

NRRPT® NEWS

National Registry of Radiation Protection Technologists

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INSIDE THIS ISSUE

Chairman's Greeting	1
Exam Panel Report	2
Bio on our Board Member	3
Tritium: A Small Fish in a Big Well	3
Welcome New Members	4
ACE Credit Recommendation Evaluation ..	5
Pressurizer Heater Sleeve Replacement	6
NRC News	11
Sponsors	12
Merchandise Order Form	19
Change of Address Form	20

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Chairman's Message



Kelli Gallion

Greetings everyone. Please join me in congratulating our newest members who successfully passed the February '06 U.S. and Canadian exam (see pg 4 for listing). If you know one of these individuals, don't hesitate to praise them on a job well done, we all remember that excitement of passing the exam. The Registry membership now stands at **4884!!!**

The 65th Board of Directors & Panel of Examiners meeting was held January 14-17 in Orlando, Florida.

Exam Panel update: The following panel members have renewed terms beginning January 1, 2007 and end January 1, 2011: Curt Repass, Dave Wirkus, and Bob Wills. Thank you for your continued support on the panel.

There is a need for Exam Panel members from the medical and military field. If you are working in the medical or military discipline and are interested or know of someone working in these disciplines please contact Karen Barcal, Exam Panel Chairman at kbporch928@sprintmail.com.

Conflict of Interest Policy: The question has come up whether or not it is okay for a Board or Panel member to facilitate a technician-training program. There are no restrictions on teaching or developing a technician-training program. A Board or Panel member cannot develop or instruct an **NRRPT** prep course while serving on the Board or Panel and/or within 1 year of removal from the Board or Panel. In

addition, an Board or Panel member can never use past membership on the Board or Panel to promote employment or advertise for instruction of an **NRRPT** prep course. All Board and Panel members will be required to sign a letter acknowledging the Conflict of Interest Policy.

Don't miss out!!! As you know we are celebrating our 30th Anniversary this year, special commemorative shirts will be available for purchase this summer.

RP2020 Staffing Initiative: **Thank you** to all those you participated in the email survey regarding what lead you into the radiation protection field. This information will be useful in determining the needs of our future radiation protection technologists. It's not too late to complete the survey, please visit www.NRRPT.org to participate in the survey.

Welcome **Bob Wills** and **Barry Kimray** to the Board of Directors. Their terms will begin January 1, 2007 and end January 1, 2012.

I am pleased to inform you that the College Credit Recommendation Service (A National Program of ACE) has evaluated the **NRRPT** exam, which resulted in a "recommendation for college credit". This evaluation is performed every 3 years.

All members' welcome!!! Our 66th Board of Directors and Panel of Examiners meeting will be held June 24th-27th 2006 in Providence, Rhode Island. This meeting also marks the celebration of our 30th anniversary.

Best wishes and thank you for your continued support!!

Kelli Gallion
NRRPT, Chairman of the Board

Exam Panel Report

By Karen Barcal, Exam Panel Chairman

As I take the reins from Dave Biela, I'd like to thank him for an excellent turnover and for his tremendous patience with all of my questions. I would also like to thank Dave Wirkus, vice chair, for all of his efforts in helping the transition go smoothly.

This past February marked the administration of the first ever Canadian RRPT exam. I would like to extend a big **welcome!** to those who participated in taking the exam. Dave Tucker did a great job coordinating the efforts and providing feedback.

The **NRRPT** continues to reap the benefits of the test processing changes implemented last summer. Along with cost savings and reduced turn around time (less than 3 weeks), we have increased statistical analysis parameters that aid in test review and development. Our recent ACE credit recommendation identified our question development process as a major strength (see article on pg 5).

We on the Exam Panel encourage communication and thank those proctors and candidates that passed along comments on the recent exam. As a reminder to current

RRPT members, submitting questions not only gives you an opportunity to participate, it helps our organization and can be worth registration maintenance points!

I enjoy being on the Exam Panel and working with the great group of people on the Board and Panel. Dave Biela left some pretty big shoes to fill, fortunately I have big feet! I hope to continue the tradition of excellence he set.

The Exam Panel is looking for people with a background in military health physics and people with backgrounds in medical physics/university settings. To be considered for an Exam Panel position, please send an up to date resume along with a letter from your employer stating their support to attend two meetings per year to:

Karen Barcal
c/o **NRRPT**
P.O. Box 6974
Kennewick, WA 99336

For more details, email: kbporch928@sprintmail.com

**** BIO ON OUR BOARD OF
DIRECTOR MEMBER ****
Eddie Benfield



Currently, Eddie is a Nuclear Station Instructor for the Radiation Protection section at Duke Power Company's Catawba Nuclear Station with responsibility for Initial and Continuing Radiation Protection training and Radiation Protection Outage Vendor In-Processing/Training. He has been in that position for six years and prior to that he worked as a field level technician in the areas of Surveillance and Control, Compliance, Respiratory Protection and Instrument Calibration. All told, Eddie has 25 years experience in the Radiation Protection field.

In 1996, Eddie became a Registered Radiation Protection Technologist and has served as a member of the NRRPT Panel of Examiners and is currently a member of the NRRPT Board of Directors. Eddie is also Chairman of the Awards/Scholarship committee.

Eddie has been married to his wonderful wife, Anita, for 23 years, and has 1 teenage son, Clinton. His hobbies include playing the guitar for his church's contemporary Praise and Worship services, going to the beach, traveling and spending time with his wife and son.

Tritium: A Small Fish in a Big Well

By Jim Martin

With the news stories now of tritium leakage at various nuclear power plants, it is important to put the risks of this radioactive leakage in perspective with other hazards. There are many comparisons of the risks from radiation exposure to that of smoking, driving, etc. These were developed with the use of statistics and can be difficult for someone to make the leap of faith in comparing normal hazards such as driving to that of exposure to radiation.

By now most people either have had or know someone who has had a medical procedure known as a Cardiolite Stress Test. This is a test where they inject the patient with a radioactive dye and then measure the stress on the heart to determine arterial damage or blockage. The radioactive substance they use is Technicium-99m which, the doctor will tell you, goes away fairly quickly. Technicium-99m or Tc-99m does have a short half-life of 6.02 hours however that is not the end of the process. What the doctor doesn't tell you is that Tc-99m decays to

another radioactive substance, Technicium-99 or Tc-99 (notice the missing meta-stable, 'm' designation).

As with any radioactive material, the hazard focuses around the quantity of material present. According to a Dec. 2005 Exelon Nuclear press release, 2400 pCi/L (pico-Curies per liter) of Tritium was measured in an off-site well. For a well containing 1,000,000 gallons of water, this amounts to a total activity of just 9 mCi (milli-Curies) of Tritium. A typical activity value for the Cardiolite Test is about 20 mCi (milli-Curies) of Technicium-99m. So, a single person will leave the hospital with twice the radioactivity as that contained in a million gallons of this well water.

Now to compare the hazards from nuclear plant tritium with those of Tc-99 being released by hospitals all over the country every day:

Continued on page 4

Welcome New Members

Congratulations to the following individuals who successfully passed the
NRRPT February 11, 2006 examination:

Joseph A. Andersen	Richard L. Emrick	David E. Mickelsen
E. Troy Andersen	Horace Fowler	Ernest J. Parker
David M. Bales	Rick L. Friedel	Hal D. Phelps
Travis K. Barney	Edward S. Goode	Greg L. Richardson
Craig B. Burtenshaw	Justin L. Griffin	Gerald L. Schnell
Travis Campbell	Daniel S. Hamilton	David M. Shekleton
Amy C. Coan	Michael R. Jensen	Paul R. Smith
David A. Craft	Rhonda L. Johnson	Victor L. Sterner
Clayton A. Dance	Ronald D. King	Matthew W. Uelen
Travis R. Daves	James P. Leonard	Carolyn M. Vieira
Joseph P. Defranco	Steven C. Long	Ted A. Ward
Bradley A. Dunn	Robert C. Mares	Timothy Andrew White
Willie A. Durosseau	Lisa J. McAuley	L. Todd Wood
Darrell L. Dutson	Ernest R. McCormick	

Congratulations to the following individuals who successfully passed the first
NRRPT Canadian exam administered in Ontario Canada on February 27, 2006:

Fiona M. Bennett	Liette D. Lemieux
June M. Burke	Geoff W. MacMaster
Johnathon T. Hash	Sergio N. Marcella
Roger D. Hicks	Normand Riccardo
Dave G. Hutchison	Fredrik E. Tornngren

New Members: If you do not have access to the private side of the web page please contact the Executive Secretary (nrrpt@nrrpt.org). She must have your email address on file in order for you to gain access.

Continued from page 3

- The radioactive half-life of tritium is 12 years while the radioactive half-life of Tc-99 is over 200,000 years.
- The average beta energy from tritium is about 5.7 keV while the average beta energy from Tc-99 is about 84.6 keV; over 10 times more energy therefore over 10 times the potential for biological damage.
- The decay product for tritium is non-radioactive, non-toxic helium. The decay product for Tc-99 is non-radioactive Ruthenium (Ru), which can combine to form a toxic Ruthenium Tetroxide.

This is not to defend any nuclear plant and is not to say that we shut down all releases from hospitals. This would involve admitting patients until they decay away and nobody can afford a \$200,000 a year hospital bill. The purpose of this article (or commentary if you prefer) is to educate people to at least one hazard more radiologically significant than the current tritium scare.

ACE Credit Recommendation Evaluation

Last month the **NRRPT** completed another American Council on Education (ACE) credit recommendation evaluation. The evaluation was conducted by Thomas Edison State College under the guidelines of the American Council on Education's College Credit Recommendation Service (ACE/CREDIT). The purpose of the periodic evaluation is to assess the formal education and training offered by organizations, such as the **NRRPT**, and determine the appropriate credit recommendations. These credit recommendations are then made available to education institutions throughout the country and recommendations are subsequently published in the *National Guide for Education Credit for Training Programs*.

ACE began in 1918 as a council to serve higher education. In 1942 it began reviews of military programs for college credit recommendations and continues today reviewing all types of education and training programs.

With this credit recommendation, registered members can receive up to 30 semester hours of college credit. Many of our members have already taken advantage of this program and with the joint effort between Thomas Edison and the **NRRPT**, it will continue to be available to future members seeking higher education.

The **NRRPT** ACE Committee members would like to thank the evaluating team at Thomas Edison State College. The night before the evaluation, a major storm passed through the Northeast. Weather conditions prohibited the **NRRPT** ACE Committee member from traveling to the college in Trenton, NJ. The team from Thomas Edison allowed the evaluation to be conducted via telephone interview.

At the successful completion of the evaluation, the following comments were presented:

Our Strength:

- The systematic process of how the test is developed,
- The integrity of the development process,
- The use of the Angoff process to develop the passing point.

Our Weakness:

- The Board and Panel members are all volunteers, therefore receive no compensation from the registry. The evaluation team felt, although our process is strong, paid individuals typically are more dependable.
- The reference material should be updated with new study material.
- The Panel of Examiners should consist of more members from the nuclear fields of Medicine, Research, Industry and Education (currently the main areas are Commercial Power and Department of Energy).

Therefore, the **NRRPT** will continue to solicit volunteers in the fields mentioned above. If interested, please send your resume, along with a letter of support to attend two meetings per year, to our Exam Panel Chairman, Karen Barcal at kbporch928@sprintmail.com or mail to:

NRRPT

c/o Karen Barcal
P.O. Box 6974
Kennewick, WA 99336

Pressurizer Heater Sleeve Replacement

By Kelli Gallion

San Onofre Nuclear Generating Station

5th ISOE Workshop on “Occupational Exposure Management at Nuclear Facilities”
Essen, Germany, 15-17 March 2006

During the San Onofre Unit 3 cycle 13 refueling outage (U3C13) in October 2004, replacement of two Pressurizer heaters and inspection of their Alloy 600 sleeves was planned. The inspection resulted in the identification of axial indications in both heater sleeves and a circumferential indication in one of the heater sleeves. None of the indications were through wall and no external leakage was detected from any heater sleeve during routine bare metal visual examinations. A pro-active decision was made to replace all 30 pressurizer heater sleeves during the Unit 3 cycle 13 refueling outage. This repair resulted in a 53-day extension to the refueling outage. San Onofre captured this industry event in INPO Operating Experience 19405.

The nozzle repair work begins by machining the external heater weld off and then securing each of the 30 heaters in place with a mechanical clamp. Once all of the heater welds are removed, all of the clamps and heaters are removed one at a time consecutively to minimize contamination of the work platform. Following heater removal, half of the original heater sleeve is removed by reaming and cutting the sleeve internally. After the partial sleeves are removed, a bare metal non-destructive examination (NDE) inspection is conducted on the Pressurizer vessel and the new weld pads, and then sacrificial plugs are installed to provide a surface for adding weld pads to facilitate the new RCS pressure boundary. Following the installation of the weld pads, the sacrificial plugs are then machined out. After the sacrificial plugs are removed, new Alloy 690 half sleeves are installed and welded. Finally, the Pressurizer heaters are inserted into the new sleeves and welded. The new primary system pressure boundary is now located on the outside of the Pressurizer.



Photo 1: Original Design of NSSS CE Pressurizer

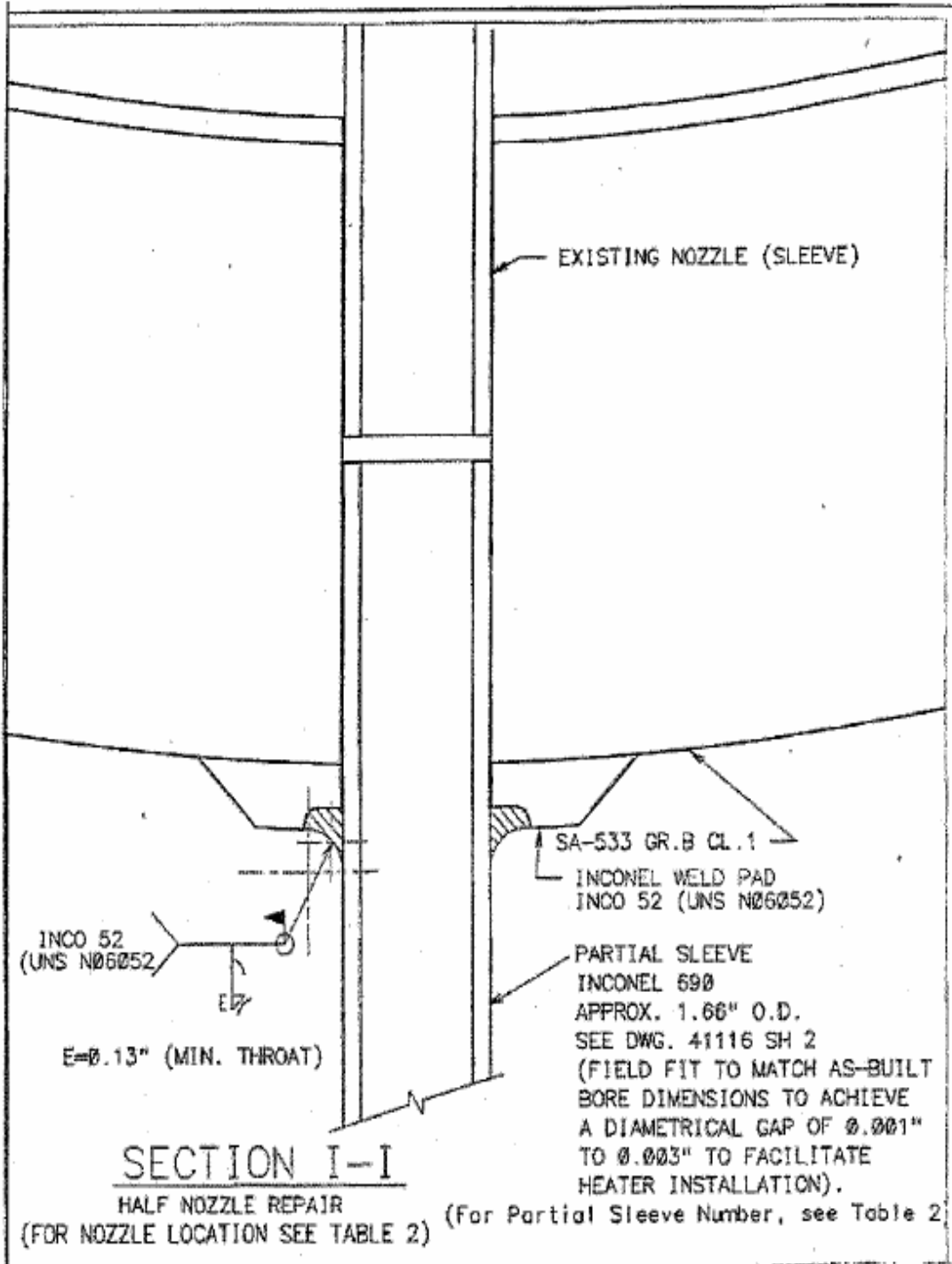


Figure 1

Major challenges during the repair were radiological exposure and radioactive contamination control. Extensive engineering controls were used to reduce general area dose rates as well as surface and airborne contamination levels. Engineering controls consisted of lead shielding, HEPA ventilation, vacuums, work area containment, and sleeving. Dose gradients in the work area below the Pressurizer required the relocation of dosimetry to the worker's head. Improved work practices, teledosimetry, and temporary shielding on the sleeves, the surge line, and the work platform saved 17 Person-Rem of exposure over the originally dose estimate of 81.6 Person-Rem. Total exposure for U3C13 outage was 64.5 Person-Rem. The highest individual exposure was 1685 mRem. Lessons learned from similar work at Palo Verde were freely shared and were very helpful to SONGS.

San Onofre U2C14 Refueling Outage began on January 3, 2006 and included the replacement of all 30 Alloy-690 Pressurizer Heater sleeves. Replacement of the Alloy-600 heater sleeves was incorporated into the U2C14 refueling outage after indications of weld cracking were found on two Pressurizer heater sleeves in the U3C13 refueling outage.

Substantial work process improvements were made between the first Pressurizer Heater Half-Sleeve Repair Project in U3C13 and the current U2C14 nozzle replacement. The person-rem estimate for U2C14 was 39 Rem, (Recall U3C13 received 64.5 Rem). With the U2C14 outage currently in progress and the repairs nearing completion, the total expected exposure will be approximately 30 Person-Rem, which will result in a reduction of more than 50% from U3C13. The key successes to a > 50% reduction of overall exposure between the 2 outages were improved tooling used by the vendor, mock-up training, experienced workers and work planning.

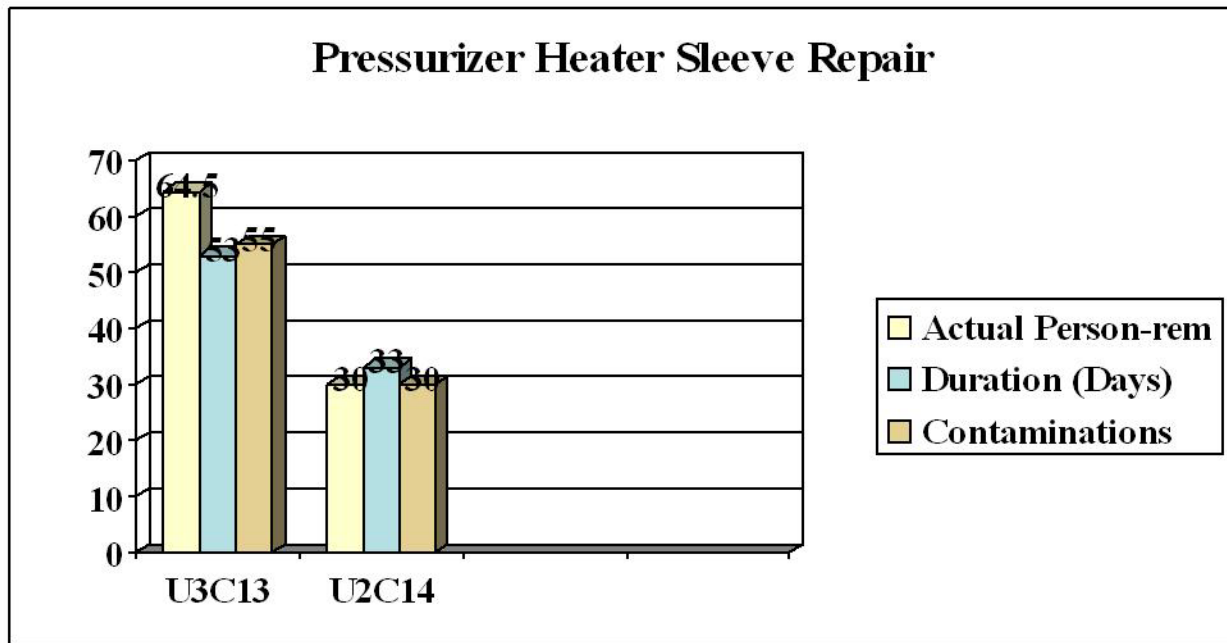


Figure 2

Improved tooling designs included the following: square weld pad (Photo: 3) machine versus the round weld pad (Photo: 2) machine, incorporation of engineering controls built into the tooling such as a containment and vacuum on the hydraulic mill (encapsulation tool) that reams out the old sleeve, and a redesign of the tool that severs the internal diameter of the sleeve using a "single point cutter" versus the "Hobby" tool.



Photo 2: U3 Round Weld Pad



Photo 3: U2 Square Weld Pad

Mock-up training was conducted prior to the U2C14 outage at the welding contractor's facility in Atlanta Georgia. San Onofre representatives included HP Planner's, HP Supervisor, HP Technicians, and Project Management. Welding contractor representatives included welders, machinists, planners, and supervisors. Mock-up trainees were dedicated to the San Onofre Project. Due to the emergent nature of the U3C13 Pressurizer repairs, mock up training was not able to be conducted.

Radiological worker practices by the welding contractor improved significantly from U3C13 to U2C14. A majority of the welding work force came to San Onofre U2C14 outage from the recent Palo Verde Nuclear Generating Station (PVNGS) Pressurizer Heater Sleeve Repair Project. The use of experienced workers resulted in significant radiological dose reduction. In addition to the experienced workforce, a PVNGS ALARA consultant and a contractor ALARA representative were utilized.



Photo 4: Pressurizer Weld Pads and New Sleeves

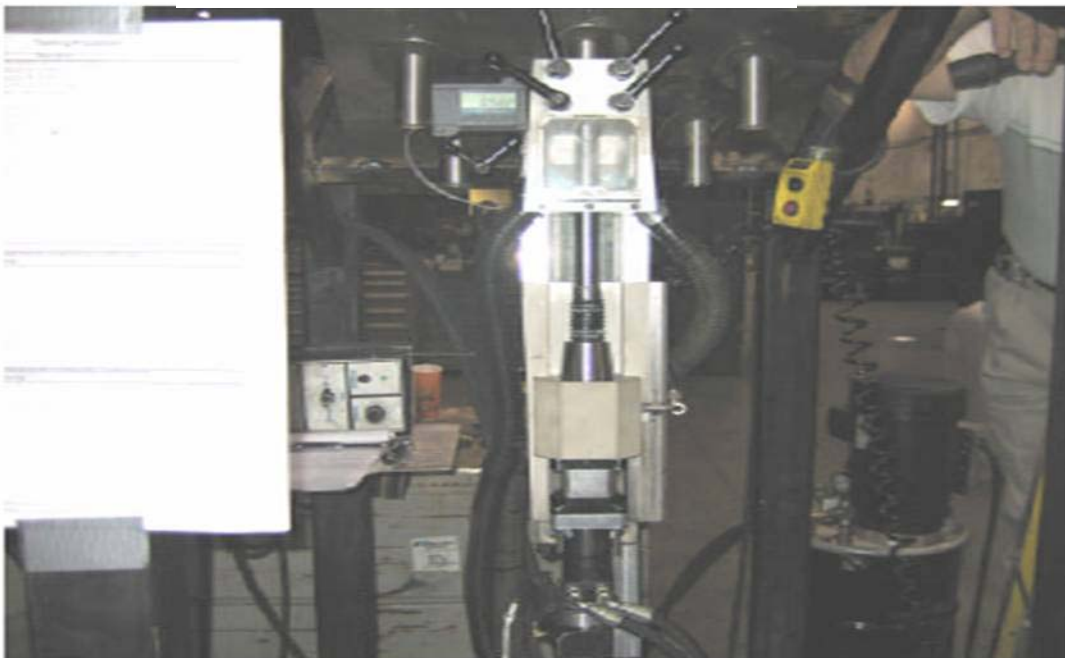


Photo 5: Encapsulation Tool (Reams Out Old Sleeve)

The Pressurizer Heater Sleeve Repair Project proved to be a very challenging radiological job. Through the use of improved tooling, which included the use of remote welding equipment, engineering controls and a well trained, experienced work force we were able to significantly improve our ALARA performance.

NRC News

U.S. NUCLEAR REGULATORY COMMISSION

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No. 06-037 March 20, 2006

NRC CREATES TASK FORCE TO EXAMINE TRITIUM ISSUE

The Nuclear Regulatory Commission said today it has assembled a group of experts from its offices around the nation to examine the issue of inadvertent, unmonitored releases of radioactive liquids containing tritium from U.S. commercial nuclear power plants.

Agency leaders directed creation of the group earlier this year following reports of unmonitored releases of water containing tritium.

“The available information on these releases shows no hazard to the public,” said NRC Executive Director for Operations Luis Reyes. “Nonetheless, we need to conduct an in-depth review to see if the NRC needs to take additional action of a broad nature.”

At the same time the NRC decided to establish the tritium study group, they also decided to create a page on the NRC Web site to provide the public the latest available information on tritium issues. This information can be accessed at this address: <http://www.nrc.gov/reactors/operating/ops-experience/grndwtr-contam-tritium.html>.

Eleven of the 12 task force members come from the agency’s Offices of Nuclear Reactor Regulation, Nuclear Material Safety and Safeguards and Nuclear Regulatory Research, as well as from regional offices. The twelfth, a representative of state government, is being selected. The group will report to Bill Kane, the Deputy Executive Director for Reactor and Preparedness Programs, and is required to complete its review by Aug. 31. A written report summarizing the task force’s findings will be issued late this year.

The task force is required to address several topics, including:

- A general assessment of the potential public health impact from these releases;
- How the issue was communicated to the public, state and local officials, other federal agencies, Congress and other interested groups;
- A review of other inadvertent releases at nuclear power plants, including decommissioning sites, from 1996 to the present;
- Industry actions in response to the releases, including the timing of remediation efforts; and,
- NRC oversight of inadvertent releases, both under the Reactor Oversight Process (ROP) and the process in place prior to the ROP.

The task force can also consider issues not listed in its charter, and can identify issues for longer-term review by NRC staff.

The task force’s charter is available on the NRC’s Web site by entering ML060690186 at this address: <http://adamswebsearch.nrc.gov/dologin.htm>.

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San Onofre Nuclear Generating Station is proud to have over 60 registered NRRPT members in our Health Physics, Training, Chemistry, Engineering, Operations, Oversight, and Maintenance organizations. We are especially proud that Kelli Gallion of our HP Planning group was a member of the Panel of Examiners, Board of Directors, and is currently the NRRPT Chairman.

San Onofre is a three unit site with two operating 1170 MWe Combustion Engineering reactors and one early Westinghouse unit in decommissioning. The station is located in Southern California on the Pacific Ocean and midway between San Diego and Los Angeles.

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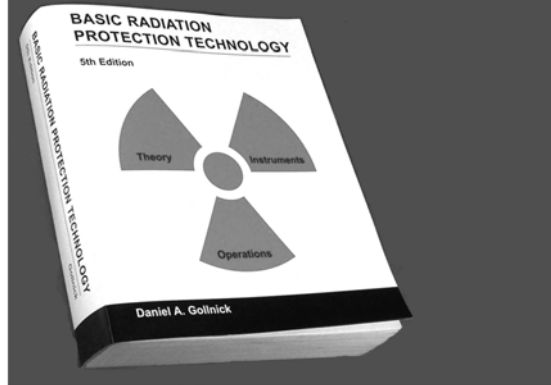
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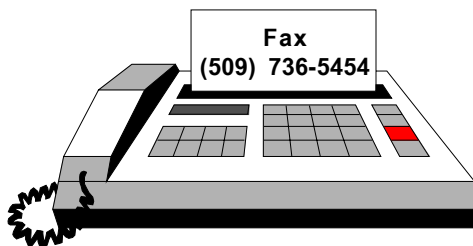
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