

NRRPT® NEWS

National Registry of Radiation Protection Technologists

Summer 2012 Edition

Incorporated April 12, 1976

Chairman's Message

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Kelly Neal

Greetings fellow RRPTs! We recently held our summer meeting in Sacramento, CA and had a great turnout from our Board and Panel members.

New discussions included recent inquiries from folks in the United Arab Emirates and South Africa asking if we would be able to provide NRRPT examinations in their countries. Although we feel that we have learned much in our successful branching out

with the Canadian NRRPT exam, we are still considering whether we are ready to take on this additional challenge at this time. We were exceptionally fortunate to have dedicated, in-country personnel championing the development of the Canadian exam process and hope to find similarly motivated partners in other countries as we continue to grow.

Many new RPTs have joined our industry in the last several years. I encourage each of you to find opportunities to mentor these newer folks to help them develop their experience base. Additionally, please encourage them to consider becoming RRPTs once they have gained sufficient experience to sit for the exam. Being an RRPT can provide many benefits as they continue their careers. The benefits of being an RRPT include increase in earning potential, providing college-level credits, or just by showing their employers that they are striving to improve themselves.

Lastly, please encourage students as well as these newer RPTs to join the Registry as Student/Associate members. The membership is free for the first year and \$10/year thereafter. As Student/Associate

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members they will receive Registry communications and will also be able to apply for a student scholarship. The Student/Associate Membership application form can be found in the Forms section of our web page at www.NRRPT.org.

Sincerely,
Kelly Neal
NRRPT, Chairman of the Board

Exam Panel Report

By Rick Rasmussen

February 2012 Exam Statistics

	US	Canadian
Number of applicants taking test:	38	N/A
Number passed:	14	N/A
Passing rate:	37%	N/A
Total number registered:	5140	

Panel Meetings were held July 22 & 23, 2012. Attendee lists for each day are recorded in the logbook. Eighteen panel members attended the Sunday meeting and sixteen panel members attended the Monday meeting. The Chairman would like to officially thank all the members that supported the two meetings. A tremendous amount of work was accomplished; including performing the Angoff on all 150 questions to be used for the February 2013 exam, establishing the August 2013 exam and performing a review of the February 2012 exam. The Chairman would also like to thank former Chairman, Karen Barcal, for her help in compiling the statistics for the Angoff sessions.

Panel Member Update

No changes are recommended to the Panel of Examiners at this time. The Chairman will contact the Panel Vice Chairman to determine his ability to attend future meetings and serve as the Vice Chairman of the Exam Panel. If he is unable to keep his obligation due to funding issues, the Chairman will attempt to recruit a member coming off of the Board of Directors in January.

Test Information

The Panel of Examiners held an Angoff session and all 150 questions for the Winter 2013 exam were completed. The new scores will be entered into the exam bank and will also be sent to Dave Biela. Based on the new Angoff scores a new passing point was recommended to the Board of Directors for the Winter 2013 exam.

Other Business

The data gathered from "How did you prepare for the exam" feedback sheets for the February 2010, February 2011, August 2011, and February 2012 exams was analyzed and the report is almost ready pending clean up and a couple of additions. Eddie Benfield has a copy of the preliminary report including the recommendations but the report is not ready for distribution at this time. The report will be made available to the NRRPT Board of Directors when complete.

Budget Request

Request zero dollars.

The Beta Paradigm

By Seth J. Kanter, RRPT, CHP

Author's Note: This article is not meant to disparage the pancake GM detector. The author recognizes its past contribution, and continued use as a valuable tool to those in the nuclear industry.

In the 1990's, Palo Verde, like other nuclear stations, implemented the use of automated tool monitors or SAMs to release items from radiological controls. While having overcome the early implementation hurdles such as software glitches, limited funding, and sadly a very serious safety event involving movement of these top heavy monitors, the most enduring issue has been the question "if an item alarms the tool monitor but no activity is seen with a hand-held frisker, can it be released?" Or, as we call it, the "**Beta Paradigm**," the overwhelming desire to determine if an item is "clean" or "contaminated" based on the result of a beta sensitive frisker.

Getting people to transition from beta to gamma detection was analogous to our experiences with the implementation of PCMs in the late 1980's, i.e., "I can frisk faster than the PCM can monitor me" or for those in the business, *turbo frisking*. So, we knew that we had some work to do.

Health Physics staff members should be aware that when surveying tools and materials for release with a pancake Geiger-Mueller (GM) probes, some minor amounts of radioactive contamination can escape detection. This is primarily due to the detection capability of the thin-window "pancake" GM probes, which respond primarily to beta radiation. Other important factors that contribute to this problem also include scan speed, survey technique, and survey thoroughness (e.g., the chance that the total surface area of the material will not be completely surveyed). Since most modern tool monitors utilize gamma detectors (plastic scintillation) the detection capability deficiencies of the GM probes are all but eliminated (note: some early tool monitors used gas flow proportional detectors).

In retrospective, the shift from beta to gamma detection proved to be the most intriguing aspect of the program's implementation. The point of reference for most technicians up to this time remained the frisker. To understand this shift in detection methodology, they desired to have a correlation between the tool monitor

and frisker. This was our first indication that there was a basic misunderstanding of the types of detectors they were dealing with and their limitations. Along with this confusion, many technicians did not understand the relative detection efficiencies of each instrument:

Instrument	β Efficiency	γ Efficiency
Frisker	~25%	<1%
Tool Monitor	0%	25%-30%

Along with the detection differences, we also noted that many technicians believed the unconditional release limit was "1000 dpm/probe area" instead of no licensed material. Questions arose about the tool monitors alarm setpoint of 5000 dpm. This only added to their confusion when we noted that the PCM alarm setpoint was also 5000 dpm/100 cm². Part of our training included the basis for these numbers from INPO 91-014 (now 05-008) and IE 85-07. We included the simple mathematical derivation of 5000 dpm/100 cm² to 1000 dpm per the roughly 17.5 cm² of the pancake probe to show where the "1k" number came from.

In addition to changing our method of detection, substantial efforts were made to reduce the amount of materials being brought into and out of the RCA. Radworkers are challenged by RP staff whenever they try to bring items into the RCA. We noted that items such as Flukes which were routinely released with friskers had accumulated low levels of contamination over repeated uses in the RCA. Now, when placed in the tool monitors, they were suddenly contaminated.

It took some time, but we were able to shift the understanding that release evaluations would now go from external beta detection per unit area, to aggregate gamma detection. This change has helped all stations improve the release programs and perform one of the core business aspects of all radiation protection programs: the control of radioactive material.

NRRPT Night-Out in Sacramento, CA

The NRRPT "Night-Out" has become a tradition for Board & Panel members and family & friends of the Registry. Over 30 people attended the Night-Out on the historic Delta King*. This tradition continues due to the generous contributions of our "Night-Out" sponsors and supporters.

Thank you to the sponsors below!!



Chris Whitener (Duke Energy), John Arrowsmith (Frham Safety Products), Mike Davidson (Tidewater, Inc), Steve Lancaster (Lancaster Services) and Tom Hansen (Ameriphysics - not pictured)



* The Delta King is the only Hotel in Old Sacramento. The Delta King made some long trips before resting here on the shores of the Sacramento River. The Delta King ran between Sacramento and San Francisco from 1927 to 1930, a 10 hour trip each way. After it was retired they shipped the Delta King between Canada and California trying to find a permanent home. The Delta King even sunk once in 1984. Finally in 1989 the Delta King made it's home in Old Sacramento on the restored water front. The Delta King serves as a hotel with a saloon, restaurant, and a theater.

NRRPT Night-Out Photos



Board Chairman Kelly Neal
and Tina



The "Group"



Steve Lancaster and Eddie Benfield



Danny McClung and wife Donna



Dave Wirkus and daughter Lauren

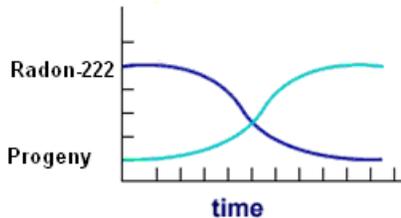
What's the Deal with Radon and Its Progeny?

By Seth J. Kanter, RRPT, CHP

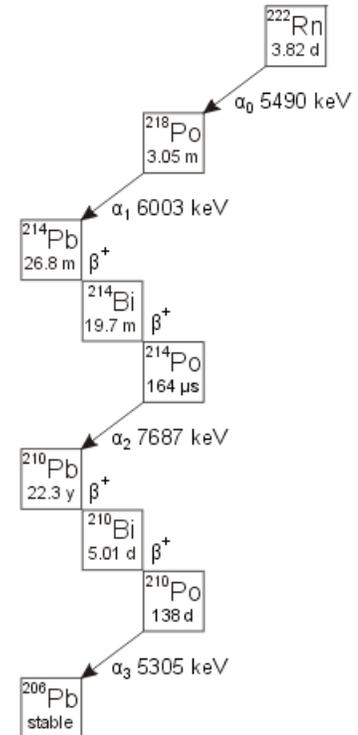
- Radon is a naturally occurring radioactive gas that seeps out of soil and cracks in rocks into the air and can accumulate into fairly high concentrations. Radon exists in the soil from the decay of naturally occurring Uranium 238 in the Earth's crust.
- During the spring and fall, we experience days with cool overnight temperatures with rapid warming periods in the morning. This creates a thermal rise in the air that draws out the plentiful quantities of radon gas.
- Following this rapid rise of air, it is very also common for this affect to reverse itself; this is called a temperature inversion.
- We generally see this as an increase in PCM alarms at our RCA Egress points.

In-growth of short lived progeny during Radon decay

- The concentration of radon progeny increases as Rn^{222} decays.



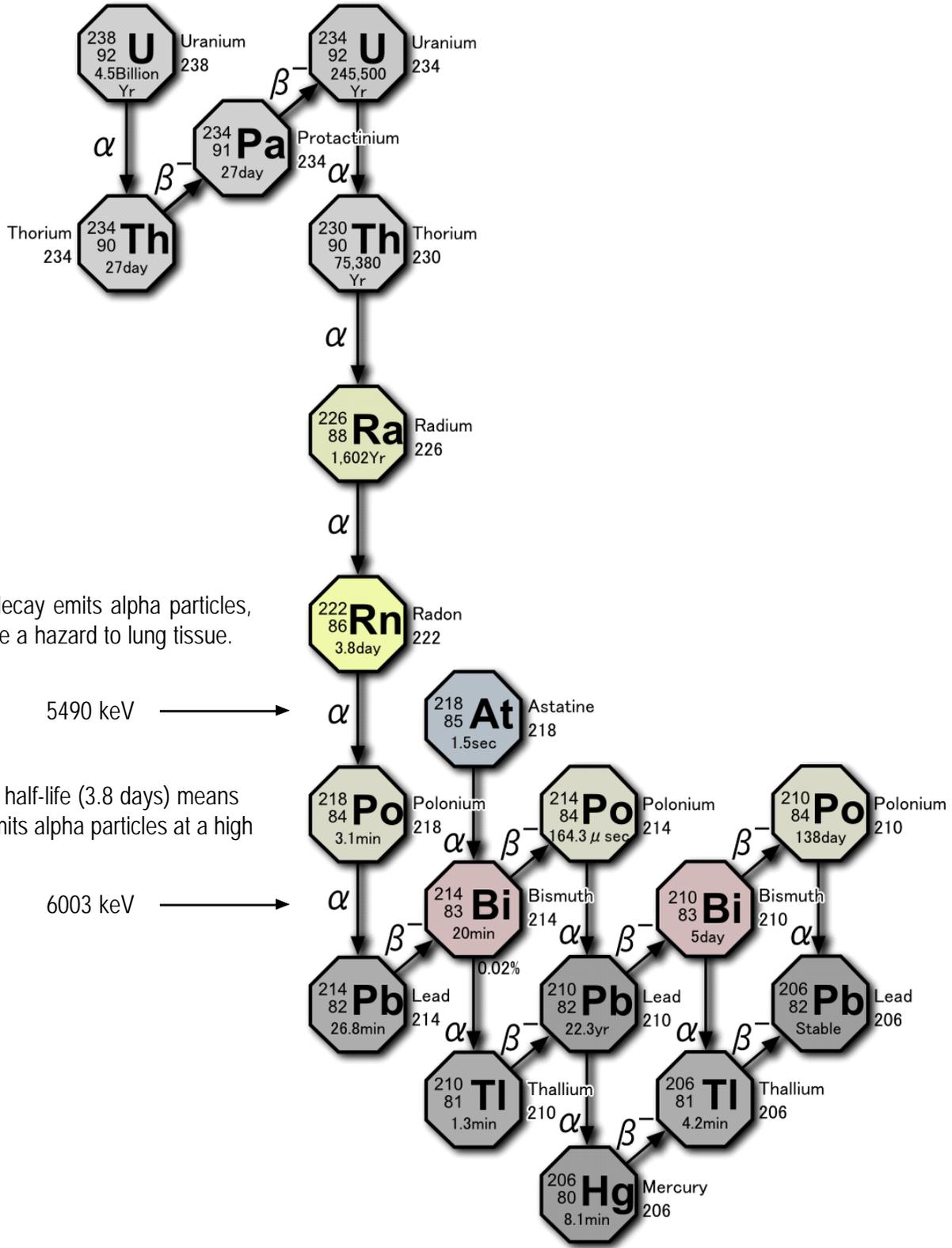
PCM Indication during Decay
 High Alpha Counts / Low Beta Counts
 Alpha Counts ~ Beta Counts
 Low Alpha Counts / High Beta Counts



- As radon undergoes alpha decays, its short-lived beta emitting progeny (particulates) have a tendency to cling to plastic, clothes, and hair especially if the air is dry (low dew point temperature) and when static electricity is present.
 - Radon's short half-life means that it emits alpha particles at a high rate.
 - Short-lived decay products (Beta Emitters)

So, how does the presence of Radon and its progeny affect RP Staff and plant personnel?

- The alphas and betas emitted will alarm the PCMs
- Alphas from naturally occurring nuclides such as Radon have high energies, typically $\geq 3 - 5$ MeV and can travel short distances and penetrate the mylar covering the PCM's detectors.
- Do not wear polyester. As this material moves it develops static electricity and attracts radon.
- Wear cotton and use lots of fabric softener.
- Allow for decay (~20-30 mins)

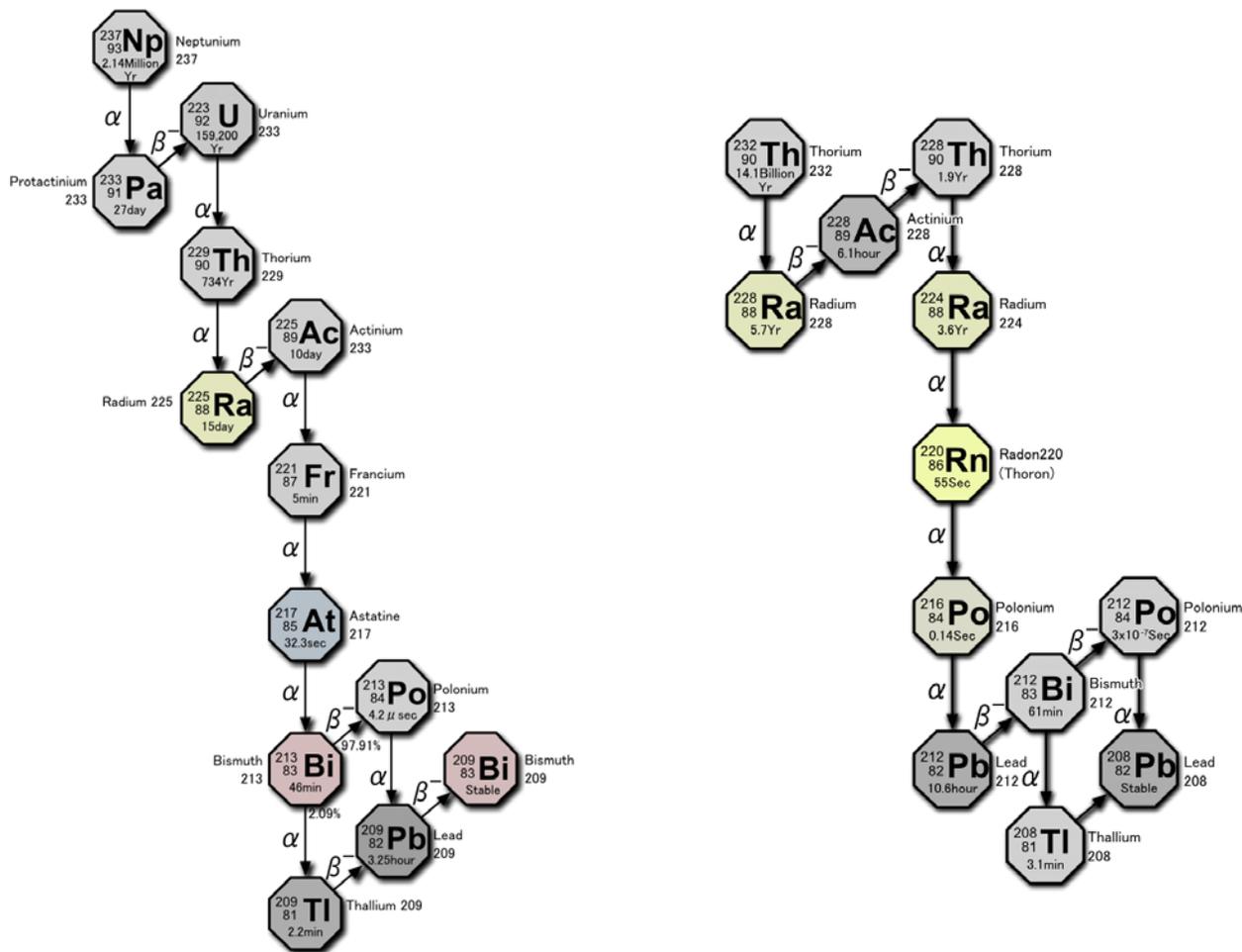


Radon decay emits alpha particles, which are a hazard to lung tissue.

5490 keV \longrightarrow

Radon's half-life (3.8 days) means that it emits alpha particles at a high rate.

6003 keV \longrightarrow



Welcome New Members

Congratulations to the following individuals who successfully passed the NRRPT examination on August 4, 2012:

Ross H. Albright
 Aaron M. Anderson
 Taylor J. Anderson
 Andrew L. Ange
 Jaime A. Barnes
 Ronald J. Bartolo, II
 Joseph J. Bevelacqua
 Jeffrey S. Caudill
 Steven S. Cho

Michael I. Christian
 Heather S. Cole
 Paul R. Dixon
 Robert M. Edling
 Alisa D. Fyfe
 Eric I. Gjerstad
 Joseph D. Gomez
 Emery J. Grohregin
 Gary D. Hansen

Ross A. Lindberg
 John M. Mitchell, Sr.
 Michael J. Negron
 Caleb A. Nixon
 Dee W. Rasmussen
 Bryan L. Remley
 Angel S. Reyes
 Kristopher C. Rowberry
 Christopher L. Royce

Erin M. Salling
 Grant A. Silva
 Michael S. Soles
 Ronald D. Sykes, Jr.
 Jonathon J. Velesquez
 Carolyn M. Vieira
 Timothy P. Vincent
 Colt B. Wells
 Marlen G. Wilkins
 Sarah J. Yu

New Members: If you do not have access to the "Members Only" portion of the website, please contact the Executive Secretary (nrrpt@nrrpt.org). Your email address must be on file in order for you to gain access.

NRRPT Board & Panel Meeting in Sacramento, CA



NRRPT Exam Panel Positions Available

If you're interested in joining the NRRPT Panel of Examiners, please contact Exam Panel Chairman, Rick Rasmussen at rickras@lanl.gov



NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

Articles from the
Office of Federal & State Materials &
Environmental Management Programs

LICENSEE NEWSLETTER

Medical Event Involving High Dose Rate Remote Afterloader



Date and Place:
January 6, 2012, Toledo, Ohio

Event Details: The licensee reported a medical event involving a high dose rate afterloader (Varian, serial #VS0054) containing a 148.37 GBq (4.01 Ci) iridium-192 source. The patient was thought to have received four treatments to the cervix; each fraction prescribed 400 cGy (rad). The physician noticed reddening of the skin to the upper thigh during examination on January 6, 2012. The licensee investigated the equipment and identified a constriction (corrosion) in the entry of the tandem used in the Fletcher Suite Device, where the device narrows at the end. It is believed that during the fourth fraction, when the catheter was inserted into the tandem, it snagged on the constriction causing the starting point of the source to be displaced by 9 cm. Preliminary calculations indicate a skin dose of 1,251 cGy (rad) to the right thigh and 1,273.9 cGy (rad) to the left, when no skin dose was intended. The dose to the treatment site during the fourth fraction was 194.2 cGy (rad) instead of the prescribed 400 cGy (rad). The total dose to the treatment site from all four fractions was 1,394.2 cGy (rad)

instead of the prescribed 1,600 cGy (rad). The patient and referring physician were notified of the event. The licensee stated that the catheter used prior to the procedure is no longer made by Varian. The licensee was using a replacement catheter that was slightly larger in diameter and thicker than the original. The old catheter did not get caught on the constriction in the tandem, but the new catheter did. The licensee's corrective actions included marking the new catheters to provide a visual indication of full insertion into the tandem (General Contact:

Angela R. McIntosh, FSME,
301-415-5030 or
Angela.McIntosh@nrc.gov)

Escanaba Paper Company (EA-11-061)



On October 17, 2011, the NRC issued a Notice of Violation to Escanaba Paper Company for a Severity Level III violation involving the failure to ensure that only persons specifically licensed by the NRC or an Agreement State perform services involving the

dismantling and nonroutine maintenance or repair of components related to the radiological safety of a gauge.

Specifically, on May 9, 2011, the licensee performed non-routine maintenance on a fixed level gauge by using a rod to change the position of the shutter, contrary to NRC License No. 21-17630-01, Condition 17.B. The licensee was not specifically licensed by the NRC or an Agreement State to perform this service.

**Associated Specialists, Inc.
(EA-11-179)**



On September 21, 2011, the NRC issued a Notice of Violation to Associated Specialists (ASI), Inc., for Severity Level III violations involving the licensee's failure to: (1) limit operation with a temporary radiation safety officer (RSO) to a period of 60 days, in accordance with 10 CFR 35.24(c); and (2) ensure that its authorized user (AU) provided adequate supervision to licensee staff who were involved in the receipt, possession, use, transfer or preparation of byproduct material in accordance with 10 CFR 35.27. Specifically, after ASI's RSO left the company on June 8, 2010, the AU functioned as the temporary RSO until October 13, 2010, a period greater than 60 days. From August 16, 2009, until April 19, 2011, the AU had limited oversight of the program, such that ASI personnel under the supervision of the AU had not spoken to him and had not received instructions associated with ASI's written radiation protection procedures, NRC regulations, ASI's license conditions, and the requirement that supervised individuals follow the instructions of the supervising authorized user for medical uses of byproduct material.

2013 USA NRRPT Exam Date

February 23, 2013

Deadline for application: Dec 31, 2012

August 17, 2013

Deadline for application: Jun 21, 2013

** Exam applications may be downloaded from our web page **

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San Onofre Nuclear Generating Station is proud to have over 30 registered NRRPT members in our Health Physics, Training, Chemistry, Engineering, Operations, Oversight, and Maintenance organizations. We are especially proud that Kelli Gallion, our Emergency Planning Supervisor, was a member of the Panel of Examiners, Board of Directors, elected Chairman of the Board, and served as the Executive Committee Chairman. Kelli was (again) elected to the Board of Directors and will begin her term January 1, 2012.

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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Duke currently operates seven power reactors in North and South Carolina and is proud to support the NRRPT.

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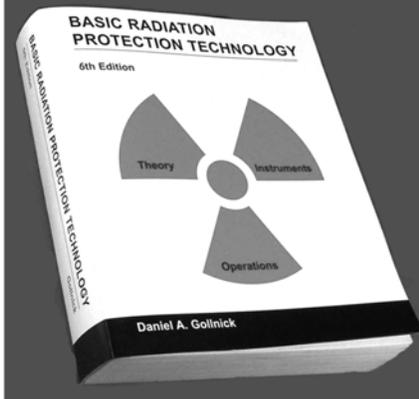
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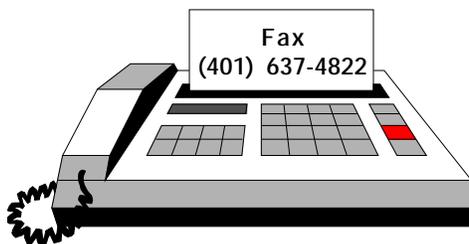
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