NRRPT

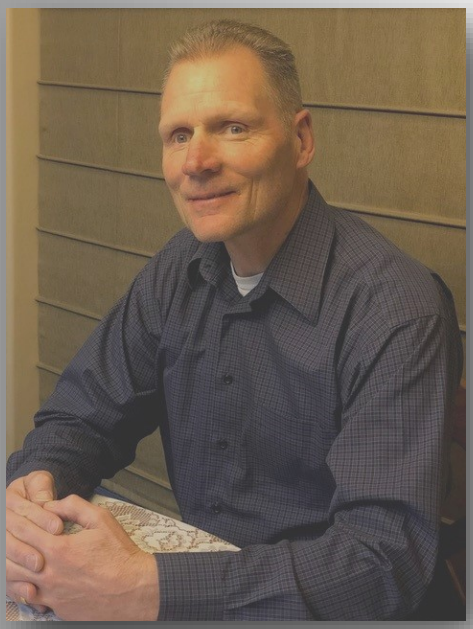
The NRRPT NEWS

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

February 2019 **Incorporated April 12, 1976**

Chairman's Message

Greetings fellow RRPTs!



As I write this we are less than a week out until the 91st **NRRPT** Board of Directors meeting and my first as Chairman of the Board. I must admit that I cannot wait for the meeting. I have been working with the Board of Directors and the Exam Panel for almost twenty-five years and I am always amazed with the amount of effort put in and the work completed by the members of the Board and Panel! These extremely hard working men and women spend many hours while at the meeting and also throughout the year working to ensure that the **NRRPT** is the best that can possibly be.

Speaking of hard working men and women – there have been three exams since the last meeting and it is with great pleasure that I welcome the fifty-two new RRPTs! Congratulations on passing the exam! This brings our total to a very impressive 5599 successful registrants since the Registry was founded.

I am very excited to start my term as Chairman of the Board of Directors of the **NRRPT**. I consider it a big honor to get to work with the other Board and Panel members and to represent the Registry as a whole! I would love to hear from you so feel free to contact me. If you are in San Diego for the HPS Midyear Meeting February 17th – 20th please stop by and say "hello".

Respectfully,
Rick Rasmussen
NRRPT, Chairman of the Board

Inside This Issue

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Understanding Field Survey Techniques

By Kenneth S. Baugh, RRPT

So: PPE, proper instrumentation, minimize contamination – KISS (Keep It Simple Simon/Shirley) Tah-Dah! End of story.

The Overview

Unfortunately, it is not so simple. To do justice to our environment and the people that entrust their safety and health to us, we must ensure that all aspects of operations are addressed. To begin to prepare field survey, let alone understand how to conduct one, we will have to start at the beginning. Like everything else, that beginning is regulation. There are three (3) Federal agencies that have missions concerning the safe use, possession and/or disposal of radioactive materials; they are the U.S. Department of Energy (DOE), the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Environmental Protection Agency (EPA). The agencies' regulations are Codified into 2 different regulation titles, one that covers our natural environment Title 40 Code of Federal Regulations and Title 10 Code of Federal Regulations. Title 40 houses the regulations of the EPA and Title holds purview over naturally (unenhanced) occurring radioactive material and technically enhanced radioactive material. Title 10 houses the licensable levels of radioactive materials governed by the NRC and DOE.

The regulations have set tenets and have caused the need for a certain grade of professionals whose sole purpose is to ensure that the regulations are followed; these very same regulations that charge the license holders with protecting the health and safety of the environment and populous in general and the workers performing tasks specifically. Most large-scale license holders slip responsibilities into two areas: operational oversite and theory and practical industrial operations. The oversite of radiological operations is usually headed by a Health Physicist holding the title of Radiation Safety Officer, either or both of these sections can be headed by a Certified Health Physicist. Most commonly the practical operations section is headed by a degreed Health Physicist that has multiple years' experience as a technologist and holds some credentials pertinent to the discipline of the field.

The Practical Health Physicist functions as the managing element of a team or set of teams that act as a safety element for employees working in engineering, construction, mining, production etc. Because the operational fields are diverse the Radiation Control/Safety Technician/Technologist's secondary field of study will be diverse also:

Nuclear/Radiation Safety technicians operate nuclear test and research equipment, monitor radiation, and assist nuclear engineers and physicists in research and operations. Some also operate remote controlled equipment to manipulate radioactive materials or materials exposed to radioactivity.

Secondary Disciplines:
Biological technicians work with biologists studying living organisms. Many assist scientists who conduct medical research. Those who work in pharmaceutical companies help develop and manufacture medicine. Those working in the field of microbiology generally work as laboratory assistants, studying living organisms and infectious agents.

Chemical technicians work with chemists and chemical engineers, developing and using chemicals and related products and equipment. Generally, there are two types of chemical technicians: research technicians who work in experimental laboratories and process control technicians who work in manufacturing or other industrial operations. For example, they may collect and analyze samples of air and water to monitor pollution levels. A few work in shipping to provide technical support and expertise.

Environmental science and protection technicians perform laboratory and field tests to monitor environmental resources and determine the contaminants and sources of pollution in the environment. They may collect samples for testing or be involved in abating and controlling sources of environmental pollution. Some are responsible for waste management

operations, control and management of hazardous materials inventory, or general activities involving regulatory compliance. Many environmental science technicians employed at private consulting firms work directly under the supervision of an environmental scientist.

Forest and conservation technicians compile data on the size, content, and condition of forest land. These workers usually work in a forest under the supervision of a forester, doing specific tasks such as measuring timber, supervising harvesting operations, assisting in road building operations, and locating property lines and features. They also may gather basic information, such as data on populations of trees, disease and insect damage, tree seedling mortality, and conditions that may pose a fire hazard.

Geological and petroleum technicians measure and record physical and geologic conditions in oil or gas wells, using advanced instruments lowered into the wells or analyzing the mud from the wells. In oil and gas exploration, technicians collect and examine geological data or test geological samples to determine their petroleum content and their mineral and element composition. Some petroleum technicians, called scouts, collect information about oil well and gas well drilling operations, geological and geophysical prospecting, and land or lease contracts.

A license review by the practical HP along with an operational oversight review by the RSO will set the regulatory parameters of the field survey. The HPs will set the composition of the survey team and now the guidance documents can be established. Remembering that we are conducting a Field Survey as opposed to a routine survey or an operational survey or even an in-house survey, there are certain associated documents that we'll need:

- Workplan
- Transport Plan
- Health and Safety Plan
- Quality Assurance / Quality Control Plan
- Memorandum of Understanding between all working groups and entities
- Survey Plan with all operational SOPs

And now that we have the base understanding of what a Field Survey is and the regulations and structure behind it how do we set one up? Well quite frankly we answer the 5-Ws:

- Who – what license and what license condition are you conforming to, or which regulatory standard are you enforcing?
- What – what are the contaminants? What are the isotopes of concern? Will your instruments, swipe/smear material and/or laboratory test respond as required?
- When – what is the expected result time? Will there be delays between sample and results? Are there incubation/inset times to consider?
- Where – location, location, logistics. Are you increasing the probability of contamination due to staging issues?
- Why – are operations as proposed necessary? Dose the cost justify the result?

As a Technician, Technologist or a Practical Health Physicist you need to know how what you do folds into the larger picture, why you are trained on more than just the rudiments of your job. We know more than how to do something, we can decide whether to own that something and be involved actively in the protection of what is around us. Welcome.

Charles D. (Bama) McKnight Memorial Award
Presented to Terry LaFreniere

The Charles D. (Bama) McKnight Memorial Award was established in honor of "Bama" because of his significant contributions to the NRRPT. "Bama" was one of the Registry's great Pioneers as well as an exceptional Instructor/Teacher, one that you never forgot. "Bama" had the gift of making the technically difficult understandable and enjoyable.

This award is presented to persons who have given outstanding efforts in the radiation protection training field leading to increased knowledge and professionalism among Radiation Protection Technologists. The Awards Committee is chartered to deliberate on potential nominees for this recognition annually; however, the frequency of this award is at the sole discretion of the Board. Without any hesitation this is one of our highest awards we can bestow any individual. To be considered for this award the recipient must have demonstrated an outstanding effort in the field of radiation protection training.

Terry spent many years working as an instructor/ developer and leading the RCT training program for Bechtel Hanford and Washington Closure Hanford. During this time he lead the redevelopment of RCT training to bring better alignment between knowledge-based and field-based activities, leading to greatly improved outcomes in knowledge and professionalism among the students. During this time Terry also led the effort to develop and provide company-sponsored NRRPT prep courses for RCTs. He has consistently and relentlessly encouraged NRRPT registration to his students and peers. Additionally, Terry devotes his considerable instructional talents to our next generation of RPTs by teaching courses at Columbia Basin College in support of the Associate in Applied Science in Nuclear Technology program.

Terry has a true passion for training, a gift for teaching, and an absolute devotion to the Registry.

Congratulations Terry, on a well deserved award!

Celebrating his award is wife Condra and daughter Tedra.

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: October 17, 1978

The Event: The third criticality accident.

The Place: Idaho Chemical Processing Plant, about 38 miles from Idaho Falls, ID.

The Cause: Equipment breakdown, maintenance and procedural breaches contributed to an unfavorable geometry in continuous uranium solvent-extraction process equipment.

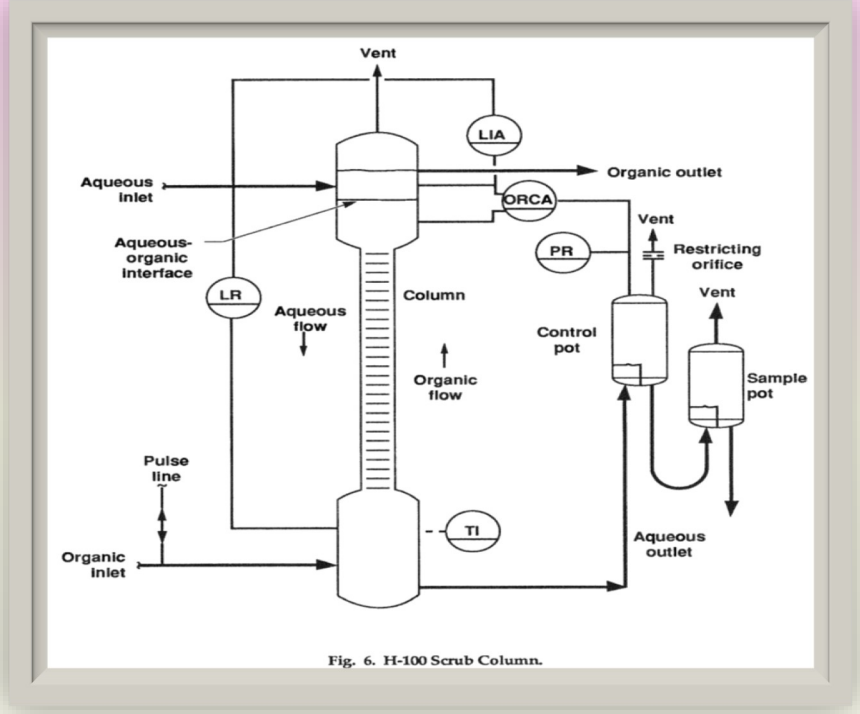


Fig. 6. H-100 Scrub Column.

The Setup: An evaporator plugged and uranium recovery operations were suspended for several weeks to correct instrumentation problems. During the shutdown, a water supply line valve leaked into a makeup tank and diluted the aluminum nitrate solution used to make feed for a scrub column.

Enter the comedy of errors: The latest operating procedure, which required periodic sampling of the makeup tank wasn't used. So operators failed to note the dilution in the makeup tank and the fact that the density gauge (measures the dilution) had become inoperable.

The makeup tank strip chart recorder wasn't sensitive enough to note the small changes in solution level in the tank without studying long lengths of chart covering several days.

The 3,000-liter process feed tank was supposed to have been equipped with a density gauge, but there was none.

Procedures required that a sample of the feed tank after each transfer from the makeup tank. The results of the analysis were not available until after the criticality accident occurred.

The Accident: In the scrubbing step of a continuous solvent-extraction process, the uranium and fission products in an organic solvent stream entered the bottom of a scrub column and flowed upward. The aqueous scrubbing agent stream (aluminum nitrate solution) entered the top of the column and flowed downward. As the aqueous and organic streams mixed most of the uranium remained in the organic stream, which exited the top of the column. The fission products and a small quantity of uranium were scrubbed out into the aqueous stream and exited the bottom of the column.

The crux of the entire process is to control the scrubbing agent concentration so the fission products are removed without taking a lot of uranium. The aluminum nitrate solution was supposed to be about 160 g aluminum nitrate/liter. The valve leak diluted the makeup tank water and allowed the aluminum nitrate concentration to fall to about 17 g aluminum nitrate/ liter.

This allowed the scrubbing agent to remove more uranium from the organic stream. The uranium concentration in the unfavorable geometry bottom section of the scrub column gradually increased from its usual 0.3 g U/liter to 22 g U/liter.

The Aftermath: Bad news – the criticality achieved about 2.7×10^{18} fissions. Good news – because the solution heated and the operators shut down part of the process during evacuation, the criticality stopped. Best news – no personnel exposed; thanks to heavy shielding in the area.

Pete Darnell, RRPT, CHP, after-the-fact reporter

Welcome New NRRPT Members

Congratulations to the following individuals who successfully passed the

NRRPT Examination on August 11, 2018:

Moises Barwis Trejo
Josh W. Beard
Matthew T. Bryant
Christopher D. Bryson
Dan Bulilan
Diana L. Case
Patsy L. Catalano
Mark E. Connelly
Jason M. Conner
Jose-Luis Cueva
Leon C. Douglas
Christopher L. Eaton
Christopher P. Elder
Eric B. Fulghum
Matthew D. Gould
James Holland
Erick J. Huttie
Justin J. Jagemann
Brandon Jordan
Glenn R. Korbeck
Jason M. Mays
Benjamin W. McGee
Brian Owens
Jacob J. Peterson
Dustin M. Pezley
Evan E. Reinhardt
Brennan Richardson
James P. Sailer
Paul R. Shields
Lige E. Smith
Justin Spradley
Derrick J. Stein
Jasen L. Swanson
Burrus C. Swayze
Daniel J. Szutenbach
Tracy R. Thompson
Aaron J. Truhlar
Frank B. Tuck
David B. Weyant
Jeremy K. Whatley
Jahmai O. Williams
James Wilson
Stewart J. Wood

Congratulations to the following individuals who successfully passed the

NRRPT Canadian Examination on November 26, 2018:

Dawn M. Bartlett
James C. Chevers
John C. Dwinnell
Terry D. Kolmel
Todd E. Otvos
Nicholas D. Squires

Congratulations to the following individuals who successfully passed the

NRRPT Special Examination on December 15, 2018:

Samuel M. Canyon
Todd R. Suydam
Donald K. Wadsworth

San Diego Mid-Year Meeting

The NRRPT will be holding the mid-year meeting in San Diego, CA from February 16th – 19th.
We encourage all members to attend!

History

The city of San Diego began in 1769 with the establishment of a presidio (a Spanish fortified military settlement) and a mission, San Diego de Alcala, near a large Native American village.

With the end of the war between the United States and Mexico, San Diego became part of the United States in 1847. At that time, it was a thriving community with a population of approximately 350. This area today is known as Old Town. Over the next fifty years, San Diego would progress through several boom and bust periods fueled by land speculation and the hopes of railroad prosperity. In the 1880s, San Diego's population peaked at 40,000. By the turn of the century, San Diego was once again in a slump and the population had dwindled down to 17, 000. It was during the boom and bust years when two notable investors Alonzo Horton and John Spreckels foresaw San Diego's full potential and invested heavily in the city. It was Horton who purchased 960 acres South of Old Town. Today this area known for its Victorian architecture and local restaurants and is referred to as the Gaslamp Quarter.

Lasting growth finally came with the arrival of the military and those industries associated with the military in the early 1900s. Veterans who had discovered San Diego while serving opted to make San Diego home at the end of their service. The military is one of San Diego's top employers.

The 1915 Panama-California exposition celebrating the completion of the Panama Canal was responsible for turning the city's 1400-acre Balboa Park into a top tourist destination. Today tourism is a significant factor in San Diego's economy.

Some of San Diego's Best

One of the most boring jobs in America must be that of a San Diego weather man. San Diego's consistent weather averages 70 degrees year-round with abundant sunshine, so it is no surprise that San Diego's best attractions are tied to the outdoors. Detailed information on the sites and attractions below as well as others can be found at aaa.com, sandiego.org, travel.usnews.com, and **travelandleisure.com.**

- Balboa Park - San Diego's cultural gem with its 16 museums, garden, and famous zoo
- Gas Lamp Quarter - Known for its Victorian architecture, shops, art galleries, and trendy restaurants
- Old Town - Location of San Diego State Historic Park offers a collection historic buildings and lively Mexican restaurants
- The USS Midway - Visitors can step aboard a retired aircraft carrier full of restored planes
- Beaches - *La Jolla* is known for its sea lions, seals, tidal pools, wide sandy beaches and 300-foot cliffs. *Mission Beach* which is known for its lively board walk. The sparking, golden sand beach of *Coronado* is consistently voted as one of the best beaches in American by the Travel Channel beach expert Dr. Beach.

- Theme Parks - *Sea World* and the nearby *Legoland* are two popular theme parks to bring out the kid in you.

Food and Dining

San Diego's cuisine results from the diversity of its population, climate, and proximity to Mexico and the ocean. Over 7,000 farms are in the area, and the local growers have gained a reputation for producing an abundance of fresh, high-quality fruits and vegetables. The food reflects San Diego's laid-back atmosphere where simple is favored over complex, with an emphasis on fresh high-quality ingredients, think fish tacos and craft beer. Visit Sandiegomagazine.com for a list of San Diego's top restaurants.

Travel Tips

Weather – The days are primarily warm and sunny year-round. The evenings can be cool and chilly especially near the water areas. When going out in the evening, it is best to bring a light jacket.

Getting Around – San Diego is a large sprawling metropolitan city. Depending on your plans, a car maybe your best option for getting around. With the freeways and streets laid out in a grid pattern, the city is easy to navigate. On top of that, most of the major attractions are near easy freeway access. With an average cost of $20.00 per day, parking is plentiful. Be warned, several websites point out that parking laws are strictly enforced. If your plans focus around the city center, then public transportation maybe the better option. Information on bus and trolley routes and schedules can be found at sdmts.com.

Submitted by Dannie Green, RRPT

NRRPT Night-Out in Cleveland, OH

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

Tom Hansen (Ameriphysics), Ken Baugh (B&B Environmental Safety), Bill Peoples (BHI Energy), Laura Davidson (Envirachem), Eddie Benfield (Duke Energy) Gregg Johnstone (UniTech) and Trip McGarity (Frham)

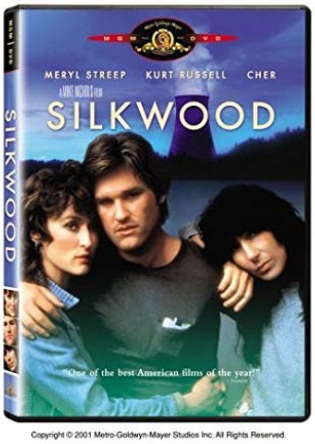
The "Group"

Biela Family

RAD MOVIE REVIEWS!

Silkwood (1983)

"Silkwood" is one of those stories about American workers. Sure, it takes place at the Kerr-McGee plant in Oklahoma (think fuel rod manufacturing). But the nuclear work isn't really the story. What you have here is a tale of woe showing villainous management against the poor workers. Like a lot of popular thought today, this movie tries to show corporate greed and how damaging that can be to the workforce.



The movie follows Karen Silkwood and her rise from a faceless worker to a leader. It's the same old story at the plant, lots of overtime and corners cut.

Silkwood screen grab

Small incidents jump out to convince Karen that the plant is dangerous and worker health and safety is at risk. One of the scenes has the actors discussing how they chopped up a vehicle to hide it because it was contaminated. No decon - that's a new one on me. Of course, she thinks, the plant is ignoring safety and fudging data on quality control. In comes the union! BUT - there's a twist. The union is more interested in publicity than protecting the workers.

After some personal intrigue (an affair, a breakup, and some other personal stuff), Karen dies in a car accident. She was trying to deliver documents to a New York Times reporter. No documents found - did someone cause the accident? Was it murder? Well, no answers in the movie and no fingers pointed at Kerr-McGee. The movie ends with a lot of people mad at Karen Silkwood.

I wouldn't really recommend this movie to anyone, but the misrepresentation of contamination control is pretty funny, even for the 1970-80s.

Pete Darnell, RRPT, CHP, amateur movie critic


Silkwood screen grab

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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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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 x 10^{14} neutrons/cm^2s. 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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If you'd like to join the Panel of Examiners please contact one of the following:

Exam Panel Chairman—Dave Wirkus—wirkdl63@gmail.com

Executive Secretary—DeeDee McNeill DeGrooth—nrrpt@nrrpt.org

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Detroit Edison Fermi 2

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frhamsc@frhamsafety.com

318 Hill Ave.
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(615) 254-0841
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Incorporated in 1983, Frham Safety Products, Inc. continues its sole purpose of manufacturing and distributing products to the Nuclear Power Utilities, DOE, DOD, Naval facilities as well as several industrial accounts and related users of safety supplies and equipment.

From the creators of proven products such as the Totes Overshoe and the Frham Tex II, Frham continues their objective to provide products and services which meet or exceed the specifications set forth by customers and the industries that it serves. These revolutionary new concepts include Life Cycle Cost Management (LCCM), Mobile Outage System Trailer (MOST) and Certified Disposable Products (CDP).

- LCCM offers products through a systematic approach of life cycle pricing to include disposal at the purchase point.
- MOST provides onsite product storage stocked systematically specified by the customer for easy access and stringent inventory control.
- CDP consists of proven disposables for every application which includes standard and custom specifications to meet your disposable needs.

Among these services and products, Frham also supplies chemical, biological and radiological equipment which will support applications for domestic, biological, nuclear, radiological or high explosive incident sites. This equipment is able to sample, detect and identify chemical warfare agents and radiological materials as well as provide safe-barrier, personal protection from chemical warfare, biological warfare, radiological and TIC/TIM environments.

F&J Specialty Products, Inc.

Frank M. Gavila
404 Cypress Road
Ocala, FL 34472
352.680.1177/352.680.1454 (fax)/fandjspeciaty.com

ISO 9001:2008 certified manufacturer of traditional and advanced-technology air sampling instruments, airflow calibrators, filter holders, consumables and accessories.
Air Sampler product lines include; high and low volume, tritium, C-14 and battery-powered air sampling systems. Various models are available for both portable and environmental sampling systems. Consumable product line includes; filter paper, TEDA impregnated charcoal cartridges and silver zeolite cartridges. F&J provides comprehensive collection efficiency data for radioiodine collection cartridges. F&J manufactures the premier line of small lightweight emergency response air samplers which can operate from line power, on-board batteries or an external DC power source. Battery powered units have on-board charging systems.

HI-Q ENVIRONMENTAL PRODUCTS COMPANY, INC.

Air Sampling & Radiation Monitoring Equipment, Systems & Accessories

HI-Q Environmental Products Company is an ISO 9001:2008 certified designer/manufacturer that has been providing air sampling equipment, systems and services to the nuclear and environmental monitoring industries since 1973. Our product line ranges from complete stack sampling systems to complex ambient air sampling stations. HI-Q's customers include the National Laboratories and numerous Federal and State Agencies in addition to our domestic and international commercial customer base. Our product catalog includes: Continuous duty high & low volume air samplers, radiation measurement instrumentation, radiation monitoring systems, air flow calibrators, radioiodine sampling cartridges, collection filter paper and both paper-only or combination style filter holders. Along with the ability to design complete, turn-key, stack and fume hood sampling systems, HI-Q has the capability to test ducts and vent stacks as required by ANSI N13.1-1999/2011.

Master-Lee Decon Services

Robert Burns
430 Miller Road
Medford, NJ 08055
(609) 654-6161
(609) 654-1404 (fax)
burns-ml@comcast.net

Master-Lee is a leading supplier of refueling, maintenance, inspection, operations and outage management services for PWR Nuclear Power Plants in the U.S. Market and has supported the major NSSS companies in the performance of similar tasks at BWR sites. Master-Lee also designs, fabricates and supplies specialty products, tools and parts in support of our various product lines. These capabilities are provided by our broad range of Product Lines: Refueling and Related Services; Pump and Motor Services; NDE – Eddy Current Testing Services; Specialized Reactor Services; Decontamination Services; Decommissioning Services; Engineered Products; and Technical Services.

MJW Technical Services

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MJW Technical Services will help you keep your radiological instruments fully functional while providing rapid turnaround and excellent customer service. Our factory-trained technicians with over 100 years of combined experience in the radiological and electronic fields, can calibrate and repair all types of instrumentation including Nuclear Density Gauges in our state-of-the-art facility.

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Mirion Technologies

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Mirion Technologies is a leading provider of innovative products, systems and services related to the measurement, detection and monitoring of radiation. The company delivers high quality, state of the art solutions that constantly evolve to meet the changing needs of its customers. With the addition of the Canberra brand in 2016, Mirion expanded its portfolio and the breadth of its expertise to bring a new standard of solutions to the market. Every member of the Mirion team is focused on enhancing the customer experience by delivering superior products, exceptional service and unsurpassed support. Mirion Technologies: Radiation Safety. Amplified.

STP Nuclear Operating Company

Roger Aguilera
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Name: _____

Old Address: _____

_____

_____

New Address: _____

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_____

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Email Address: _____

If you have moved, please complete this form and return via email, fax or USPS mail.

nrrpt@nrrpt.org

(401) 637-4822

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