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# United States Nuclear Regulatory Commission



## Commissioner Lyons' Briefing Package

Shieldalloy Metallurgical Corporation  
September 4, 2008

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**Agenda for Commissioner Lyons' Visit to Shieldalloy  
Metallurgical Corporation**

- 7:00 a.m. Travel via car from NRC Headquarters to Shieldalloy Metallurgical Corporation (SMC), Newfield, NJ
- 10:00 a.m. Arrive at Newfield, NJ Senior Center\*, Introductions
- 10:10 a.m. Presentation by SMC Representative, Site Overview, History, and Current Status
- 10:45 a.m. Travel to SMC site
- 10:50 a.m. Walking Tour of Site
- 12:00 p.m. Discussion and Conclusion
- 12:30 p.m. Lunch at Local Restaurant with Region I Representatives and the Commissioner's Technical Assistant
- 1:30 p.m. Return to NRC Headquarters

\* The Site Overview presentation will be conducted at the Newfield Senior Center due to renovations underway in the SMC Administration Building. The Senior Center is less than a five-minute drive from the site.

## Executive Summary

### Purpose of the visit/meeting

- Obtain an overview of SMC site activities and history, tour the SMC site, and discuss current site activities with SMC managers.

### Issues to be addressed

- Development of the draft Environmental Impact Statement (EIS) for public comment
- NRC review of Decommissioning Plan and preparation of the Safety Evaluation Report
- Potential radionuclide contamination in portions of Hudson Branch and in groundwater
- Leach rate of radionuclides in slag and baghouse dust
- Ongoing site characterization activities
- Upcoming NRC public meeting on September 30, 2008
- Impact upon the regulatory process as a result of New Jersey becoming an Agreement State

### Persons to meet

#### Principal Management (See Tab 8)

- Eric Jackson, President, Advanced Metallurgical Group N.V.
- David Smith, Radiation Safety Officer

#### Newfield Borough

- Mayor Joseph J. Curcio III, (SMC has extended an invitation to the Mayor to attend the pre-tour meeting)

### Ongoing activities on site

- Sampling and analysis to identify the leach rate of radionuclides from the slag and baghouse dust matrices, and sampling to determine the presence of radioactivity in soil beneath the slag and baghouse dust piles.
- Buildings in the administrative area of the site have recently been leased to outside parties. Region I reviewed this issue and determined that it was an acceptable practice.

### Messages for communication by Commissioner Lyons (See Tab 6)

- Continue working through the review process and provide information as requested in a timely manner.
- Importance of stakeholder outreach (local citizens, public officials).
- Maintain safety.

### Licensee ownership information

The Shieldalloy Metallurgical Corporation is a subsidiary of the Metallurg Vanadium Corporation. The Metallurg Vanadium Corporation is owned by the Advanced Metallurgical Group N.V., a Netherlands company.

## Facility Location Map and Directions

Aerial View of Shieldalloy Site



### Directions to SMC Facility

From: 11545 Rockville Pike Rockville, MD

To: 18 CATAWBA AVE, Newfield, NJ (Location of introduction meeting prior to site tour)

1. From MARINELLI RD, make a LEFT onto ROCKVILLE PIKE/MD-355 S. (2.09 miles)
  2. Merge onto I-495 E/CAPITAL BELTWAY via the ramp on the LEFT toward BALTIMORE/SILVER SPRING. (8.39 miles)
  3. Merge onto I-95 N via EXIT 27 toward BALTIMORE/NEW YORK (Portions toll) (Crossing into DELAWARE). (94.05 miles)
  4. Merge onto I-295 N toward NEW JERSEY TURNPIKE/DEL MEM BR/NJ-NY (Crossing into NEW JERSEY). (6.46 miles)
  5. I-295 N becomes US-40 E/NEW JERSEY TURNPIKE N (Portions toll). (0.89 miles)
  6. Take the exit toward ATLANTIC CITY. (0.17 miles)
  7. Turn SLIGHT LEFT to take the US-40 E ramp toward ATLANTIC CITY. (0.06 miles)
  8. ramp becomes US-40 E. (8.14 miles)
  9. Turn LEFT onto US-40/NJ-45/NJ-48/WEST AVE. Continue to follow US-40. Pass through 1 roundabout. (16.70 miles)
  10. Stay STRAIGHT to go onto WEST BLVD/CR-615. Continue to follow CR-615. (2.45 miles)
  - 11 Turn LEFT at STOP onto CATAWBA and go 0.05 miles to 18 CATAWABA AVE, Newfield Senior Center on left,
- Total Estimated-Time: 2 hours, 37 minutes, Total Distance: 139.4 miles

**Facility Data**

Licensee Name: Shieldalloy Metallurgical Corporation

Site Location: 12 S. West Blvd, Newfield, NJ 08344

Site Contact: David Smith, RSO, (856) 362-8680 office, [ (b)(6) ]

License and Docket Nos.: SMB-743 and 040-07102

Location of Meeting: Newfield Senior Center (SMC offices are under renovation)  
18 Catawba Avenue, Newfield, NJ 08344

Licensed Activities: Shieldalloy Metallurgical Corporation (SMC) processed pyrochlore, an ore containing columbium (niobium), to produce ferrocolumbium, an additive used in the production of specialty steel and alloys. The ore contained greater than 0.05 percent by weight thorium and uranium and was, therefore, regulated as source material. NRC license SMB-743 authorized SMC to ship, receive, possess, use and store source material. The maximum amount that SMC can possess at one time is 303,050 kilograms of thorium and 45,000 kilograms of uranium. The licensee notified the NRC in August 2001 of its intent to terminate its NRC license. There are currently 18,000 m<sup>3</sup> of slag and 15,000 m<sup>3</sup> of baghouse dust in piles on the site.

Decommissioning Plan and EIS Status: In its Decommissioning Plan (DP), SMC has requested that the licensed slag and baghouse dust be consolidated into an approximate eight-acre footprint and covered with a rock matrix to prevent erosion. SMC would retain ownership of this area under a Possession Only License for Long-Term Control (POL-LTC). The licensee would conduct final status surveys on the remainder of the site, conduct remediation where necessary, and request that these areas be released for unrestricted use. Revision 1a of the DP was submitted in June 2006 and accepted for technical review in October 2006. NRC staff had rejected previous submittals of the DP because of insufficient information. NRC staff reviewed the DP and developed Requests for Additional Information (RAI) that were transmitted to the licensee in March 2007. Concurrently, an Environmental Impact Statement (EIS) is being prepared by the NRC staff and additional RAIs were developed and provided to the licensee. Because some of the NRC staff issues relate to the leach rate of radionuclides from the slag and baghouse dust materials and the radioactivity content of the soil underneath the slag and baghouse dust piles, additional site sampling and analysis is needed. The staff is awaiting a complete response to the RAIs, which will be then be incorporated into Revision 1b to the DP. The complete response is anticipated in December 2008. The staff expects to complete the Safety Evaluation Report in April 2009 and the draft EIS in March 2009.

FSME Project Manager:  
John Hayes

FSME Branch Chief:  
Rebecca Tadesse

Regional Inspector:  
Mark Roberts

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## Facility Unique Features

The 67-acre site is located in rural Newfield, NJ. The site is bounded by West Boulevard to the west, residential and commercial properties to the south and east, and farmland and a closed landfill to the north. The site consists of administrative buildings, former manufacturing buildings, and warehouses on the west side of the site and a storage yard on the east side of the site. Buildings that were impacted have been demolished or remediated as necessary, subjected to radiological surveys, and released for unrestricted use by the licensee. The buildings have not been released from the NRC license. The storage yard on the eastern portion of the site has been used to store materials that were generated during manufacturing and demolition operations. These materials include slag, baghouse dust, excavated soils and building rubble. The contaminated slag and baghouse dust piles are prominent features of the site. Currently, there is approximately 18,000 m<sup>3</sup> (635,580 ft<sup>3</sup>) of slag and approximately 15,000 m<sup>3</sup> (529,650 ft<sup>3</sup>) of baghouse dust contaminated with natural uranium, thorium, and radioactive decay chain progeny stored on-site. Ferrovanadium slag (material not from licensed operations) was stored at the far eastern end of the storage yard, but has been removed. This area has not been released from the NRC license. Undeveloped plant property is situated along the southern border of the site. SMC also owns a 19.8 acre non-contiguous plot that is located southwest of the site and was not used for NRC-licensed activities.

A small stream, Hudson Branch, flows northeast to southwest along the eastern and southern site borders and flows through a portion of the site. Groundwater flow is generally from the northeast to the southwest. Approximately 60 groundwater monitoring wells are located on the site and in the site vicinity. Water from these wells is sampled at various frequencies and analyzed for a variety of non-radiological components. The site is on the National Priorities List under CERCLA because of chromium contamination in groundwater from past releases of process water to an unlined lagoon. The chromium contamination did not result from NRC-licensed activities.

## Facility Oversight Information

### NRC inspections

NRC Inspection No. 04007102/2006001 (ADAMS Accession No. ML080170065) was completed in November 2007. The inspector identified one Severity Level IV violation for the failure of SMC to perform an annual review of the radiation protection program as required by 10 CFR 20.1101 (c). In addition, the inspection activities included groundwater sampling of sixteen wells. Samples obtained from these wells were split with SMC and with the State of New Jersey. The samples were analyzed for gross alpha activity, gross beta activity, and additional radiological parameters by each of the three independent laboratories. The analytical results were generally in very good agreement among the three laboratories and the results were documented in NRC Inspection Report No. 04007102/2006001. Data from all three laboratories for one of the onsite wells identified a Ra-226 + Ra-228 concentration that exceeded the 5 pCi/l U.S. Environmental Protection Agency (EPA) maximum contaminant level for drinking water. This issue is being considered as part of the ongoing review of the DP to determine whether the radium is naturally occurring or the result of licensed activities.

In addition to the formal inspection, the staff has conducted a number of site visits to gather technical information. One visit focused on the design of a proposed erosion cover for the slag pile. Another visit was conducted to observe SMC's evaluation and sampling of three rock quarries to select the material for this erosion cover. Two other site visits focused on variability of the slag types and slag sampling for the leach rate testing program. The NRC has coordinated these inspections and visits with the State of New Jersey.

### NRC staff reviews and consideration of NJDEP and USEPA comments/issues

As part of the detailed technical review of the DP, by letter dated March 19, 2007, the NRC staff transmitted a Request for Additional Information (RAI) regarding environmental issues to SMC. On April 26, 2007, NRC staff received SMC's response to the environmental RAIs and commenced its review. In addition to providing some of the information needed for the staff's environmental review, SMC's response also provided part of the basis for the NRC staff's development of additional RAIs that were transmitted to SMC by letter dated July 5, 2007. These RAIs also included comments on the DP that were submitted to the NRC by the New Jersey Department of Environmental Protection (NJDEP). Although the staff typically requests responses to RAIs within 30 days, the staff recognized that response to some of the RAIs required environmental sampling and laboratory work that could not be completed within 30 days. Therefore, the staff requested that SMC provide its response within 120 days.

SMC submitted its response to the staff's July 5, 2007, RAIs on November 9, 2007. The response was a partial response that included responses to some RAIs and a schedule for the submittal of responses to the remaining RAIs. It also included a commitment to submit Revision 1b of the DP. As previously discussed, Revision 1b of the DP is expected to be submitted in December 2008. The staff completed its review of the partial response and, as a result of this review, conducted a series of telephone conference calls with SMC to discuss issues related to this review. NJDEP participated in these calls. In addition, the US Environmental Protection Agency (USEPA) submitted comments to the NRC regarding Revision 1a of the DP. The staff met with the USEPA to discuss these comments.



One of the major areas for additional discussion was SMC's characterization of the leach rate of radioactive components associated with the slag and baghouse dust material. Between April 2008 and the present, there have been a number of communications between the staff and SMC related to the sampling plans designed to determine the leach rate of the slag and baghouse dust piles. While the final leach rate testing protocol has not been determined, SMC reported that samples taken in June 2008, of the soil underneath some of the slag and baghouse dust piles, showed no radioactivity above background in the soil that was not associated with slag dispersed into the soil.

Another technical issue is the determination whether radiological contaminants identified in the Hudson Branch are naturally occurring or the result of licensed activities. As a result of one of the staff's RAIs, additional sampling and analysis of the Hudson Branch was performed, and the results are expected to be provided in Revision 1b of the DP. The staff has discussed groundwater monitoring at the site with both the NJDEP and USEPA.

The State of New Jersey filed suit in the U.S. Court of Appeals for the Third Circuit challenging NRC issuance of a revision to NUREG-1757, "Consolidated Decommissioning Guidance," and the guidance being followed by the licensee to prepare the DP. On April 16, 2008, the NRC's attorney presented oral arguments to the Circuit Court in opposition to the New Jersey suit against the NRC regarding the implementation of the long term control policy without rulemaking occurring. The Third Circuit dismissed the case on May 21, 2008, due to lack of jurisdiction.

#### Licensee Strengths

SMC staff and contractors have been responsive to direct requests from NRC staff.

#### Licensee Weaknesses

Public Involvement - Pursuant to 10 CFR 20.1403, the licensee was required to seek advice from affected parties, as part of the development of the DP. Initially, this was not done and was one of the reasons for the rejection of the first DP. Subsequently, the licensee established a site specific advisory board (SSAB) to meet this requirement and held several public meetings. However, the NRC staff received several negative comments from affected parties that SMC excluded certain parties from participation in the initial SSAB meetings, and that the licensee's public meetings had not been adequately noticed. The NRC staff conveyed these comments back to the licensee as they were received so they could be factored into future interactions.

Quality of submittals - the staff rejected earlier DPs submitted by SMC in August 2002 and October 2005 because of deficiencies in providing information needed to conduct a detailed technical review.

#### Recent NRC Commissioner Visits

Commissioner Jaczko visited the Shieldalloy site on November 17, 2006, and separately met with local officials and representatives from the NJDEP. Commissioner Merrifield visited the site on February 20, 2007.

## Current Issues

### A. EXPECTED DISCUSSION TOPICS

#### License Amendment Request for Possession-Only License for Long Term Control (POL-LTC)

In developing its DP, SMC considered several options for decommissioning its site:

- License Continuation
- Offsite Disposal and License Termination (unrestricted use)
- Onsite Stabilization and POL-LTC (restricted use)

After conducting a cost/benefit analysis, SMC proposed the use of onsite stabilization and long term control. This plan would leave the radioactive slag onsite with an engineered cover and land use restrictions under a NRC POL-LTC license. The DP proposal with respect to onsite stabilization and restricted use of a POL-LTC license was contested by seven parties who requested a hearing. Six of the hearing requests were denied by ASLBP. One of the 17 contentions (contention 5 relating to dose modeling and groundwater pathways) from the State of New Jersey's request was admitted. The Board deferred ruling on the remainder of the New Jersey contentions and deferred all other proceedings in the case pending completion of the staff's safety and environmental reviews. The issues will include whether a POL-LTC license can be used to meet the License Termination Rule requirements for restricted use, including legally enforceable and durable institutional controls and an independent third party.

#### Public Involvement in the NRC's Decommissioning Plan Review Process

As evidenced by letters to the NRC from the NJDEP, elected officials and local stakeholders, and media coverage, there is considerable interest in the SMC site. Consequently, as part of its DP review process, the NRC staff held a public meeting on the review process in Newfield, New Jersey on December 5, 2006. Because SMC proposes restricted use of the site following decommissioning, as part of the DP review process, the NRC staff is developing an EIS instead of an Environmental Assessment. As part of the EIS process, the NRC staff met with local officials to inform them of the EIS process and held a public EIS Scoping Meeting on December 12, 2006. A public meeting in the site vicinity is planned for September 30, 2008, to provide stakeholders with the status of the staff's review.

#### New Jersey's Intention to become an Agreement State

By letter of May 23, 2006, Governor Corzine expressed New Jersey's intent to become an Agreement State. The State has submitted a draft application and received comments, and anticipates submitting a final application in October 2008, with the goal of having the Agreement signed by September 2009. At that time, the NRC would relinquish its authority over the SMC site to New Jersey and New Jersey could impose equivalent or more stringent requirements for SMC.

B. OTHER TOPICS OF INTEREST

State and Congressional Interest

Governor Corzine, US Senator Menendez, US Senator Lautenberg, US Representative LoBiondo, State Senator Madden, State Representative Mayer, and State Representative Moriarity have expressed concerns with the use of a NRC POL-LTC license for the SMC site. Their stated concerns are: 1) the proposed approach would create an unlicensed low-level radioactive waste disposal facility; 2) that there has not been a meaningful opportunity for community discussion; and 3) the radioactive material should be disposed of and not left for future generations. NRC has acknowledged these concerns, and explained that NRC would continue the decommissioning process, including the review of Shieldalloy's DP with the proposed POL-LTC license to implement the restricted use option.

Financial Assurance

When the site was originally licensed by the Atomic Energy Commission, SMC was not required to provide financial assurance for decommissioning. The licensee estimates that offsite disposal would cost \$63 million and contends that the cost associated with offsite disposal would force the company into bankruptcy. In contrast, the licensee estimates that the cost associated with its proposal to leave the material on site in an engineered facility would be more manageable (approximately \$8 million including \$5 million held in trust to pay for long-term maintenance and control). The current financial assurance is not adequate to cover these costs but SMC plans to increase the amount of funding to cover the cost estimate. Local stakeholders have raised concerns that SMC's proposed alternative is based on financial convenience as opposed to the best interest of the public.

Local Media Interest

There has been considerable ongoing media interest in the decommissioning process at the site.

Escalated Enforcement

There has been no escalated enforcement within the last year

Open Investigations

None.

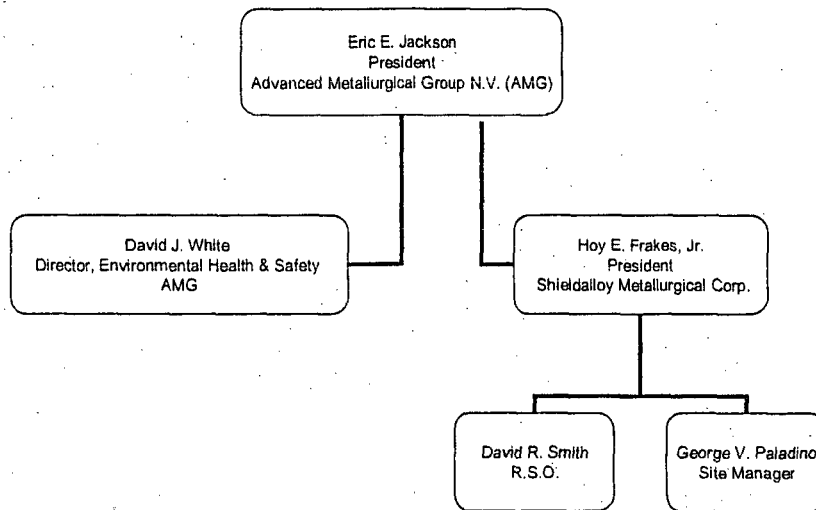
Open Allegations

None.

Harassment and Intimidation Issues

None.

## Facility Organization



## Biographical Data of Principal Managers

### Eric E. Jackson, President, Advanced Metallurgical Group N.V. (AMG)

Mr. Jackson was appointed president of the Advanced Materials unit and member of the Management Board on April 1, 2007. In November 2002, he was appointed chief operating officer of Metallurg and also serves as a director for certain subsidiaries of Metallurg. Mr. Jackson has been senior vice-president of Metallurg since 1998 and has previously acted as director at Phibro, a division of Salomon, Inc, and as vice-president at Louis Dreyfus Corporation. In addition, from 1979 to 1989 Mr. Jackson acted in various roles for Cargill Incorporated in Canada and the United States. Mr. Jackson received a BS degree in economics and an MBA, both from the University of Saskatchewan, Canada.

### David R. Smith, Radiation Safety Officer, Shieldalloy Metallurgical Corporation

#### Education

B.S. (Civil Engineering), Villanova University, (b)(6)  
Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120),  
Naval Facilities Engineering Command, 1986.  
Hazardous/Toxic Waste Management, Lion Technology  
SMC General Employee Training and Employee Right to Know Training  
Radiation Safety Training for Authorized Users of Radioactive Materials, IEM, 1994.  
Managing Radiation Protection Programs, IEM, 1996

#### Experience and Background

2006-Present - TRC - Has the overall site management responsibilities and on site direction of work beginning conducted as part of the Newfield Exit Strategy Project. In addition to the Exit Strategy Project responsibilities, continued support and execution of Shieldalloy Metallurgical Corporation's Newfield New Jersey Radiation Safety Program as the Radiation Safety Officer (RSO) and the USNRC Decommissioning project. Management of the groundwater investigation of the potential perchlorate contamination resulting from past metallurgical operations.

1988-2006 - Shieldalloy Metallurgical Corporation - Has been responsible for overall management and direction of the company's environmental remedial investigations related to past operating practices, as well as its environmental management of current operations to assure compliance with appropriate local, state and Federal laws and regulations. Managed the Newfield NJ RI/FS and RCRA Lagoon closure programs. Supervised and managed the groundwater remediation program, participated in radiological characterization including pressurized ion chamber measurements, gamma scintillation survey and surface soil sample collection at SMC Newfield. Has been a member of the Radiation Safety Committee, supervised and assisted with the management of the TLD program, performed bioassay sampling and air sampling to demonstrate license and regulatory compliance. Has conducted sampling for analysis to update source material inventory. Responsible for the SMC coordination of EA/EIS efforts which NRC has been conducting at the Newfield facility as part of the license renewal and evaluation of the decommissioning options available to the company.

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Responsible for conducting environmental due diligence investigations associated with planned acquisition of property and companies.

1974-1988 - Naval Facilities Engineering Command - Senior environmental manager responsible for the management of CERCLA Site Assessments, Remedial Investigation/Feasibility Studies, RCRA Remedial Investigations and UST closures, development and auditing of NPDES programs and air pollution control programs., Radiological concerns were addressed at several sites, particularly related to groundwater and soil contamination.

1972-1974 - United States Army Environmental Hygiene Agency - Assisted with the planning, management and accomplishment of baseline environmental surveys of US Army munitions depots and manufacturing plants.

**Biographical Data of NRC Staff**

**John D. Kinneman**

Director, Division of Nuclear Materials Safety, Region I, USNRC

Mr. Kinneman received his Bachelor of Arts degree in Biochemistry from Rutgers University in (b)(6) and did graduate work in health physics and environmental science at Rutgers from 1973 to 1975. He received comprehensive certification from the American Board of Health Physics in 1982.

Mr. Kinneman worked for E.R. Squibb and Sons in New Brunswick, NJ, as a supervisor in the Radiopharmaceutical Quality Control Department for several years before joining the Region I Office in 1975. From 1975 until 1980, Mr. Kinneman was assigned as a radiation specialist inspecting a variety of NRC Materials licensees. He supported the response to the TMI event response for about a year. From 1980 to 2006, as Section Chief and then Branch Chief, he supervised NRC technical staff performing the inspection and licensing of facilities using radioactive materials. For a number of years during that period he was responsible for staff approving licensing actions for and inspecting facilities in active decommissioning. More recently he was assigned to supervise staff with licensing and inspection responsibility for large irradiators, radiographers and to support the development of requirements for security of radioactive material.

In late 2006, Mr. Kinneman was assigned as Deputy Director, Division of Nuclear Materials Safety in Region I where he assisted the Division Director in managing the Region I program for inspecting and licensing materials facilities, decommissioning reactors and other facilities and Independent Spent Fuel Storage Facilities. In June 2008, he was designated as Director, Division of Nuclear Materials Safety in Region I. Mr. Kinneman is a graduate of the 2007-2008 NRC SES candidate development program.

**Mark C. Roberts**

Senior Health Physicist, Division of Nuclear Materials Safety, Region I, USNRC

Mr. Roberts received his Bachelor of Science degree in Physics from Duquesne University in Pittsburgh, PA in (b)(6) and his Masters of Science in Radiation Health from the University of Pittsburgh in 1974.

From 1974 to 1990, Mr. Roberts worked for two radiological consulting firms, holding titles of environmental scientist, health physicist, and radiation safety officer. His over 15 years experience includes work in the areas of environmental sampling and radiological analysis, radiological training, general health physics, emergency planning, in vivo counting, nuclear power plant support services, and decommissioning of nuclear facilities.

In 1990, Mr. Roberts joined the NRC Region I staff as a health physicist, performing licensing and inspections of a variety of NRC materials licensees. In 1991, he was promoted to the position of senior health physicist and in 1992, joined a newly formed decommissioning branch in Region I. Mr. Roberts is a member of the Region I Incident Response Team in the protective measures area. Mr. Roberts is a member of the Health Physics Society (HPS) and an active member of the Delaware Valley Society for Radiation Safety, the local HPS Chapter.

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