 workshops and sessions were scheduled for completion by December 31, 2000.

<u>Sponsor</u>	<u>Location</u>	<u>Date</u>
National Science Teachers Assoc. Regional	Boise, ID	October 2000
National Science Teachers Assoc. Regional	Milwaukee, WI	October 2000
University WI-Madison ANS Student Section	Madison, WI	October 2000
IL Sci Teachers Assoc/ ANS Chicago Section	Chicago, IL	October 2000
Fort Discovery ANS Savannah River Sec	GA	October 2000
Ruth Patrick Center, ANS Savannah River Sec	SC	October 2000
School Sci & Math Assoc	Albuquerque, NM	October 2000
University of Michigan, ANS Michigan Section	Ann Arbor, MI	October 2000
Alabama Sci Teachers Assoc Farley Visitor Center	Columbia, AL	October 2000
FPL Energy Encounter	Jensen Beach, FL	November 2000
North Carolina Sci Teachers Assn ANS Student Sec, NC State Univ	Greensboro, NC	November 2000
VA Assoc. Sci. Teachers	VA	November 2000
University WI-Madison ANS Student Section (2 in November)	Madison, WI	November 2000
Sci Teachers Assoc NY ANS Long Island Section	NY	November 2000
National Science Teachers Assoc. Regional	Baltimore, MD	November 2000
ANS National Meeting	Washington, DC	November 2000
National Science Teachers Assoc. Regional	Phoenix, AZ	December 2000

Tennessee Sci Teachers Assoc	TN	December 2000
IL-Kankakee Regional Office		
Of Education		
ANS Chicago Section	Kankakee, IL	December 2000
Northern California ANS Section,		
Stanford University	Palo, Alto, CA	December 2000
District 204 School System		
ANS Chicago Section	Naperville, IL	March 2001
ANS Pittsburgh Section	Pittsburgh, PA	March 2001