



The

NRRPT NEWS

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

May 2024

Incorporated April 12, 1976

Chairman's Message



Chairman Danny McClung

Greetings fellow RRPTs!

Spring is a time for change!

Fellow RRPTs; welcome to another edition of the NRRPT newsletter. We are well into spring all over Canada and the United States. Here in Florida, I think it may be summer already. As Mark Twain said, "In the spring, I have counted 136 different kinds of weather inside of 24 hours." I'm sure many of you have experienced both beautiful and wild spring weather already this year. It's thundering outside as I write this. Wild weather indeed!

Let's welcome the 35 new RRPTs who passed the February 2024 USA exam and 2 new RRPTs who passed the December 19, 2023 Canadian exam. I encourage each one of you, both old and new to the NRRPT, to become involved. NRRPT is YOUR organization. We only exist to serve you. Anyone who wishes to become part of the Exam Panel, please contact me or our Executive Secretary, DeeDee McNeill, and we will get you set up. We need a diversity of individuals, geographic locations, and work experiences. This diversity is a big part of the exam's American Council on Education (ACE) accreditation. I don't know about you, but I used the credits earned from the NRRPT exam to finish my bachelor's degree.

Speaking of the Exam Panel, Karen Barcal has taken over the reins as Chairman of the Panel of Examiners. Karen is one of the most knowledgeable members of the Panel. She knows the workings of our exam process inside and out and has been instrumental in bringing that process into the present day. There will be more news on the updated exam process soon.

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**IRPA 16
69th HPS Annual
Meeting
July 7-12, 2024**

[https://burkclients.com/
IRPA/2024/site/index.html](https://burkclients.com/IRPA/2024/site/index.html)

I want to tell you that it is a great privilege to have been elected NRRPT Chairman by the Board of Directors at the summer meeting last year. My term began at the beginning of this year, and I was fortunate to Chair my first meeting in Key West this past January. We had a great turnout of Board and Panel members. Key West seems to bring out the best in our group, especially for those traveling from cold wintry locations. A lot of work was accomplished, and fun was had by all. There are some pictures from the NRRPT night out in this edition. I also want to thank Rick Rasmussen, our most recent Chairman, for his welcome to me and for helping make the transition go smoothly. Thanks, Rick!

I suppose I should share a bit about myself for those of you who do not know me. I was trained as a Health Physics (HP) Technician in the US Army. I had interesting assignments: hospital health physics at Walter Reed Army Medical Center, HP instructor at the Academy of Health Sciences in San Antonio, TX, radioactive waste compliance official at the Nevada Test Site for the Defense Nuclear Agency, Senior Reactor Operator, and panoramic Co-60 irradiation facility operator at Armed Forces Radiobiology Research Institute. I finished up my military time as the First Sergeant of the 133rd Medical Detachment in Hanau, Germany. After the service, I spent time in the medical arena again (Walter Reed and the National Institutes of Health), HP at the National Institute of Standards and Technology (NIST) Center for Neutron Research, and as Assistant Radiation Safety Officer (RSO) at the University of Louisville (Go Cards!). I've been working for the Veterans Health Administration (in Washington, DC) for almost 15 years now as the radiological consultant for the central program office now known as Health Outcomes of Military Exposures. Lots to do there as it relates to US Veterans. Thank you for your service fellow Vets!

I will close this message with the Chairman's agenda presented to the Board and Panel in Key West.

1. Go live with the online NRRPT exam. We are close to this happening now. Beta testing is underway. Karen Barcal is leading the way in this effort. Also, thanks to Scott Engemann, Dave Wirkus, and Dave Biela for applying their expert knowledge of the exam process to make this a reality.

2. Re-start work on an international exam. We made some headway on this several years ago but now is the time to re-invigorate this initiative. We had contacts in South Africa and the UAE that were interested in a "certification exam" for their personnel. With the growing interest in nuclear power worldwide, NRRPT should explore the avenues for global cooperation and growth. The HPS/NRRPT/International Radiation Protection Association (IRPA) meeting in Orlando this coming July will be a good time for us to get the message out.

3. Continue promoting radiation protection as a great opportunity for work. We all know this, but does the rest of the world? It's becoming harder for employers to find qualified personnel to work. In addition to providing a benchmark for Radiation Protection Technologist (RPT) knowledge, our Academic Expansion and Reach Out committee is doing all it can to promote our line of work and encourage more people to join us in this field. We welcome your ideas and will listen to what you have to say about the future of the NRRPT.

Until next time,

Danny McClung

NRRPT Chairman of the Board



Artificial Intelligence

by Michelle Kovach

The Oxford Dictionary defines artificial intelligence as “the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages”.

The launch of Chat Generative Pre-Trained Transformer (ChatGPT) took the portions of the artificial intelligence theory and made them reality. This can cause integrity issues when used in radiation protection.

The National Registry of Radiation Protection Technologists (NRRPT) prides itself in its credibility within the radiation protection industry. At this time, NRRPT will not use artificial intelligence platforms (for exam questions, within our committees, or for newsletter input).

A special issue of the Health Physics Journal is targeted for a winter 2025 release. This special issue will target artificial intelligence. Mike Mahathy and Dr. Shaheen Dewji will be co-editors and will highlight uses and research of artificial intelligence as it applies to radiation protection. Once this journal is published, NRRPT will reevaluate their stance on artificial intelligence.

Welcome New NRRPT Members

Congratulations to the following individuals who successfully passed the Canadian
NRRPT Examination on December 19, 2023:

Chris Asselin
Bradley Bolger

Congratulations to the following individuals who successfully passed the USA
NRRPT Examination on February 24, 2024:

Michael Albanese
Jason Ashbocker
Austin Bailey
Amber Bolen
Keith Chartier
Liyen Chen
Keyna Collingham
Karah Dann
Mark Ellis
Angiolo Ferrigno
Kent Fisher
Keith Gilbert

James Gouldthorpe
Timothy Higginson
Matthew Hill
Shiloh Johnson
Veronica Kerl
Daniel Koerner
Douglas Mallory
Zachary Matthews
Alissa Moore
Tatiana Nasierowski
Justin Nichols
Jason Olsen

Aaron Otterstein
Bal Parajuli
Sam Paterniti
Michael Peck
Brock Robison
John Roemer
Christopher Sanchez
Daniel Schoen
Michael Stanfield
Matthew Vaughan
Colby Watt

Beefing up the Radiation Protection Workforce

by Christopher Royce

Dwindling Radiation Protection staffing is an issue, and I'd like to interject my voice. I want to thank the National Registry of Radiation Protection Technologists (NRRPT), for allowing me to provide my input.

My name is Christopher Royce, and I am a Health Physicist. My background is broad, but my roots in the field are in the US Navy. I was an engineering laboratory technician in the Navy and there I cut my teeth as a radioactive pool man. Like many of you, I've observed fewer and fewer people getting into our field as time has gone by. Due to my broad background, I've had the opportunity to see this happen in more than just one industry, and have been able to observe some of the trends that lend themselves to the reduction of staff. It has been my observation that the reduction in force is not due to a lack of humans desiring to work in the field. We have failed to make the work opportunities available for new and incoming staff and encourage interest in the field.

We are in a period of transition in our field. We hope for more reactor projects such as the boom of Small Modular Reactors, and we are seeing the beginning of the decommissioning field growing as the Zion Nuclear Power Plant is released for unrestricted use. National Laboratories and Environmental Clean-ups are attempting to increase work as well.

The demand for radiation protection professionals, at both the technician and health physicist levels, has increased in the medical field as well. Radiation-generating devices and radioisotopes being used for diagnostics and treatments have increased. We work with radiation in a gambit of industries, nuclear power, environmental cleanups, research laboratories, hospitals, and the oil field to name a few. In each field, our work force is aging, and the number of new

radiation protection professionals has not kept up with the attrition. We are at a subcritical level and losing steam.

Not to berate the point, but I think we all agree we are not seeing the oncoming staff we need for the field. The causes can be vast. I can rant about policies and practices that brought us here. I try to be pragmatic. I would like to bring up some changes we can make that I believe will start to move us in the right direction. I am sure these ideas will let you make solid guesses as to what policies and practices I blame for our current state.

I teach at the Columbia Basin College where we have a radiation protection curriculum in the two-year non-licensed Nuclear Operator program. I see between 8 to 15 students in my class a year. Our students are required to have an internship or write a project report to graduate. Most years I see about 25% of the students write a report because they were not able to secure an internship. I do have two students this year who are under 18, taking running start college classes, and are too young to work at most facilities. I just want to brag about those young people that are taking initiative and I do not add them to the 25% mix.

In my neck of the woods, we have a commercial nuclear power plant, a 580 square-mile environmental clean-up site, a commercial nuclear fuel fabricator, a national laboratory, two radioisotope manufacturing facilities, a low-level radioactive waste disposal site, a radioactive waste broker and processor, a couple of large hospital systems, a couple of universities, more health physics consulting companies than I would like, and multiple state, local, and federal agencies performing oversight of all the aforementioned organizations. There is no reason a student, paying

tuition out of pocket or through grant money, should not be able to get an internship in the field. We need to do a better job of getting people opportunities that show evident desire to be in the field by taking classes. We do not want Radiation Protection related degrees to become another empty degree path.

Once we make space for these people with internships, we need to actively help their long-term hiring. I recognize the desire for experienced staff. I recognize the reduction in training costs, the increased safety, and efficiency. I also recognize that when I did not teach someone else in the house to fish, I have to go buy questionable catfish in the freezer section of the supermarket when I twist my ankle and cannot walk out to fish. We have come to rely on and demand radiation protection staff that have at least 15 years of experience. We are not making space for persons with no experience or even less than five years' experience to secure meaningful jobs and begin knowledge transfer from our senior staff. In my current job, I have the opportunity to talk to hiring managers of radiation protection staff regularly. I have heard many managers complain that many of their current staff have less than two years of experience. I understand the difficulty this poses, but I think this is a great catalyst moment. If we had been hiring staff with less than two years of experience over the last 20 years, we may have a better mix of generations in the workforce.

We continue to increase and standardize requirements on technicians with benchmarking standards such as ANSI 3.1, EPRI AP3/STE qualifications, and the DOE Core. We also rely on Navy nukes to staff the field. These items do help to ensure a minimum level of meaningful knowledge. Either through experience, training, or a combination of the two. We need to make sure we are also not screening out new entrants. I have seen many people looking to enter the field struggle because they do not have the two years of experience needed to get on board. We need to come up with a flow path for people with no experience

looking to enter the field. It needs to include more than decontamination work at outages for people that "know a guy".

To this effect, stop trying to hire only Navy nukes as entry-level candidates. Be prepared to train some students coming from two-year collegiate programs, or even some of the 6-month technical programs. The Navy nuke pipeline is awesome. I get it, I benefit from the gold standard of the radiation technician programs. Every job I have gotten since I left the Navy was due to my naval nuclear propulsion experience. No one thinks twice when I tell them Homer Simpson's job as the safety inspector in sector 7G was the inspiration for my nuclear career. Even the non-radiation-related jobs enjoyed my Navy experience. I worked in quality control in the oil field and industrial manufacturing. In those jobs, my Navy nuclear attention to detail was my passport to fly. Other industries have begun to covet those and other aspects of the Navy nuclear worker. Many data centers are hiring Navy nuclear alum for their energy production and transmission experience, procedural compliance, and ability to get security clearances. The Navy nuclear pipeline is starting to become a trickle in our hiring pool.

To shift some onus from the employers, we as practitioners need to be actively moving our way up to make room for new staff. We need to take on proteges whenever we can. Formal or informal. We need to help encourage our managers, unions, and colleagues to take on a newcomer to the industry any chance we can. We also need to avoid jobs ourselves, that can be done by persons that could benefit from the experience. Whether you take a junior person with you to train whenever you can, or you avoid pursuing roles juniors could do. If you are lucky to be nearing retirement, consider working with your employer to slowly transition while assisting a new person to learn the field. I worked for the Environmental Protection Agency (EPA) for a time, and the EPA maintained a program that gave me a lot of hope, but I never saw it

utilized. If you were near your federal retirement, and willing, the EPA would allow you to slowly reduce your hours over years while simultaneously hiring an entry professional for you to train as your replacement. Most commercial facilities will not allow this additional expense and burden on overhead. It was exciting for the federal government to have a thoughtful knowledge transfer policy.

Encourage public outreach about our field. One of the big drivers to our low numbers is public perception and lack of awareness. Locally, people are aware of some radiation protection jobs. Most of my students only know commercial power and the 580-square-mile remediation site in town. Few of my students had awareness about the other operations in town or considered their radiation protection needs. This is a visibility issue. It is negativity many collectively have from the advent of our industry and dodging years of undesirable press. I have worked at nuclear and radiation facilities where we actively worked to remain unknown to the community as being in the field. No news is good news. This quiet service attitude has caused children and their parents not to think of our industry when considering vocations. My brother asked me why I encouraged my niece, unsuccessfully, to enter the field. He reminded me I complained about power plants that will not be renewing licenses and the 17 new license applications in 2011 that came to a screeching halt following the Fukushima Daiichi event. I have never worked directly for a commercial power plant but that was what he knew of the field.

We can visit schools, go to science fairs, give demonstrations of cloud chambers and consumer product "show and tells". I have gone into classrooms and just talked about pay scales for different fields of radiation work. We all need to proudly talk about the benefits and longevity of our field to young people, even before they reach college. I want to hear about a kid dressing up in a chicken suit (yellow anti-Cs with orange gloves and orange rubber overshoes) for career day!

Let us all work together to provide solutions to the radiological professional shortage. I hear so many people talk about the wave that is coming. It takes all of us rolling up our sleeves and not throwing up our hands. Ask yourself if you can do more to encourage your employer to hire a non or less-experienced worker. Work with your employer and unions to reach out to the community through high school programs. Find someone to mentor in a college or university who is curious about the field.

As radiation protection professionals, our career roles are specialized. We need to work to grow those special talents into future generations. The radiation protection field is not going away. Our society depends on nuclear power, medical isotopes, radiography, and other peaceful uses of radiation to function at a high caliber. Environmental cleanup sites need to be successful for the health of our communities.

Thank you for reading this and do not hesitate to reach out for help with any of your endeavors to grow the industry.

Christopher Royce, NRRPT, CHP

VP Services, Advetage Solutions

<https://www.irpa.net/page.asp?id=54831>

<https://www.ans.org/news/article-5521/nrc-releases-decommissioned-zion-site-for-unrestricted-use/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9028287/>

Is That Thing Radioactive and How Was it Used

by Michelle Kovach and Alden Ryno

While proctoring an NRRPT exam at the Richland, Washington, NV5 office, an eye-catching collection was noticed. This sizable grouping contained Vaseline glass, Uranium glass, Fenton glass, Radium dial clocks, Fiesta Dinnerware, a Radium ore Reviator, and many other former consumer products that are radioactive. Uranium glass and paints were and are prized for their vibrant colors.

One of the more unique items was a paperweight. It was a replica of a 1926 Pontiac Native American hood ornament radiator cap. (Note: Chief Pontiac inspired the name of the town of Pontiac, Michigan. He also inspired over 40 mascots for different commercial brands.) The Guernsey Pontiac Radiator Cap paperweight was manufactured in a variety of colors, one being Uranium glass. These replicas were novelty items created in the 1980s for collectors. They can fetch well over \$100 if in good condition.

Uranium glass can contain between 2% to 25% Uranium by weight. While Uranium has been added to glass products since the early 1900s, its addition was banned during the Manhattan Project in 1942. The ban was lifted in 1958, though the prevalence of use sharply declined until the end of the Cold War (1991).

Uranium glass is radioactive. Pieces may register slightly above background to a few thousand counts per minute (cpm) when using a Geiger-Müller (GM) detector. Natural uranium contains U-238, U-235, and U-234. Due to radioactive decay, uranium glass also contains isotopes such as Th-231, Th-234, and Pa-234m. The gamma rays emitted primarily come from Th-234 and U-234. Since the levels are low, the external exposure hazard is negligible. While intact items are not known to leach radioactivity, its use in commercial products has ceased. Even broken items containing Uranium are not known to be an internal exposure hazard.

Searching for Uranium glass treasures (like the 1926 Pontiac Radiator Cap paperweight) at flea markets, garage sales, and antique malls can be exciting! When searching, be sure to bring a blacklight (UV) and shine it on your new find; it will glow due to fluorescence. There are other glass items marketed to look like

Uranium glass but does not give off the same vibrant glow and a lack of fluorescence is a dead giveaway that it's not Uranium. An even better way to verify your item is Uranium glass is to carry a GM around with you to these places (you can get a low-cost one from eBay) and check for the crackling sound or observe the needle deflection when placing the detector on your find. But you might want to lower the sound so as not to alarm other customers.



Guernsey Pontiac Radiator Cap Paperweight (front view)



Guernsey Pontiac Radiator Cap Paperweight (side view)



Guernsey Pontiac Radiator Cap Paperweight (left front)

Partial Collection at the NV5 Office in
Richland, WA



Exam Achievement Award

By Kelli Gallion-Sholler, Awards Committee Chairman

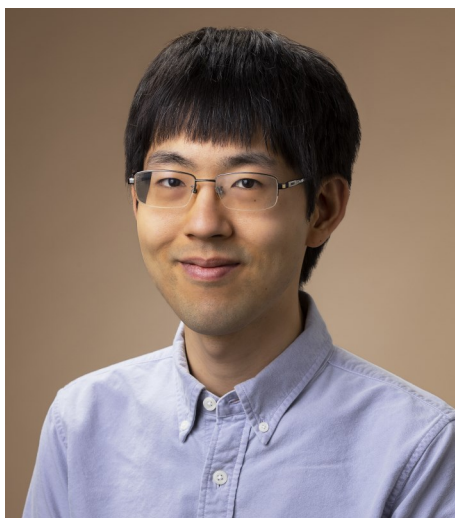
The **NRRT** Exam Achievement Award is given to the individual with the highest score on each scheduled **NRRT** examination for becoming a Registered Radiation Protection Technologist. In addition to a letter of recognition, the individual receives a complimentary “high scorer” membership plaque and is featured in an article in the **NRRT** Newsletter. It is a great accomplishment to pass the exam and even a greater feat to achieve the highest score.

Congratulations to our high scorers!

High Scorer—February 25, 2023

Examination

Jiefu Yin



“I am a radiation safety specialist overseeing Cornell University’s radiation and laser safety program. Being certified as a RRPT is a great achievement for myself and our programs. I prepared for the NRRT exam concurrently with the first part of the CHP exam. Starting in December 2022 I spent at least 20 hours a week on study until I took the exam in February 2023. I reviewed *Introduction to Health Physics 5th Edition*, *Basic Radiation Protection Technology 5th Edition*, the regulations (such as the *10CFRs*, *NUREGs*), and reports (*ICRPs*, *NCRPs*). I found the DATAHEM question base especially helpful as you can practice your knowledge and do mock tests. My scientific background and working experience also play an important role, we have a diversified radiation safety program that covers almost all subject areas of health physics. I suggest that candidates make their efforts to learn a wide range of knowledge in their work and understand how things work. Learning and practice are equally important in preparing for the exam, so study hard and practice as much as you can.”

High Scorer—August 12, 2023

Examination

Gerald Godwin



I received my master’s in health physics from Illinois Institute of Technology in May 2022. That’s probably the main thing that prepped me for the exam. Outside of that, I studied the *Problem Solving in Preparation for the NRRT Exam* book and made sure that I could do all the problems in it.

I’m currently a Health Physicist for the National Institutes of Health, where I’ve been going on 2 years now. Before that, I worked as a U.S. Army civilian where I was a radiographer and Authorized User of a Cf-252 source to assess possible recovered chemical warfare material.

High Scorer—December 19, 2023 Examination

Brad Bolger



My parents took me on a plant tour when I was 5 and it has been my interest ever since

"I am currently employed as a Radiation Protection Technician for Ontario Power Generation in Ontario, Canada. I've worked at various sites in Canada where I've been able to apply my NRRPT study materials in real world settings. With the designation, I have benchmarked my RP skill set and it has opened opportunities for career advancement into more specialized roles.

I committed the better part of 6 months of studying after work and learning the broad concepts of the curriculum. I prepared for the NRRPT exam with the help of Thomas E. Johnson and Francis E. Tourneur. Their 3 month course administered 3 lectures per week that gave us the opportunity to thoroughly learn knowledge objectives and test us along the way. In addition to the course, I built in 5-10 hrs/week to practice course material that I needed more pay attention on. I found that committing to a little bit of studying over longer time was the trick for me!"

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

Exam Panel Chairman—Karen Barcal—kbporch928@sprintmail.com

Executive Secretary—DeeDee McNeill—nrrpt@nrrpt.org

NRRPT Night-Out in Key West, FL

January 28, 2024

*** Thank you to our generous NRRPT
Night-Out sponsors — Ameriphysics and RSI-Envirachem ***



Todd Davidson (RSI-Envirachem) and Tom Hansen (Ameriphysics)



KEY WEST



Left to Right: Gary & Abby Hansen and Wes Gamett



Left to Right: Laura & Todd Davidson,
Chairman Danny McClung and Tom Hansen

Night-Out Group Photos



Back to Business!!

Exam Panel (and Board members) hard at work



RAD MOVIE REVIEWS!



(movie poster)

Suffice it to say, our news crew finds unforgiveable safety concerns (coolant pump leaks). The plant can't take another scram without going through the syndrome. The plant is brought up to power, the crazy operator grabs a gun and takes control while on TV. The plant scrams when the company takes back control. Yep, you guessed it – major damage but a china syndrome narrowly averted by automated safety systems.

If you can believe it, this turkey of a movie won awards, and Jack Lemon got a best actor nod out of the Cannes Film Festival.

Movie Reviews UK reported that this move was so accurate; it could easily be a documentary. Well, I happen to know what really happens at a china syndrome.

The late Peter Darnell, RRPT, CHP, amateur movie critic

Drum roll please... And the runner-up to the best nuclear comedy goes to... The China Syndrome (1979)! You know there's real laughs when Jane Fonda and Michael Douglas hook up!

Best line of all time:

the China Syndrome would render "an area the size of Pennsylvania" permanently uninhabitable

In the movie, our intrepid reporting team visits the local nuclear power plant in search of safety violations. They meet the crazy operator (Jack Lemon) and the plot turns toward "the china syndrome" after an unusual vibration shakes the control room.

Yep, a film crew in the control room. Yep, "please don't film here." Yep, film anyway and capture the vibration. Yep, show the film to an expert and voila! The plant has narrowly escaped a china syndrome where the reactor melts down and the slag reaches the groundwater. Yep, you guessed it – radioactive steam killing everyone and everything.

Oh the humanity! Oh the horror! Oh, the timing of this movie! Released just 2 weeks before Three Mile Island.



(video screen grab)



(video screen grab)

25 Years + as an NRRPT

The following members were registered 1993

ALEXANDER, MICHAEL I.	BOYD, JR., WILLIAM E.	CROWDER, JR., THOMAS R.	FLOYD, WILLIAM H.
ALLAN, JAMES	BRADLEY, PAUL M.	CULP, CHARLES D.	FOSTER, DOUGLAS W.
ALLEN, C. EDMOND	BRADLEY, STEVEN R.	CURTIS, MARK H.	FOSTER, JAMES A.
ALLEN, PAUL M.	BRAVO, ADA M.	DAGGETT, ERIC L.	FOWLER, RANDY M.
ALLOR, KENNETH J.	BREEDEN, JAMES B.	DAMSCHEN, JR., GERALD A.	FOX, ERIC L.
ANAGNOSTOPOULOS,	BRENNER, CARL A.	DAVILA, JR., RAMON	FOY, RAYMOND
HAROLD W.	BRENNER, CARL A.	DAVIS, LISA A.	FRANCZAK, W. MICHAEL
ANCARROW, WILLIAM F.	BREVIG, CHRIS K.	DECENSI, ROBERT J.	FUSARO, RALPH
ANDERSON, KURT R.	BRONSON, FORREST J.	DEGASPERI, MICHAEL G.	GADBURY, DONALD CASEY
ANDERSON, RICHARD L.	BROWN, FRANKLIN C.	DEKRAFFT, JAMES A.	GASS, ROY H.
ANDREWS, DAVID W.	BROWN, GERALD E.	DEMPSEY, DOUGLAS	GAUSE, LEE B.
BACQUET, JAMES L.	BUCK, JEAN A.	DENEEN, JR., THOMAS L.	GEORGE, GERALD L., CHP
BAKER, STANLEY F.	BUFALO, RICHARD N.	DENNY, BYRON J.	GEROVAC, LARRY S.
BALL, MICHAEL A.	BUNDY, KENNETH R.	DETCHEMENDY, THOMAS F.	GHANTT, EDWARD W.
BARBER, WILLIAM G.	BURDA, PAMELA A.	DETRICK, MARK F.	GIDDING, RUSSELL S.
BARMORE, RICHARD E.	BURNHAM, VANCE S.	DILANDRO, ERIC W.	GILLIAM, BOB J.
BARNUM, ROCKY	BURTON, GARY A.	DODGEN, CHRISTOPHER D.	GILLIAM, RON D.
BARRON, DAVID A.	BUSCH, TONY W.	DONAHUE, MARY E.	GODLEWSKI, SHERRY
BARRY, LORI K.	BYRD, GEORGE E.	DOSKEY, CONRAD A.	GONZALEZ, RON R.
BARTON, CLARK B.	BYRNE, KELLY	DRAGOSLJVICH, KIRSI	GOOD, RICHARD M.
BARTON, KIM L.	CALDWELL, ARTHUR L.	RUOKOKOSKI R	GOODE, KIMBERLY R.
BASEHORE, STEPHEN P.	CALERO, NESTOR	DUFFEY, DAVID W.	GOOSNEY, CAROLE A.
BASS, JARRETT B.	CAMPBELL, WILLIAM	DUNIVAN, MARVIN E.	GORDIE, RICHARD M.
BEAVERS, MICHAEL G.	CAMPBELL, WILLIAM B.	DURKEE, DAVID J.	GORTON, STEVEN A.
BECKHAM, ROBERT E.	CATHCART, WALTER R.	DYE, JOHNNIE B.	GOUDEAU, JEFFREY R.
BEELER, GEORGE E.	CEGLIO, DOMINICK	EATON, TRACY D.	GRANT, PATRICK V.
BELL, JOHN W.	CHANCE, APRIL C.	EDMONDS, JACQUELIN G.	GRATZLE, JOHN J.
BENDER, JOHN A.	CHRISTENSEN, DAVID C.	ELLARS, CHARLES E., CHP	GRATZLE, PAUL K.
BENJAMIN, KEITH A.	CHRISTOPHERSON, PATRICIA E.	ELLIOTT, MARCY A.	GRIFFITH, CHERIE L.
BENJAMIN, MICHAEL J.	CLAYTON, SHEILA G.	ELLIS, KELLY D.	GROSS, JEFFREY J.
BENSON, MICHAEL A.	CLEMENTS, JR., JERRY H.	ENGLAND, DARREN MARK	GROVES, DANIEL C.
BERRY, CLIFFORD A.	COLEMAN, MOSES	ERWIN, DONALD W.	GRUSE, STEVE A.
BESANSON, DAVID M.	COLLING, MARK S.	EVANS, DANIEL J.	GUMNICK, JOHN T.
BIVINS, STEVEN R.	COLLINS, DAVID M.	EVANS, JR., ROBERT B.	HALCOMB, JOHN W.
BLACK, NEIL C.	COLLINS, JOSEPH F.	FANNING, MICHAEL , CHP	HALE, HOWARD S.
BOHACHEFF, JOHN A.	COLLINS, MARK A.	FARRAR, MITCHELL T.	HALL, CHARLES R.
BOPPRE, BRIAN W.	CONEJO, DANIEL	FAULKENBERRY, III, WILLIAM T.	HALL, LINDA L.
BOSS, DONALD R.	CORDRAY, KEVIN	FENTON, STUART L.	HALL, LYTHIA JOY
BOURASSA, JOSEPH F.	CRAIG, DENISE L.	FERGUSON, MATTHEW A.	HALLGREN, JAMES R.
BOWDEN, KIMBERLY Y.	CREASEY, SCOTT L.	FERGUSON, TOD D.	HALTER, MICHAEL F.
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**Please contact the Executive Secretary if you have a
“Greater than 25 Years as an RRPT” story to share!**

Executive Secretary—DeeDee McNeill—nrrpt@nrrpt.org



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 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!

NRRPT BLAST FROM THE PAST!

Good evening Mr. and Mrs. NRRPT, from border to border and coast to coast and all the ships at sea. Let's go back in time...

The Date: December 2, 1942

The Event: The first self-sustaining nuclear reaction.

The Place: An abandoned rackets court underneath Stagg Field in the middle of the University of Chicago campus. The reactor studies for the Manhattan Project began at the Metallurgical Laboratory (or Met Lab) at the University of Chicago. They were interested in designing a method for plutonium production.

The Setup: In 1939, Enrico Fermi, Leo Szilard, Walter Zinn, and Herbert Anderson conducted chain-reaction experiments at Columbia University to measure the neutron emissions from fission. In February 1942, the studies moved to Chicago and the goal



Stagg Field (US Archives)

changed to produce a self-sustaining nuclear reaction. Fermi believed this could serve as a model for plutonium production. Although many other scientists were unsure if the reaction could be controlled, Fermi believed it could. If anything went wrong, Fermi said, *"I will walk away – leisurely."*

Construction: Using a wood frame, scientists built the pile by stacking layers of graphite bricks. There were holes in the graphite to house fuel rods. A great deal of precision was needed because the rods had to fit closely together. The rods were drilled with holes to fit pockets, some containing uranium and some just graphite. Others were drilled to fit 14-foot cadmium "control rods" which, when removed, would cause the reaction to go critical.



Graphite Pile (US Archives)

The pile consisted of 57 layers of graphite weighing over 770,000 pounds. They used 80,590 pounds of uranium oxide

and 12,400 pounds of uranium metal. After 30 rebuilds of the graphite pile, construction was finished on December 1, 1942. The whole thing cost a whopping (for 1942) \$1,000,000.



Fermi



Szilard



Zinn



Anderson

The first self-sustaining nuclear reaction was too weak to power a light bulb.

The Criticality: On December 2, 1942, Fermi and the other scientists watched from a balcony while George Weil pulled out the cadmium rods. Using Geiger counters, they monitored the k of the reaction (the effective neutron multiplication factor). This factor provides the average number of neutrons from fission that will cause another fission. Once k reached a high enough value, the reaction could sustain itself.



CP-1 Reunion, 1946

They broke for lunch. Then Weil pulled the final cadmium rod out of the pile another 12 inches. Fermi told Arthur Holly Compton, *"This is going to do it. Now it will become self-sustaining."* The pile went critical with a k value of 1.0006 and a thermal output of 0.5 watts.

Physicist Herbert Anderson recalled:

"At first you could hear the sound of the neutron counter, clickety-clack, clickety-clack. Then the clicks came more and more rapidly, and after a while they began to merge into a roar; the counter couldn't follow anymore. That was the moment to switch to the chart recorder. But when the switch was made, everyone watched in the sudden silence the mounting deflection of the recorder's pen. It was an awesome silence. Everyone realized the significance of that switch; we were in the high intensity regime and the counters were unable to cope with the situation anymore. Again, and again, the scale of the recorder had to be changed to accommodate the neutron intensity which was increasing more and more rapidly. Suddenly Fermi raised his hand. 'The pile has gone critical,' he announced. No one present had any doubt about it."

Fermi allowed the reaction to continue for less than 5 minutes. Then came the chianti toast that they drank out of paper cups. Forty-nine scientists and workers witnessed the historic event (listed below).

Arthur Compton, the director of the Met Lab, called his boss James Conant at Harvard.

"Jim, you'll be interested to know that the Italian navigator has just landed in the New World," he said.
"Were the natives friendly?" asked Conant.
"Everyone landed safe and happy," Compton replied.

Harold M. Agnew	Samuel K. Allison	Herbert L. Anderson	Wayne Arnold
Hugh M. Barton	Thomas Brill	Robert F. Christy	Arthur H. Compton
Enrico Fermi	Richard J. Fox	Stewart Fox	Carl C. Gamertsfelder
Alvin C. Graves	Crawford H. Greenewalt	Norman Hilberry	David L. Hill
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Leo Szilard	Albert Wattenberg	Richard J. Watts	George L. Weil
Eugene P. Wigner	Marvin H. Wilkening	Volney C. (Bill) Wilson	Walter H. Zinn
Leona Woods (Marshall Libby)			

References: Atomic Heritage Foundation and the University of Chicago

The late Peter Darnell, RRPT, CHP, after-the-fact reporter



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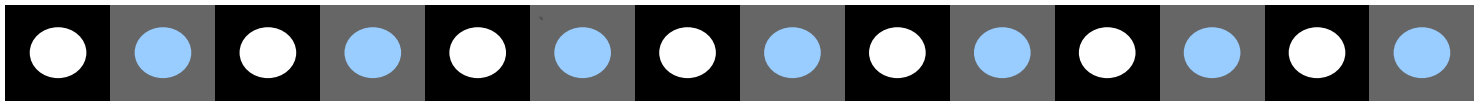
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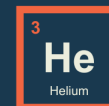
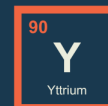
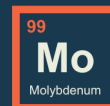
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Thank you Al Goodwyn