NRRPT® NEWS

National Registry of Radiation Protection Technologists

Fall 2003 Edition | Incorporated April 12, 1976

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CONTACTS

John Molner, Chairman of the Board
(856) 339-3752 (w)
(856) 467-8906 (fax)
jmolner@mindspring.com

DeeDee McNeill, Executive Secretary
(509) 736-5400 (w)
(509) 736-5454 (fax)
nrrpt@nrrpt.org

Bob Farnam, Newsletter Editor
(573) 676-8784 (w)
(573) 676-4484 (fax)
refarnam@cal.ameren.com

Vice-Chairman's Message

I'd like to take this opportunity to extend a welcome to our newest members and congratulate them on their successful completion of the **NRRPT** Exam. Look on page 6 and see if any of your friends or coworkers are listed and congratulate them the next time you see them.

It is not too early to book your flight and hotel reservations for the 2004 International ALARA Symposium (IAS) in Coral Gables, Florida starting January 10, 2004. The **NRRPT** Board of Directors and Panel of Examiners meeting will be held at the same time and in the same location. Drop in and visit with the board and panel. Meet the officers of the **NRRPT**, find out what makes the organization "tick."

The IAS meeting is a good forum for collecting ideas and benchmarking data that you can bring back to your work place and implement to help improve your overall programs. Topics and presentations cover a variety of subjects applicable to all disciplines with in the **NRRPT**, medical, DOE, Decon and Decommissioning, and Power Reactors. I think you'll find the meeting very beneficial. Look inside this issue for the registration form and don't forget to check the **NRRPT** block.

I read with interest Dwaine Brown's "back to basics" article on biological damage and its relationship to the federal dose limits. No matter how far advanced we are in our radiation safety careers, we can't forget the fundamental building blocks of "why we do what we do." Thanks Dwaine.

Jim Rolph's article on Webster's Effective Dose Equivalent Calculation intrigued me also. Not being in the medical field I found it fascinating and will definitely have to do more reading in this area. Now if we power reactor types could only figure out an Effective Dose Equivalent methodology without conditional criteria that is overly restrictive, we'd be set! Thanks Jim. You may or may not know that Jim and Dwaine are long term members of the **NRRPT** and also members of the Panel of Examiners. Both have contributed greatly to the success of the registry.

The Board of Directors and Panel of Examiner is made up of volunteers just like Jim and Dwaine who give time and effort promoting and supporting the **NRRPT** and making it successful. Most Board and Panel members have the financial support of their employer who funds their trips to the meetings and allow the **NRRPT** to use their facilities for exams and preparatory courses. On the other hand, a few of our Board and Panel are either self-employed or retired and fund their trips to the meetings out of their own pockets and they do this all to make the **NRRPT** work for you. Most of the work these people do outside of the meetings is done after the kids are put to bed and most normal people have retired for the evening. Without this dedication of the current Board and Panel, or the dedication of the past members, the **NRRPT** would not be where it is today. So if you see a current or past Board or Panel member, thank him for his/her efforts.

Finally, our sympathies go out to the family, friends and coworkers of Marshal Wade. Marshal's dedication to the **NRRPT** and the dedication of others like him, have made the registry what it is today.

Bob Farnam, Vice-Chairman of the Board

NRRPT Board of Directors / Membership Meeting
** Special Invitiation to all NRRPT Members!**

The 61st **NRRPT** Board of Directors and Panel of Examiners meeting, along with an **NRRPT** Membership meeting will be held at the Hyatt Regency Coral Gables in Coral Gables, FL (near Miami). The property is located 5 miles from the Miami Airport. The meeting is in conjunction with the International ALARA Symposium. The **NRRPT** meeting begins Saturday, January 10 and continues through Tuesday, January 13, 2004. Members and/or visitors are encouraged and welcome to attend Board meetings on Saturday and Tuesday.

The meeting is co- sponsored by the North American Technical Center (NATC), Information System on Occupational Exposures (ISOE), the International Atomic Energy Agency (IAEA- Vienna), the OCED/Nuclear Energy Agency (NEA-Paris), and the National Registry of Radiation Protection Technologists. The symposium is also held in conjunction with other industry meetings including the CANDU ALARA Committee, and US NRC Region III & IV RPM Committee Meetings. The Nuclear Suppliers Association will make arrangements for vendors to exhibit in the Exhibition Hall located across from the symposium ballroom. Please contact Rosann Travis (703-451-1912) for more information.

**** Meeting Registration Form is located on Pg 7 ****

Registration Maintenance Points -- **NRRPT** registered members will receive 2 points for attending the 4 day conference and .25 point(s) for each PEP course attended.

PEP Courses -- **PEP #1**: John Molner, current **NRRPT** Chairman of the Board will led a course in developing exam questions. Registration Maintenance points can be earned for questions accepted by the Panel of Examiners.
PEP #2: Mr. Frank Hejmanowski of the West Valley Demonstration Project will conduct a two-hour PEP presentation on methods used to ensure that workers maintain their radiation and contamination exposure as low as reasonably achievable. The presentation will review the philosophy of ALARA and it's application to solving real-life problems. Included in the presentation will be the incentives and initiatives for taking ownership of ALARA principles, an overview of regulatory requirements, and examples of generic forms that can be modified for site specific use. An extensive workbook and guidelines for setting up an effective ALARA program will be provided.

**** PEP Courses Registration Form is located on Pg 9 ****

A Simple Discussion of Biological Damage in Support of Code of Federal Regulation Exposure Limits

Dwaine Brown – Halliburton Energy Services

Introductory Remarks

The penetration of matter by charged particles, neutrons, or gamma rays deposits energy, resulting in the alteration of the absorbing medium through the process of ionization. Ionization is the process by which a neutral atom acquires a positive or negative charge through the subsequent gain or loss of electrons surrounding the nucleus of an atom. The resulting change in atomic charge changes the binding ability of the atom so that it no longer functions appropriately. If already incorporated into a molecule, it can cause the molecule to disintegrate or to cease to perform its intended function. If this molecule is involved in a biological process within a cell, it can result in the death of the cell or a mutation.

The number of ionizations produced per unit length is referred to as specific ionization and is a critical concept in discussing damage to biological systems. The more intense the ionizations, the less are the probabilities for repair of any radiation-induced damage. The probability that permanent cellular damage will result is increased.

Neutrons lose energy owing to collisions of with the nuclei of the atoms in their paths, losing energy after each collision. These neutrons will eventually be absorbed within a nucleus when their energies have decreased to very low levels. When a neutron collides with a hydrogen atom (the nucleus of which is a single proton), a proton is ejected. The proton is a positively charged particle, and it now proceeds through the medium, ionizing atoms in its path. Protons are significantly larger than electrons and tend to cause a great deal of ionization within a relatively short distance. As previously stated when describing specific ionization, increased density of interactions results in greater biological damage.

Neutrons penetrate deeply into the incident medium before losing energy. Deep penetration is a consequence of the fact that neutron interaction is by collision with the nucleus of an atom. A nucleus occupies little actual space within an atom, so the probability of neutron interaction in a medium is low. Neutrons lose energy more efficiently when they interact with lighter nuclei, such as hydrogen in water or oil. Neutrons are better shielded against penetration with less dense substances with high hydrogen content.

Electromagnetic radiation and neutrons have a long range. Due to the low density of the electrons surrounding an atom, the probability for gamma ray interaction and resulting energy loss is relatively low. The higher is the density of an absorbing medium or shielding (e.g., lead or tungsten), the more dense the electrons; and consequently, the more rapid the energy loss of the incident radiation.

Gamma and neutron radiation decrease with distance owing both to absorption by the medium and to source to target geometry. The amount of material required to reduce the radiation by half is called the "half-value layer"; each additional half-value layer will reduce remaining radiation by one-half (e.g. two half value layers will reduce the radiation to one-fourth, three half value layers will reduce it to one-eighth, etc.).

Geometrically, the amount of radiation rapidly decreases with distance, similar to the decrease in light intensity with distance from a source of light. Doubling the distance from a source drops radiation by a fourth. This observation illustrates another basic concept of radiation protection: distance. Decline in radiation with distance may, however, also work against the radiation worker as the worker decreases the distance to the radioactive source. An exposure at one-meter may be quite acceptable. Nevertheless, as workers move from 100 cm to one cm from an actual source, the radiation level will increase 10,000 times.

Biological damage is the result of the ionization of atoms, altering their basic characteristics and disrupting the molecular structure. If ionizing events are widely spaced (chronic), there is a higher probability that the damage may be repaired. If ionization events are highly concentrated (acute), then there is less probability that damage may be repaired. The probability of permanent cellular damage as a result of radiation exposure must be taken into account in establishing radiation safety standards.

Biological Consequences

Atoms may combine to produce molecules, which are then grouped to produce cells. A cell has two major compartments. Its so-called nucleus contains genetic material, called DNA, which defines the growth rate and function of the cell. When cells grow by division, the DNA must be reproduced and divided exactly. Cytoplasm surrounds the nucleus and contains many structures critical to the specific function of a cell. The combination of DNA regulation and cellular function determines the type of cell and its relation within the human body. For example, cells lining the intestine are designed to divide rapidly and absorb nutrients; nerve cells do not divide and conduct nerve impulses; heart cells slowly divide and produce energy, enabling contraction of muscle. Cells are organized into larger units called organs, which in turn form the human body.

Damage to the cellular material, specifically the DNA, may compromise the cell's ability to perform its specific functions or its ability to multiply. The result may be damage to the organ and possibly the whole body. For example, if intestinal cells do not properly divide, eventually the intestinal surface becomes bare, increasing the risk of infection as well as the loss of ability to absorb nutrients. The ultimate result is serious illness or possibly death.

As previously stated, cellular damage is the result of ionization within a cell. In some cases, the radiation may directly interact with the molecules, resulting in damage by ionization of individual atoms within a cell. Since the body is 80% water, the radiation interacts with water molecules to produce free radicals and hydrogen peroxide. These free radicals are poisonous to the cells and are the primary source of cellular damage from radiation.

The degree and rapidity of damage results from a number of components: the total dose delivered the time frame in which the dose is delivered (acute-vs.-chronic), the amount of body tissue irradiated, and the relative sensitivity of the body or organ system to the radiation.

The effects of exposure to radiation may be divided into two large groups. Acute or immediate effects result when the whole-body has been exposed to high levels of radiation over a short period of time. These effects may be immediately life threatening.

There are three main categories of acute effects resulting from an acute radiation exposure. In order of increasing severity, they are: (1) hemopoietic damage, (2) gastrointestinal damage, and (3) central nervous system damage. Delayed effects result from lower levels of exposure (chronic) to the body or individual organ systems; these may include cancer or genetic effects. Delayed effects are the technical basis for whole body radiation exposure guidelines.

Acute Effects

Hemopoietic damage may results from radiation exposure affecting the blood-forming organs and tissues. Changes in actual blood counts may be seen in exposures as low as 25 rem. However, hemopoietic damage results from higher doses which actually impact the bone marrow as well as the blood. Death may occur from infection, anemia, or uncontrollable bleeding. The average radiation dose at which hemopoietic damage first occurs is about 200 rem Recovery is usually possible from this dose level; but, once the dose is over 700 rem, a bone marrow transplant is required to sustain life. If death occurs, it is usually 1 - 2 months post exposure.

Gastrointestinal damage may result with doses over 1,000 rem. This damage is the result of the loss of surface tissue of the intestine, with inability to absorb nutrients. There also is associated severe diarrhea, as well as the increased potential for infection. Death is inevitable at this dose level, occurring within several weeks post exposure.

Central nervous system damage may result with doses over 5,000 rem, with death occurring within hours to days following this very high exposure. Several other immediate effects are less serious. Reddening of the skin (erethema) may occur with doses as low as 300 rem. As the local doses increase, the skin may blister and eventually produce large ulcers (desquamation).

Doses to the reproductive organs as low as 30 rem in men and 300 rem in women may produce temporary sterility. As the dose increases, the duration of sterility increases, as does the probability of permanent sterility.

Radiation exposure to the lenses of the eye may also produce cataracts. Doses exceeding 200 rem are required to produce cataracts, which may occur several years after the exposure. Radiation-induced cataracts have a specific appearance and are located at the posterior portion of the lens. A posterior location contrasts with the position for normal cataracts, which occur at the anterior or sides of the lens.

Delayed Effects

Delayed effects may result from a single, large exposure or from a prolonged exposure to low levels of radiation. When compared to acute effects, which have a threshold dose level below which effects may not be observed, delayed effects are conservatively presumed to be stochastic events and may be presumed to occur at low doses. At low dose rates, the probability of occurrence for delayed effects is extremely small. Therefore, it is very difficult to verify the results of damage associated with these chronic exposures to low levels of radiation. The estimates of damage used as a basis for regulatory guidelines are developed by the evaluation of known effects at significantly higher doses and by modeling the assumptions regarding the risk at lower doses.

Cancer is the most commonly documented delayed effect and occurs at doses over 100 rem. Cancer results from damage to the cellular DNA, in that the cell no longer functions normally. DNA in the nucleus is composed of multiple long double helix strands. Genes reference the specific function of portions of the DNA, i.e., one gene will program for blue eyes; alterations of this gene results in brown eyes, etc. Specific gene sequences are involved in cellular growth and reproduction. Radiation exposure of a normal cell may cause a cell to become malignant. Alteration of the normal genes can take place either by "activating" a gene which subsequently produces malignant behavior or by "inactivating" a tumor suppressor gene which had been preventing the cell from displaying the cancer characteristics. (The gene which, when activated, produces malignant behavior, is called an "oncogene"; onco for "oncology").

Certain organ systems may be more sensitive to the carcinogenic effects of radiation than others. One hundred rem increases the risk for leukemia by about 5; female breast cancer by about 2; lung cancer by about 1.5; and various other cancers by about 1.3. The time to development of leukemia post exposure is estimated to be about 7 years, while for other, solid tumors, it is estimated to be about 20 years.

Genetic changes refer to changes that are seen in one's progeny. For radiation-induced changes, the suppositions have been inferred from animal experiments and atomic bomb survivors. Radiation does not necessarily result in new mutations but may increase the incidence of mutations that occur naturally. One hundred rem is considered the dose that doubles the probability of occurrence of a mutation.

A great deal of effort has gone into the development and revision of risk estimates for radiation exposures. The efforts by the BEIR Committee V (Biological Effects of Ionizing Radiation Committee) have developed the following risk probabilities:

- Cancer risk - 1.5×10^{-4} per person receiving 1 rem exposure
  This means that an exposure of 1,000 mrem would cause about 150 genetic cancers among 1,000,000 exposed individuals (probability of about 1/6600) among the exposed population.

- Genetic risk - $\sim 25 \times 10^{-6}$ per person receiving 1 rem exposure
  This means that an exposure of 1,000 mrem would cause about 25 genetic disorders among 1,000,000 exposed individuals (probability of about 1/40,000) among the exposed population. This estimate must be further compared against the rate of naturally occurring genetic disorders of about 50,000 per million.

Continued on bottom of Pg 6

Marshal Wade, RRPT

1952-2003

Marshal Wade, age 50, of Idaho Falls, Idaho, passed away suddenly from an apparent heart attack on January 22, 2003. He is survived by his wife of over 27 years, Glenda, children Amy, Andrew, Sarah, Dawn and four grandchildren.

Marshal lived his whole life in Idaho Falls and started his career in radiation protection after graduation from high school in 1971. He completed a two-year program in Nuclear Technology, Health Physics Option, at the Eastern Idaho Vocational Technical School in 1974. He then worked at the Idaho National Engineering and Environmental Laboratory's (INEEL) Chemical Processing Plant for nine years as a Health Physics Specialist A.

Marshal left the INEEL in 1984 and returned to the Eastern Idaho Vocational Technical School (renamed the Eastern Idaho Technical College). He was responsible for providing instruction to future radiological control technicians (RCTs). During Marshal's 13 years at the Eastern Idaho Technical College, he provided post-secondary instruction in operational health physics and related physical sciences. His efforts led to the successful placement of over 550 new RCTs into the nuclear industry's workforce.

In 1997, Marshal returned to the INEEL as a principle technical specialist in the training department. Marshal was responsible for program management, curriculum development and content delivery to RCTs and radiological engineers in the Radiological Control organization. He also was instrumental in mentoring RCTs and radiological engineers in their endeavors to successfully pass the NRRPT exam. He often did this on his own time and only asked for a commitment from the individuals to take studying for the exam seriously.

Marshal was an active supporter of the NRRPT organization since he passed the exam in 1981.

Marshal was a dedicated family man. He loved to read and admitted that a life long desire of his was to author children's books. He was deeply respected by his peers, students, and co-workers for his wealth of knowledge, sense of humor, and skill at presenting difficult subject matter in an easily understood manner.

Marshal was a true friend and a dedicated professional. He will be greatly missed.

Radiation may result in biological changes with cellular damage that may at some point in the future be visible. The probability of acute, life-threatening effects is very low. The risk for cancer or genetic damage is extremely low at or below the prescribed regulatory limits. The 5,000 mrem (as well as the 2,000 mrem imposed in some countries) whole body exposure limit is felt to be a safe level for prevention of cancer or genetic effects. Radiation workers are required to wear personal dosimetry if the potential exposure could exceed one-tenth of the allowable regulatory limits for exposure. A more basic principle is the ALARA (As Low As Reasonably Achievable) philosophy in which every reasonable effort is made to minimize occupational (as well as the general public and environmental) exposure to radiation to the lowest practical level. One of the basic concepts of radiation protection is shielding. Another one of the basic concepts that must be considered is time. The ALARA philosophy is achieved by using the concepts of time, distance and shielding.

The duration of exposure (time) of exposure may be minimized by pre-planning activities. Pre-planning can minimize time required in handling radioactive sources or in being in close proximity to sources of radiation. Distance-related notions that minimize the possibility of exposure include safe and secure storage, isolation of sources of radiation

Continued on bottom of Pg 8

Meeting Registration Form

2004 North American ISOE ALARA Symposium
Saturday, January 10 - Wednesday, January 14, 2004.
Hyatt Regency Coral Gables
50 Alhambra Plaza
Coral Gables, Florida (near Miami)
305-441-1234 or 800-223-1234
www.coralgables.hyatt.com

Registration fees cover attendance at all sessions of the symposium. A CD ROM containing presentations from the International ISOE ALARA Symposium will also be provided. Please register on the electronic registration form located at NATCISOE.org or HPS.NE.UIUC.EDU. Or complete the following form:

Please Fill Out Completely

Name: ____
Last Name First Name Middle Initial

Title: ________________ Organization: ________________

Address: ____

City: ________________ State/Country: ________ Zip Code: ________________

Phone: ________________ Fax: ________________ Email: ________________

Registration Fees Paid by January 6, 2004 $375.00

[ ] **NRRPT** Registered

Registration Fees Paid After January 6, 2004 $450.00

Walk-In registrants are welcome if Symposium space is available
Please make checks payable to NATC ISOE
Mail Registration Form to:
David W. Miller, North American Technical Center, ISOE, Department of Nuclear, Plasma, and Radiological Engineering, College of Engineering, University of Illinois at Urbana-Champaign, 103 S. Goodwin Ave, 206 NEL, Urbana, Illinois 61801 USA
Or fax with credit card payment to: (217) 333-2906

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A receipt will be sent as soon as the registration form is received. Faxed registration forms do not need to be mailed as well. Registrations canceled by January 6, 2004 will be refunded less $75 processing fee. After January 6, 2004 there will be no refunds, however, you may send a substitute.

Webster EDE Calculation for Clinical Staff

Jim Rolph

Radiation protection professionals in the health care industry face challenges in monitoring and controlling doses for clinical staff performing fluoroscopy procedures. Some of the medical procedures where fluoroscopy is routinely applied include angiography, abdominal interventional procedures, and cardiac catheterization. Clinical staff members routinely wear lead aprons and thyroid collars during procedures to protect vital organs from radiation exposure. Sometimes professionals find radiation safety programs and dose monitoring programs seem to conflict with their objective of providing quality patient care. This conflict occurs when dosimeters worn properly on the exterior of the lead apron or thyroid collar over-report actual effective dose equivalent exposure (EDE), and dosimeters worn improperly under aprons under-report the EDE because exposure to bone marrow is not taken into account. In order to avoid exceeding annual limits, some clinical staff members refuse to wear the dosimetry assigned to them or wear it improperly, under the apron. This situation may be corrected by having the provider wear two dosimeters and then using the Webster EDE Calculation, a calculation named after it's founder, when estimating the EDE.

In 1989, E. W. Webster submitted an article to the Health Physics Journal that was published in volume 56, titles "EDE for exposure with protective aprons." In this article he proposed a calculation that uses the readings from two badges to provide an accurate estimation of the EDE received by an individual while performing activities in which a lead apron is being used to reduce radiation exposure. One badge is worn at the waist under the apron (H_1). The other worn at the neck above the apron (H_2) and on the thyroid collar if it's being used. Normally, badges worn beneath the apron produce readings that are too low, while badges worn over the apron produce readings that are too high. However when the two readings are used together in the Webster Calculation ($1.5 \times H_1 + 0.04 \times H_2 = EDE$) the result is an accurate estimation of the EDE.

On December 27, 1995, NCRP Report No. 122, Use of Personal Monitors to Estimate Effective Dose Equivalent and Effective Dose to Workers for External Exposure to Low-LET Radiation was published. This report provided analysis and validation of the Webster calculation. In the analysis and validation of this calculation tube voltages between 60 to 120 kVp were used with aprons with lead equivalent thickness of 0.3 and 0.5 mm.

The Conference of Radiation Control Program Directors (CRCPD) in 1995 suggested the voluntary use by state authorities of this calculation method for clinical staff performing fluoroscopy procedures and wearing protective aprons. Many states have adopted this calculation method.

Single badge methods can result in over reporting of doses resulting in the radiation protection professionals expending additional time and effort in re-estimating doses for clinical staff members, who appear to have exceeded their federal annual limits. The use of the Webster Calculation eliminates this situation. An additional benefit of the Webster Calculation is that knowledge of x-ray tube kilo-voltage and the thickness of lead in the apron is unnecessary. The only data needed to calculate the EDE is the readings from the two badges. To learn more about the benefits of this calculation refer to the publications listed in this article or contact your dosimetry provider. Additionally, check your state regulations to see if your state has adopted this calculation method should you plan to use it. Some dosimetry providers will perform the calculation for you and include the result on your monitoring report.

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when not in use, and limited access to such areas. Maximizing the distance between the target and the source is more critical than minimizing time in limiting radiation exposures because doubling the distance will decrease the dose to one-fourth.

Utilization of shielding is the final component of radiation exposure reduction. By maintaining the source in a properly shielded location, or by the installation of temporary shielding, exposure to radiation may be greatly reduced.

PEP Courses

Offered by the NRRPT

During the 2004 ISOE International ALARA Symposium, the **NRRPT** will provide two PEP courses for your enrichment.

PEP #1 – **NRRPT** Question Development

Who needs to attend?

Any current or future **NRRPT** member. Registration Maintenance points can be earned for developing questions that are accepted by the **NRRPT** Panel of Examiners. This course will be led by the current **NRRPT** Chairman of the Board.

PEP #2 – ALARA and Containment

Who needs to attend?

All persons who use engineered containments as an ALARA practice. This course will be presented by a West Valley Nuclear Services ALARA expert. Many handouts will be provided which will be useful at your own facility.

Each course is $40.00 if advanced registration is received on or before January 2, 2004. After that time the cost will be $50.00. Questions about the courses should be directed to:

Tim Kirkham
Calvert Cliffs Nuclear Power Plant
410-495-6885
timothy.j.kirkham@constellation.com

Send Registration to:

NRRPT
P.O. Box 6974
Kennewick, WA 99336
509-736-5400 (ofc) nrrpt@nrrpt.org 509-736-5454 (fax)

Name:________________________Company/Affiliation:____________________

Street Address:____

City:____________________ State:________Zip:__________Phone:____________

PEP #1 _____ PEP #2 _____ Total cost $__________ (to pay by credit card, please call the **NRRPT** office)

2004 Sustaining Dues Notice

****Reminder ****

As a reminder, the annual **NRRPT** membership sustaining fee will increase to $35 per year beginning in 2004. Any back dues prior to 2004 will remain at the $20 rate. Sustaining notices will be mailed the beginning of November and should be returned back to the Executive Secretary's office by December 1, 2003. Address changes and dues payment can be made directly on the **NRRPT** website located at www.nrrpt.org.

Welcome New Members

NRRPT Examination Results

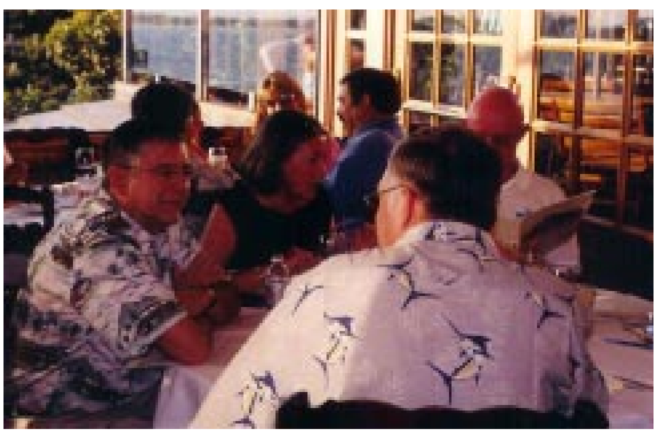
Congratulations to the following individuals who successfully passed the August 2, 2003 exam:

Steven B. Aitken
Nicholas F. Breault
Richard Butler
Edwina A. Collins
Thomas J. Csomay
Todd A. Davidson
Shawn J. Dove
James W. Fuller
Daniel M. Gregor
Douglas B. Hatmaker, Jr.
Raymond E. Hausele, Jr.
William E. Herbert, Jr.
Steven E. Herweyer
John R. Horton
James F. Johannsen
Neil A. Knudsen
Thomas P. Lewis
Michael C. Morris
Sean J. Murphy
Colin J. Pritchard
Larry D. Romanowich
Steven L. Spica
James E. Thomas

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.

NRRPT Night-Out

Sponsored by Bartlett Nuclear & FRHAM Safety Products



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NRRPT Board of Directors and Panel of Examiners Meeting

July 19 - 23, 2003
San Diego, CA

Paul Harvey & John Molner

Please join us at our next meeting!

NUMANCO, LLC

John Ellison
7633 East 63rd Place, 4th Floor
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Future NRRPT Exam Dates

February 21, 2004

Deadline for application: Dec. 31, 2003

August 14, 2004

Deadline for application: June 18, 2004

Registration Maintenance Program

One of the greatest achievements of the **NRRPT** was getting the examination evaluated and approved for equivalent college credits. Successful completion of the exam can qualify for almost a full year of college. To maintain this valuable benefit, the Registry must be reassessed every few years. The Registration Maintenance Program was developed to strengthen the Registry's position during these periodic reassessments. In truth, the **NRRPT** was one of the last professional organizations with a registration/certification exam to establish some type of maintenance program. The program was established in 1999 to assist the Registry in demonstrating that its members maintain current with the sciences and regulations of radiation protection. The end of this year marks the end of the first full five-year maintenance cycle. During the previous four years, hundreds of members have completed and submitted their first maintenance worksheet. Many more members have been placed in this last cycle which ends December 31, 2003, and are expected to submit worksheets by March 31, 2004. While some members may not entirely be in agreement with the maintenance program, their completion of the worksheet demonstrates support for the Registry and the efforts made to improve benefits to the membership. Unfortunately, after this year, any member who has not completed a registration maintenance worksheet will be dropped as an **NRRPT** Practitioner. Without completing a worksheet, the only way to become re-established in the Registry is to retake the **NRRPT** exam. There is still time to complete the maintenance program requirements for this year and be retained in the Registry. Please contact the **NRRPT** office for information and assistance.

Jim Martin, RM Committee Chairman

Computers in the future may weigh no more than 1.5 tons. — *Popular Mechanics (1939)*

"You do not really understand something unless you can explain it to your grandmother." — *Albert Einstein*

"We must believe in luck. For how else can we explain the success of those we don't like ?" — *Jean Cocteau*

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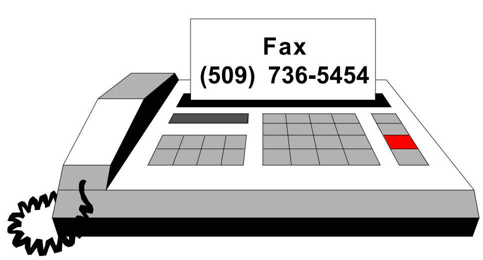

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