



# The NRRPT NEWS

OFFICIAL NEWSLETTER of the *National Registry of Radiation Protection Technologists*

March 2018

Incorporated April 12, 1976

## Newsletter Editor's Message



This is being written for the Chairman of the Board, Dave Tucker. Dave is our Canadian friend and colleague who has made a distinguished career for himself in Canada, both at Atomic Energy Canada Limited and at McMaster University.

And now Dave is currently in an active transition in his career. He is a new employee of the International Atomic Energy Agency, and has moved himself and wife to Vienna, Austria. We at the NRRPT wish him luck in his new job with the IAEA and we will hear from him very soon!

Inspired by the hiatus in Dave's "message-writing free-time", as well as many other reasons, the focus of the message from this Chairman's message will be straightforward: change.

There are many changes in the NRRPT that are being worked upon. Two of these changes are:

- changes in the NRRPT Examination question grouping process
- beginning of online training from the NRRPT

### Changes in the NRRPT Examination Question Grouping Process

For the changes in the NRRPT Examination question process the details are important, but overall it does not

change much for the candidates: the amount of questions on each exam remains the same, the way that the questions are created remains the same, the way that the questions are picked for the examinations remains the same. The primary difference is that we are changing the way we are grouping the questions.

Before there were three overall groups of questions, divided into 18 sub-groups. Now we are building our examination using objective-based criteria. We have made 24 objective "categories," composed of several hundred objectives. Details on the objective-based examinations will follow in a later newsletter, and will be available on the NRRPT website when the transition is complete. This is expected to be complete later in 2018.

## Inside This Issue

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## Contacts

Dave Tucker, Chairman of the Board  
tuckerdavidm@gmail.com

DeeDee McNeill DeGrooth  
(401) 637-4811 (w)  
nrrpt@nrrpt.org

Todd Davidson  
(636) 448-8633 (cell)  
t-davidson@sbcglobal.net

## Online Training From the NRRPT

During one of our recent meetings, an idea was presented for the NRRPT to design and produce online training modules for our registry, as well as for presenting it to other persons in our industry. This idea is currently being worked upon, and the group that is executing this will have an update on this work in a later newsletter in 2018. These training modules may help those RRPTs who are not enrolled in a continuous training program, and may also provide a way for them and others to enrich their knowledge of various subjects in the radiation protection industry.

Other evidence of change is seen in our industry. This has been spoken of for years, but it is becoming more evident as we continue. Our chairman recently wrote in his message that our industry is changing and had examples of that with photos. Very important in that message is that new persons come into our field continually. Through mentorship they can gain knowledge, experience, and hopefully a true

appreciation of what our industry of radiation protection means and what it provides. Many of us are imagining our lives with retirement nearing, and what that may mean. Continue to imagine that while you are encouraging younger professionals of the wonder and importance of our field.

Also, while you are imagining the future, think of how our profession has changed with the persons who have passed on. The most recent case we'll speak of is Gary Kephart. Please review the memoriam for Gary as well as the added editorial comments. Gary is one of the names that were listed when the NRRPT redesigned the process to renew practitioner status, and we remember him fondly.

The bottom line for our industry as well as many others is listed here: no change = no growth = no evolving = no continuation. Let's hope that changes will help us grow, and evolve, and that our profession will continue.

Respectfully,  
Todd Davidson  
NRRPT Board Member and Newsletter Editor



## Welcome New NRRPT Members

Congratulations to the following individuals who successfully passed the  
NRRPT Examination on August 12, 2017:

Steven K. Anderson  
Terry J. Bell  
Andrew E. Benson  
Thomas D. Blasco  
David D. Briggs  
Harry Brown  
Kenneth Burns  
Eric J. Cieszkiewicz  
Edward C. Dolezal  
William R. Gibbons  
Isaac D. Houck  
Deacon Jack  
Joseph M. Jaegers  
Hayden L. Jeffrey  
Rick L. Jensen

Aaron J. Karavias  
Jesse Kass  
Shad T. Keele  
Kasey J. Kennedy  
Ian P. Lake  
Mark A. Lorenz  
Jon R. Merkel  
Gustavo Molina  
David F. Moore  
Kevin L. Murray  
Michael P. Nelin  
Justin W. Partee  
Martin S. Phalen  
David J. Platt  
Curt A. Prebe

Nashua H. Ramage  
Rose Marie A. Ridge  
Peter M. Robida  
Tyler B. Rovig  
Chris J. Sinn  
Brett Smith  
Kristopher D. Smith  
Timothy D. Sollenberger  
Joseph L. Taylor  
Carl L. Tucker  
Librado Villalobos  
Theodore J. Wagner  
Joshua E. Walker  
Christopher R. Ward  
Jeffrey A. Wilhelm



# Kelly Neal Receives the Arthur F. Humm Jr. Memorial Award

By Ed Lohr, Award Chairman



The NRRPT recognized one of its most beloved and well-regarded members, Kelly Neal, at the night out in Denver. The Arthur F. Humm Jr. Memorial Award is bestowed by the NRRPT Board of Directors to “persons who have given outstanding support to the NRRPT.” The award is named for Arthur F. Humm Jr., one of the six original elected members of the Panel of Examiners and its first Chairman. It was established in January 1985, shortly after his passing, to honor his many invaluable contributions to the NRRPT.

Kelly first became actively involved in the NRRPT in 1998 when he joined the Panel of Examiners. Once he got his feet wet, there seemed to be no limit to his willingness to support the NRRPT. Over the next 19 years he contributed to the organization in

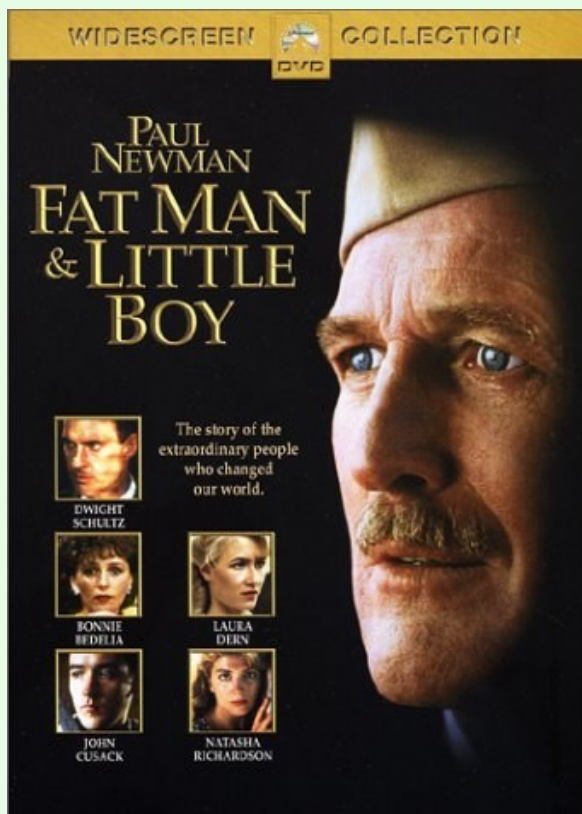
many invaluable ways. As a Board member, Secretary/Treasurer, and Chairman; on numerous committees as a member and as their Chairman; and a friend and mentor to many new Board and Panel members. Kelly truly believes in the Registry and works hard to keep it a viable entity. He is willing to work on anything that will improve the NRRPT. Even when his employer is unable to support sending him to the meetings, he finds a way to attend. If you see Kelly be sure to congratulate him on his outstanding achievement.



Ed Lohr introducing Award Recipient Kelly Neal at the NRRPT Night-Out

# RAD MOVIE REVIEWS!

## PART 1 – FAT MAN AND LITTLE BOY – THE MOVIE AND CAST



DVD Cover Paramount Home

Fat Man Weapon – picture signed by the pilot and commander of “Bockscar: - the plane that delivered weapon, National Archives

This will be a multipart series!

The general gist:

A film about the Manhattan Project, if you were born under an egg, it's the super-secret U.S. program to make the first atomic bomb. The movie revolves around the relationship between General Leslie Groves (think top General of the science project) and the science director, Dr. J. Robert Oppenheimer. Dr. Oppenheimer led the scientific and engineering teams involved in creating and delivering both bombs. In the movie we learn about the engineering and technical issues encountered during the development of "Little Boy" (gun-type uranium bomb dropped on Hiroshima – see picture to the right) and "Fat Man" (plutonium implosion bomb dropped on Nagasaki – see picture below).



Little Boy Weapon, National Archives



Don't worry, the movie is more than just a history lesson. Even if this American story was filmed in Durango, Mexico.

The featured cast includes: Paul Newman (General Leslie Groves); Dwight Schultz (J. Robert Oppenheimer), Gerald Hiken (Leo Szilard); John Cusack (Michael Merriman), John C. McGinley (Capt. Richard Schoenfield, M.D.); Laura Dern (Kathleen Robinson), Natasha Richardson (Jean Tatlock); and, Bonnie Bedelia (Kitty Oppenheimer). The director was Roland Joffe. Like any good movie review, we need my original box score to keep track. The next installment will discuss more about the box score and fact vs. Hollywood:

Topic	Truth-O-Meter	Comments
Complaining about the morality of the bomb	25%	Yes, this happened, but Hollywood loves to exaggerate things
Louis Slotin “tickling the dragon”	50%	You'll never guess when this really occurred
“Implosion Method” for Fat Man	10%	Let's just say there is an implosion method
“Father” of the atomic bomb	0%	It wasn't Dr. O!

# Cleveland, OH

By Dannie Green

The NRRPT will be holding the “2018 Annual Meeting” July 14<sup>th</sup> – 17<sup>th</sup> in Cleveland Ohio. The Board encourages all members to attend.

Cleveland was founded in 1796 on the shores of Lake Erie and the Cuyahoga river. Cleveland saw early growth as a transportation center due to its location on the water and later with the establishment of the Erie canal and railroad. In the early 1900s, manufacturing fueled growth and economic prosperity. That growth and prosperity attracted a wave of immigrants from Europe along with migrants from the south. Growth and prosperity continued until the 1960s when Cleveland's economy began to falter, and the city entered a twenty-year period of decline. During that time, the Cuyahoga river caught fire and the city defaulted on its loans. Clevelanders were determined not see their city become another one of those fallen rust belt cities with its best days in the past. In the 1980s, the city began a period of economic recovery which lasted for a couple of decades. During that time the city restructured its debt and paid off its obligation, improved its infrastructure, revitalized the downtown area, and diversified its economy. Due to its incredible economic recovery, Cleveland has been dubbed the comeback city. Today Cleveland is once again a Midwest economic and cultural giant.

My first trip to Cleveland was a week-end trip in January. My first impressions were, “Wow, that wind coming off the lake is cold!” and “Wow, what a great city!” I found that with everything Cleveland has to offer, museums, sports, and outdoor activities, you need more than a week-end. For every big city, every travel guide has its own “Top Things to Do” list. The

problem is, we are all different, and what I find interesting others may not. The first time I visited Cleveland I spent a day and a half at the art museum; for others one hour would be too much. What I can say is that regardless of your personality, in Cleveland you will find something of interest.

Name a famous chef from Cleveland, Ohio! If you said Michael Symon of Food Network fame you would be correct, but that is only one of many names. In fact, Cleveland is home to several renowned chefs. Cleveland is a foodie delight, with a culinary scene running from simple to sophisticated. In Cleveland, there is no shortage of great restaurants and good food. It was in Cleveland where my wife and I discovered the Chocolate Bar. That's right: of all things—a bar dedicated to chocolate. The food alone is worth the trip. By the way, that other famous Cleveland chef is Hector Boiardi of Chef Boyardee fame. He was, in fact, an actual chef and owner of a very popular restaurant in the early 1900s. He got the idea for his food company from his restaurant patrons who were continually asking if they could take home some of his food and sauces!

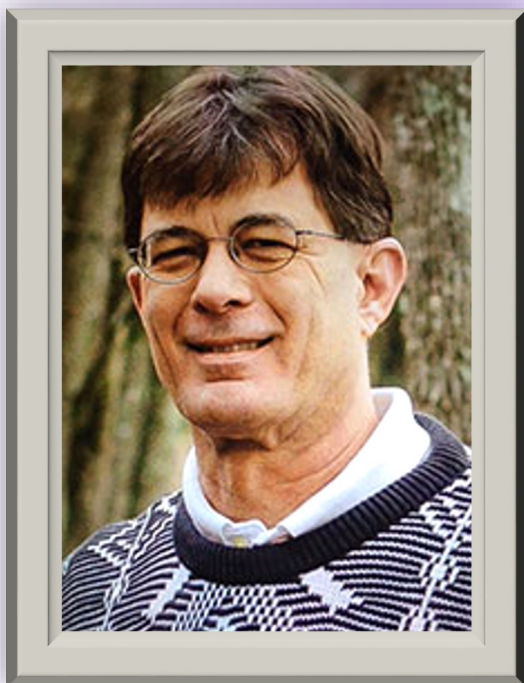
If you are looking for a restaurant, you can turn to an online review site, such as Yelp. Or do as I do and ask a local. Go beyond the downtown and explore the neighborhoods. Like many cities, Cleveland is made up of several neighborhoods and districts. Each neighborhood has its own unique vibe, characteristics, and architectural style; all are shaped by the demographics and culture of the immigrant populations who settled there earlier. Head over to Little Italy for a good meal. Visit the West Side Market in the Ohio City district. Or check out the famous “Christmas Story” house in Tremont. To learn more about Cleveland and things to do check out the following websites: [Ohiohistorycentral.org](http://Ohiohistorycentral.org) [Tripsavvy.com](http://Tripsavvy.com) and [Thisiscleveland.com](http://Thisiscleveland.com).



# In Memoriam

## Gary S. Kephart, NRRPT, CHP

July 21, 1953 – January 14, 2018



Gary Steven Kephart, age 64, passed away on January 14, 2018 in Knoxville, Tennessee.

Gary was a long-time member of the National Registry of Radiation Protection Technologists. He had a productive, and quite diverse career in health physics and was well liked and respected by colleagues and coworkers for his professional and people skills.

He began his professional career at Hanford in 1979 as a health physicist in the 200 Areas, working for Isochem and its successor, Rockwell Hanford, for a decade. He then moved on to Westinghouse for a brief stint before moving to Tennessee. At the time of his death, he was employed by UCOR in site cleanup and remediation of the Department of Energy East Tennessee Technology Park in Oak Ridge with the goal of restoring this contaminated area back to public use in 2020. Regrettably, Gary will not be present among the celebrants.

While employed at Hanford, Gary enrolled in the University of Washington radiological sciences program at the Joint Center for Graduate Study (now Washington State University at Tri-Cities) in Richland, earning a master's in radiation science. He was an able student. His thesis research was the preparation of a calibration phantom of the arm using actual human bones containing americium for in vivo counting applications. This delicate and difficult task, requiring great skill in obtaining exact and precise measurements, was carried out in conjunction with Earl Palmer at Pacific Northwest National Laboratory and with the United States Transuranium and Uranium Registries at Washington State University. The phantom he prepared is now part of the International Standards Organization precision phantom collection and is used worldwide, serving as a legacy of Gary that lives on after him.

Gary was a member of the National Registry of Radiation Protection Technologies (NRRPT) since 1980. He served on the Panel of Examiners and Board of Directors for many years. Gary was awarded Fellow status in 1996 and the prestige Arthur F. Humm, Jr. Memorial Award in 2002.

He was also a member of the Health Physics Society since 1981, was certified by the American Board of Health Physics in 1988, and was a member of the American Academy of Health Physics.

Gary is survived by his wife Jody; daughter, Julie Kephart, and her husband, Alan; son, Brian Kephart, and his wife, Becca; four grandchildren; sister, Brenda Baird, and her husband, Larry; brother, Craig Kephart, and his wife, Kathy; and brother, Eric Kephart, and his wife, Melissa.



**Gary will be deeply missed**

## Gary Kephart Memoriam Addendum—from Todd Davidson, NRRPT Newsletter Editor

First, thanks to the HPS, and Ron Kathren specifically, for the memoriam for Gary. It was a very accurate depiction of his value in our profession and a wonderful reminder of what Gary meant to radiation protection.

I first met Gary shortly after becoming fully integrated into the field of radiation protection. Gary designed and presented a training session about the occupational safety within the field of radiation protection. Although I was very new to the field, Gary's approach and message was very pragmatic, as well as scientific. I recall him giving exercises to the students to allow them to work the assignments in ways that they wished. I also remember that for the presentations of the assignments, he was very practical and pragmatic about what was presented and how that may apply to our own jobs.

At many later meetings, Gary would encounter me in the hallways, exhibit hall, or meetings and would consistently speak about how the NRRPT and the HPS, as well as the ABHP should be working together on the same message. He regularly remarked that as a former RRPT practitioner, he was very interested in being listed as a practitioner again. I distinctly remember mentioning his name as being the poster child for making it easy to regain practitioner status when the Board was discussing the mechanisms.

Although I never worked with Gary as an employee, I know how much the industry has been depleted by the fact that he is no longer practicing radiation protection.

He is, and will continue to be missed.



### NRRPT Field Forum

You have questions or concerns in your daily job or in your career and you do not always have many knowledgeable persons to discuss your thoughts. As a technician, technologist, radiological engineer, manager – or whatever your title is – it may be helpful for you to get opinions, solutions, and other help from professionals in your field.

So, the NRRPT will encourage sharing by opening the NRRPT Field Forum. In this you can bring up what is important to you; questions you want answered, problems you think are ignored or unnoticed, or important developments in science, technology, or public circumstances in which you want RRPTs to voice an opinion.

The idea here is to be as open as possible. The NRRPT has a website forum for topics of interest to RRPTs. Our goal is to make this an ongoing feature in our Newsletter.

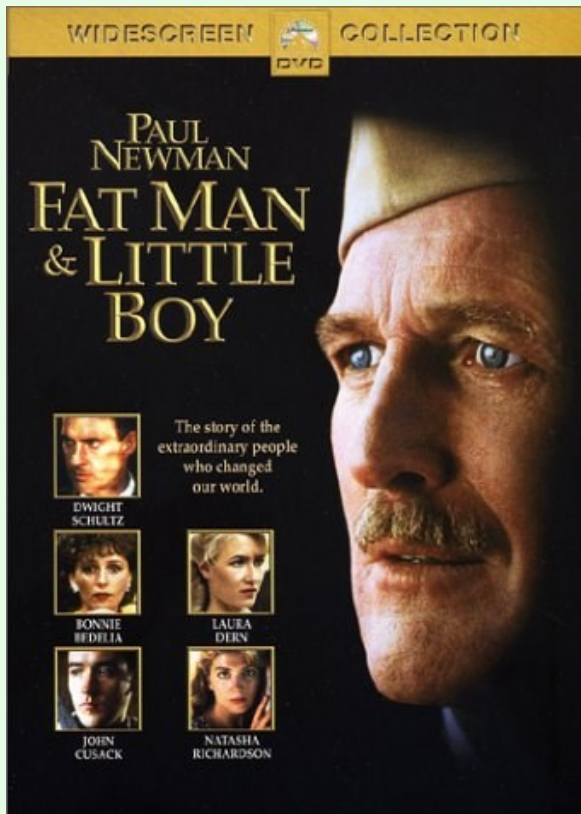
With that in mind: what is important to you that you would like to discuss in an open forum? Please respond via email or text to [nrrpt@nrrpt.org](mailto:nrrpt@nrrpt.org) or to the Newsletter editor: [t-davidson@sbcglobal.net](mailto:t-davidson@sbcglobal.net), 636-448-8633. Please include "NRRPT Field Forum" in the message line of an email or clearly list what you're writing about in a text and who the text is from. You can also keep your interactions anonymous; if you don't come up with a pseudonym, then we will.

You could win free merchandise from the NRRPT stores, so don't hesitate! If we do not hear from the registry at large, the Newsletter committee will begin the dialogue, and you all know how unoriginal we can be. We need your participation—thanks for your help!



# RAD MOVIE REVIEWS!

## PART 2 – FAT MAN AND LITTLE BOY – THE STORYLINE – WHO IS THE FATHER OF THE ATOMIC BOMB?



DVD Cover Paramount Home

I decided to tell more of the story in this installment – Fact vs. Fiction and an atomic timeline will come in later stages.

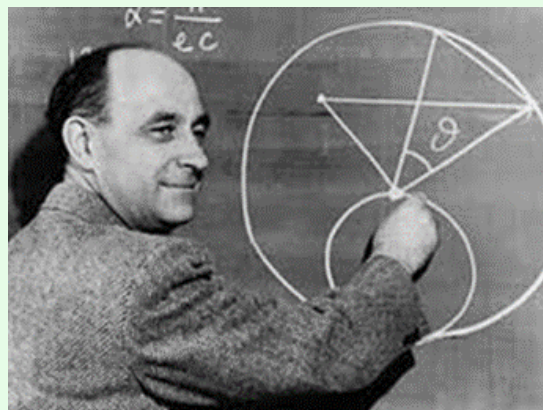
The U.S. started the Manhattan Project after Albert Einstein wrote President Roosevelt about a powerful bomb from atomic energy. In comes General Leslie Groves (the guy who built the Pentagon) to lead the project. Among the scientists were J. Robert Oppenheimer, Enrico Fermi, and Leo Szilard. But don't get fooled, Groves didn't select the scientists by himself.

The Manhattan Engineering District (formal name) was the largest secret industrial enterprise ever undertaken by the U.S. The facilities included Los Alamos, New Mexico, Oakridge, Tennessee, Hanford, Washington, and Chicago, Illinois.

According to Szilard, he came up with the idea for an atomic bomb when he lived in London. He had read a science fiction book written in 1913 by H. G. Wells: "*The World Set Free*." Wells described a weapon using "atomic disintegration" that could unleash "limitless power" and lead to worldwide nuclear war. Szilard was walking across a street London when "it suddenly occurred to me that if we could find an element which is split by neutrons and would emit two neutrons when it absorbed one neutron, such an element if assembled in sufficiently large mass, could sustain a nuclear chain reaction."



Oppenheimer



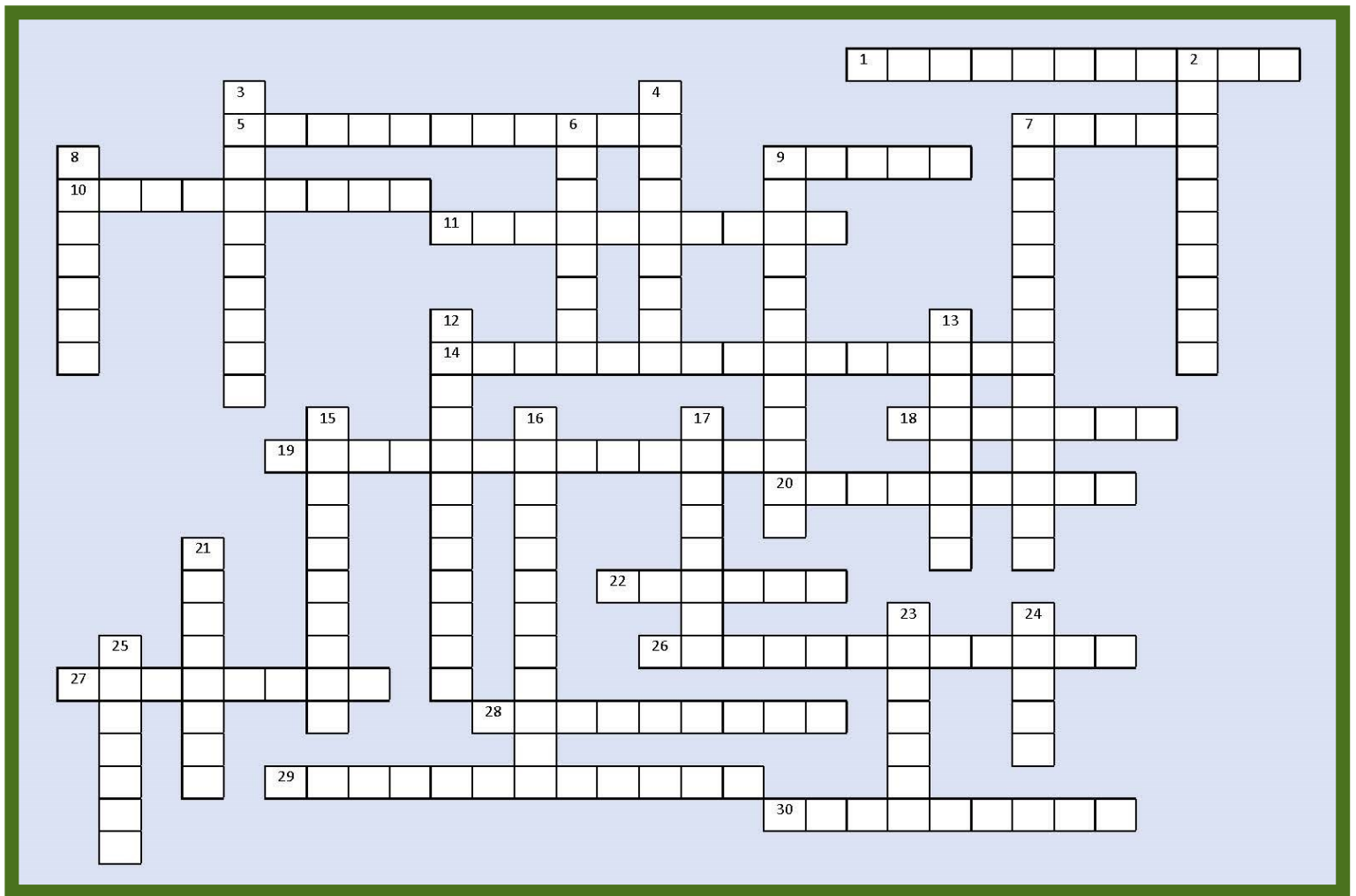
Fermi



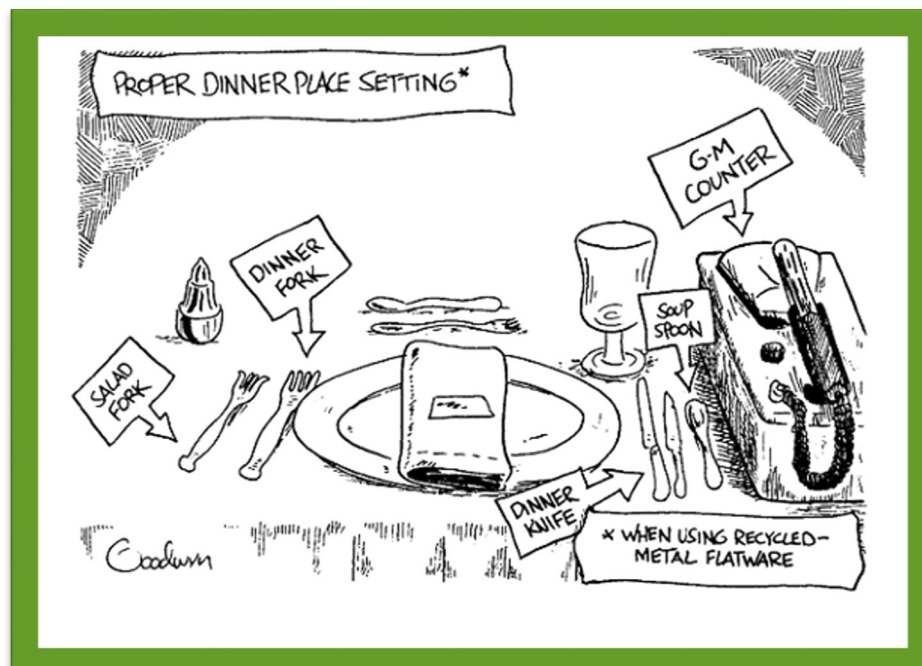
Szilard



## Do you know your Detectors and Detector Theory



Crossword Puzzle Answers on back page



## Across

1	Any measurement based on observing the radiation emitted in nuclear decay is subject to some degree of _____ fluctuation.
5	The operation of any radiation detector basically depends on the manner in which the _____ to be detected interacts with the material of the detector.
7	Helium-3 and _____ trifluoride are two gasses commonly used in neutron detectors to get reaction products from neutron interactions.
9	The three general modes of operation of radiation detectors are _____ mode, current mode, and mean square voltage mode.
10	By definition, noise is any _____ fluctuation that appears superimposed on a signal source.
11	Radiation detectors that are based on the effects produced when a charged particle passes through a gas are called _____ chambers.
14	This tube converts the extremely weak light output of a scintillation pulse into a corresponding electrical signal.
18	_____ drifted silicon detectors are a common choice for electron spectroscopy.
19	The detection of ionizing radiation by the _____ light produced in certain materials is one of the oldest techniques on record.
20	All pulses in a GM counter are the same _____ regardless of the number of original ion pairs that initiated the process.
22	The operating _____ of a gas counter is dependent upon the applied voltage within the detector.
26	A photo peak of 0.511 MeV is to be expected from the _____ photons created when a positron is stopped.
27	A widely used detector for slow _____ is a BF3 proportional tube.
28	An _____ semiconductor is a material where the number of electrons in the conduction band must exactly equal the number of holes in the valence band.
29	The average distance traveled in an absorber before an interaction takes place is the definition of _____ .
30	One application of counting statistics is to estimate the _____ of a single measurement.

2	Radiation spectra can be categorized into two main groups: line and _____ spectra.
3	The dependence of the pulse amplitude on position of interaction in electron-sensitive ion chambers can be removed with the use of a _____.
4	What element is used in a HPGe detector?
6	The first step in a PM tube is the conversion of _____ light photons into electrons.
7	When fast electrons interact in matter, part of their energy is converted into _____ radiation.
8	In 1928 Geiger & _____ introduced the a counter that is today known as a GM counter.
9	In a _____ counter, each interaction avalanche is basically independent and identical to all other interaction avalanches.
12	The modern era of gamma-ray _____ was established with the development of a thallium-doped sodium iodide scintillation crystal.
13	Detector assemblies use coaxial shielded cable to _____ pickup of noise from stray electric and electromagnetic fields.
15	The three gamma-ray interactions of any real significance are photoelectric absorption, Compton _____, and pair production.
16	The process of _____ is the prompt emission of visible radiation from a substance following its excitation by other means.
17	Germanium detectors must be cryogenically cooled. The medium typically used for this purpose is liquid _____.
21	Solid-state detectors operate using _____-hole pairs, analogous to the ion pair created in gas-filled detectors.
23	The main interaction for detecting fast neutrons is _____ scattering.
24	FWHM stands for full _____ half max.
25	For linear tail pulses, the most significant parameter besides amplitude is the rise time of the _____ edge of the pulse.



## NRRPT Night-Out in Denver, CO

**\*\*\* Thank you to our generous NRRPT  
Night-Out sponsors \*\*\***

Pictured below (left to right): Jay Tarzia (RSCS), Ken Baugh (B&B Environmental Safety), Bob Wills (GEL),  
Laura Davidson (Envirachem), Eddie Benfield (Duke Energy) and Jim Kost (Mirion)

Not Pictured: Bill Peoples (BHI Energy)

*Thank you Sponsors!*



*Night-Out / Super Bowl*







The Panel of Examiners had to meet an extra day in Denver because there is so much Panel business to do. They will also meet an extra day in Cleveland. They're a group of hard working, dedicated men and women!



# **WE WANT YOU—To Re-Member!**

## **An Article About Reclaiming NRRPT Practitioner Status**

**By Michelle Kovach**

During NRRPT's 2016 annual meeting, which took place in Spokane, Washington, the Board of Directors approved a feasible means for non-practicing registrants to become active practitioners.

The change to registration maintenance is as follows:

Active professionals now requires 20 hours (previously 40 hours) when completing the registration maintenance worksheet for the previous five years,

or

Retaking and passing the NRRPT exam (previously the only means to become an active practitioner when registration maintenance was not maintained),

and

RRPT may become current on dues by paying all back dues owed up to a maximum of five years at the current annual dues rate.

Benefits of practitioner status are as follows:

- Nationally (and Canada) recognized as an industry benchmark of individual competency for commercial power, medical industry, universities, and state and government fields in radiation protection.
- Many entities waive NRRPT practitioners from taking pre-employment exams.
- Most employers recognize the importance of having employees that are RRPTs by providing monetary incentives (hourly rate increase and/or bonuses).
- NRRPT maintains certification with the American College of Education (ACE). This provides up to 35 CEUs for practitioners to use toward education in science and health physics based degrees.
- Employers seek employees that are active practitioners over those that are not. (Yes, employers do check the registry or call NRRPT's secretary to verify practitioner status.)
- Many employers weigh a portion of employee radiation protection based promotions on whether or not an employee is an active practitioner.
- Passing the NRRPT test prepares those practitioners desiring to take part one of the exam administered by the American Board of Health Physics (ABHP).
- Practitioners have access to the member's portions of [www.NRRPT.org](http://www.NRRPT.org) where they are able to access NRRPT's Handbook, newsletters, job postings, scholarships, and many other "members only" portions of the website.

What are you waiting for? With the multitude of benefits and the minimum requirements to becoming active, you have nothing to lose. And, many employers pay NRRPT membership dues.

**RE-MEMBER WE WANT YOU BACK!**





B & B Environmental Safety, inc. (BBES) is a minority-owned, CVE-Certified Service-Disabled Veteran-Owned Small Business (SDVOSB) that provides a wide array of environmental services. BBES is headquartered in the Central Valley of Northern California. BBES was founded in 2005 as an environmental consulting company, specializing in radiological services. Since its inception, BBES became incorporated in 2007 and has expanded to have a regional office located in the Denver, Colorado Metro Area as well as numerous satellite offices. BBES offers its services throughout the entire United States and its territories. In addition to having an active California State Radioactive Materials License, BBES also maintains a Nuclear Regulatory Commission Broad-Scope Radioactive Materials License. When necessary and permissible, BBES will enact our NRC license to commence operations while any State-required RML issuance is pending.

More than just being a SDVOSB, BBES believes in the commitment to excellence demonstrated by those who currently or have previously served in the US Armed Forces. With most of BBES' employees being either Veterans or family members of Veterans, Trained First Responders, or other emergency service personnel, the corporate culture has evolved to that of a dedicated service organization that strives for excellence. BBES also continually looks for self-motivated, like-minded individuals who will commit to being an asset to the company.



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Randall Baugh  
B & B Environmental Safety, Inc.  
Corporate Marketer  
710 Kipling St.  
Suite 105  
Lakewood, CO 80215  
(720) 550-8443  
[randall@bbensafety.com](mailto:randall@bbensafety.com)  
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*(\*Please reference NRRPT when sending in your resume)*



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At Envirachem we provide our clients with the best services available. Our philosophy is that if we can't provide you with the best, then we'll find someone who can. For that reason we provide comprehensive training and professional development programs to our employees. This allows Envirachem personnel to quickly respond to a variety of operational situations with informed and decisive action.

We provide a full complement of services but if you require a service not found on our site, or require additional information, please email us at [sales@envirachem.com](mailto:sales@envirachem.com)

## GRIFFOLYN®: CONTAINMENT SYSTEMS FOR OUTAGE, MAINTENANCE & CONSTRUCTION PROTECTION

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Griffolyn® can be produced with specialized properties including fire retardancy and low contamination for safety applications around critical materials or work areas. Performance features such as corrosion inhibition and anti-static properties are also available for sensitive equipment. Products range in weight, thickness and special composites, and are ideal for:

- Floor covers
- Custom box liners
- Containment enclosures
- Bags
- Tubing
- Outdoor/Indoor storage
- Shipping covers for contaminated equipment
- Secondary containment systems
- Decontamination pads
- Underslab vapor retarders for critical applications
- Feed water heaters/rotor covers
- Soft-sided packaging for surface contaminated objects
- FME barriers

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## San Onofre Nuclear Generating Station



For more than 40 years, SONGS generated power for Southern California – in fact, units 2 and 3 were capable of generating 2,200 megawatts of electricity, enough power to serve 1.4 million average homes at any point in time. SCE announced in June 2013 that Units 2 and 3 will be permanently retired. Unit 1 was retired in 1992.

SCE is committed to a safe and timely decommissioning of the San Onofre nuclear plant that protects the environment and our customers' economic interests. SCE established a set of guiding principles focused on safety, stewardship and engagement that will guide the successful decommissioning of SONGS and can make San Onofre a model for the industry.

SONGS is proud of its' continued dedication of registered RRPT members that are represented in various organizations across the station.



# McMaster Nuclear Reactor

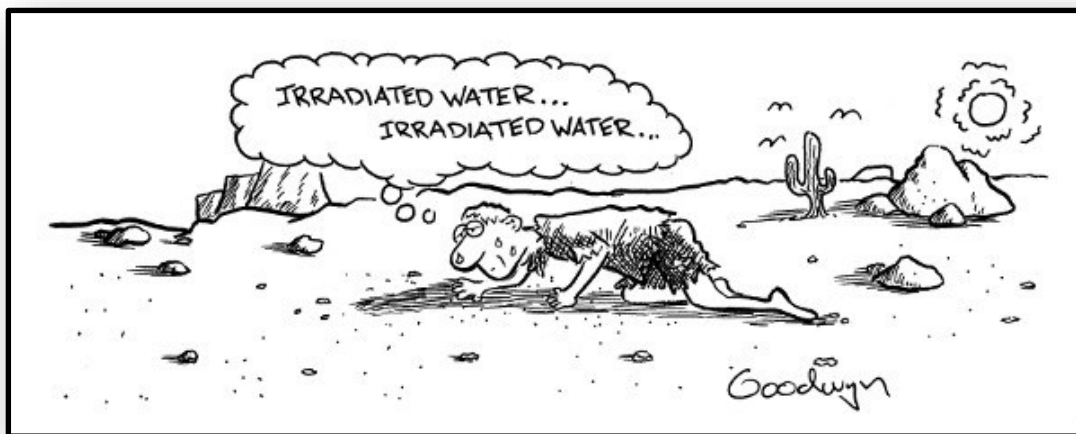


The McMaster Nuclear Reactor (MNR) first became operational in 1959 and was the first university-based research reactor in the British Commonwealth. Originally designed to operate at a maximum power of 1 MW, MNR was upgraded during the 1970s to its current rating of 5 MW with a maximum thermal neutron flux of  $1 \times 10^{14}$  neutrons/cm<sup>2</sup>s. MNR is classified as a medium flux reactor and it is by far the most powerful research reactor at a Canadian university – the handful of so-called “Slowpoke” reactors at other institutions typically operate at a power of 0.02 MW.

**Services Provided:** Assay Equipment and Services, Uranium; Irradiation Services; Laboratories, Chemical; Neutron Activation Analysis Services; Neutron Radiography; Radiochemicals; Radioisotopes; Research and Development

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Hamilton, Ontario L8S 4K1

jacks@mcmaster.ca  
<http://mnr.mcmaster.ca>



If you'd like to join the Panel of Examiners please contact one of the following:

Exam Panel Chairman—Dave Wirkus—[wirkdl@cableone.net](mailto:wirkdl@cableone.net)

Executive Secretary—DeeDee McNeill DeGrooth—[nrrpt@nrrpt.org](mailto:nrrpt@nrrpt.org)

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Detroit Edison operates the Fermi 2 Nuclear Power Plant located in Monroe, MI along the shores of Lake Erie. Fermi is a 1200 MW power plant supplying electricity to the metropolitan Detroit area.



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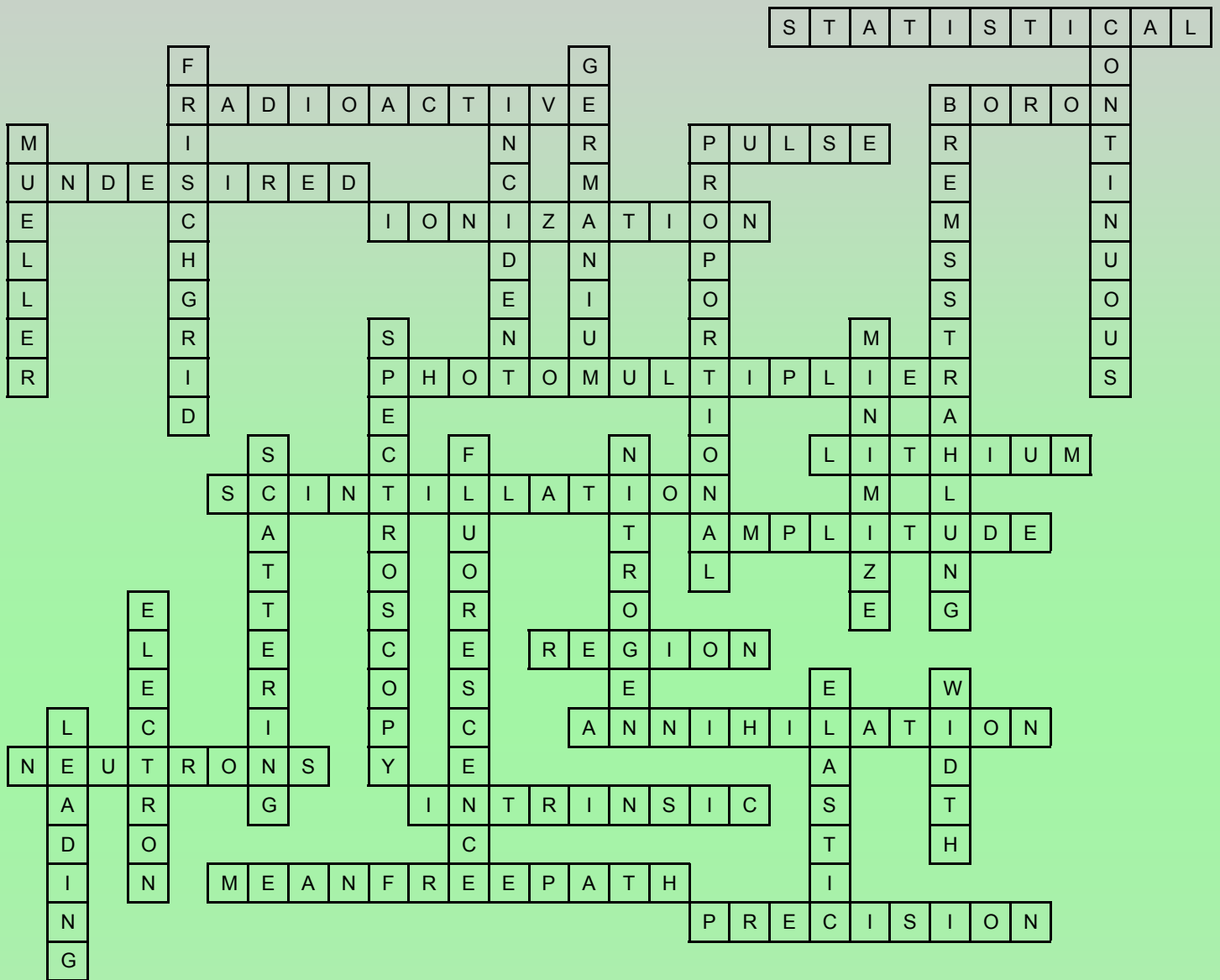
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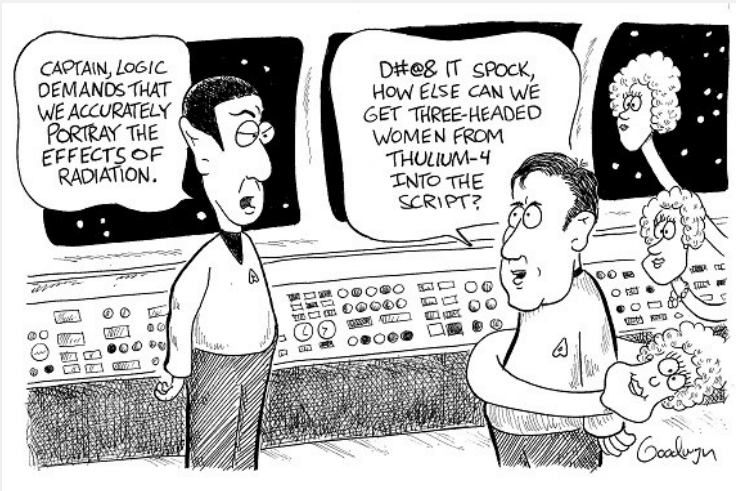
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New Address: \_\_\_\_\_

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