

THOMAS A. GRICE

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SUMMARY

As a versatile safeguard and security professional with over 25 years of wide-ranging experience in domestic and international safeguards for nuclear material, physical protection and information security, I understand the unique interplay and need for integration of the various elements within a safeguards and security program. Working with nuclear materials in the laboratory, combined with my experience in the design, implementation and evaluation of material control and accountability systems and procedures, diversion path analysis, physical protection systems, personnel security measures, cyber security and information security practices provide a valuable and unique perspective. Representing the U.S. Nuclear Regulatory Commission (NRC) in various forums has demonstrated my ability to use this diverse background to help build consensus and bridge the gap between policy challenges and technical implementation considerations. Furthermore, my experience with reviewing and implementing U.S. international safeguards agreements at civilian nuclear facilities has provided insight into the challenges of transforming theoretical concepts into practical rules and requirements. I have proven abilities in project and program management, excellent verbal and written communication skills, proficiency in strategic problem solving, team building and over twenty years of direct supervisory experience.

PROFESSIONAL EXPERIENCE

U. S. Nuclear Regulatory Commission

2006 – PRESENT

Office of Nuclear Materials Safety and Safeguards
Division of Fuel Cycle Safety and Safeguards
Material Control and Accounting Branch

Team Leader (2008 – Present)

I currently lead the U.S. Nuclear Regulatory Commission's (NRC) International Safeguards Team to support fulfillment of U.S. obligations under nuclear nonproliferation related international treaties and agreements. The International Safeguards Team is responsible for the oversight of the implementation and compliance with, bilateral and multilateral treaty obligations, development of potential IAEA safeguards measures at NRC licensees, and providing technical support to the NRC Office of International Programs on policy issues related to nonproliferation. Additionally, I have continued to support the Material Control and Accounting (MC&A) activities involving the NRC's domestic safeguards inspection program.

Accomplishments

Implementation of the U.S./IAEA Additional Protocol

- Primary author of the 2008 revision to the U.S. Code of Federal Regulations, Title 10, Part 75 which codified the requirements necessary for implementation of the U.S./IAEA Additional Protocol at NRC and NRC Agreement State licensees. This revision established the U.S. legal requirement for NRC and NRC Agreement State licensees to submit information related to the reporting requirements of the U.S./IAEA Additional Protocol.
- Coordinated with the U.S. Department of Commerce (DOC) to develop and publish the U.S. Additional Protocol Handbooks and Forms. The U.S. Additional Protocol Handbooks provide NRC and NRC

Agreement State licensees with a concise summary of the Additional Protocol reporting requirements and detailed instructions for completing the reporting forms.

- Conducted outreach to NRC and NRC Agreement State licensees at several industry meetings and conferences to ensure the timely and effective dissemination of information to effected NRC and NRC Agreement State licensees. These outreach activities were instrumental in making certain the U.S. Additional Protocol declaration was as complete and correct as possible.
- Involved directly in the preparation of the U.S. Additional Protocol declarations. Specifically, the preparation of the NRC portion of the annual U.S. Additional Protocol declarations, the quarterly Additional Protocol export declarations and vetting of all consolidated U.S. Additional Protocol declarations.
- Served as the U.S. Host Team Leader for the first complementary accesses conducted in the U.S. This included overseeing the collection of information about the facility, logistics of the U.S. Host Team members, coordination of activities with the facility, and serving as the primary point of contact with the IAEA inspectors.

Represent the NRC on U.S. interagency committees and U.S. delegations

- Chairman of the Subgroup on International Atomic Energy Agency (IAEA) Safeguards in the United States (SISUS) with responsibility for coordinating and facilitating IAEA safeguards at U.S. facilities. As an active member of SISUS, and now Chairman, I have worked to greatly improve the working relationships and collegial atmosphere with members from the other agencies.
- Served as the NRC representative on the International Technical Coordinating Committee overseeing development of a generic IAEA safeguards approach for geological repositories (ASTOR). During my tenure the ASTOR group reviewed the draft safeguards approach for geological repositories, the draft DIQ form for geological repositories, and the draft DIQ form for conditioning plants.
- Serve as the U.S. Representative [with the support and representation of the U.S. Department of State (DOS) and the U.S. Department of Energy (DOE)] on the (Treaty of Cardiff) ETC Quadripartite Committee Safeguards Working Group (QCSWG). This working group reviews the status of IAEA safeguards implemented at gas centrifuge enrichment plants utilizing ETC technology. The U.S. was invited to participate as an observer to this working group in 2009 and 2010, and was granted rights as a full participant in 2011.
- Served as the NRC representative at bilateral meeting with Japan and the IAEA. These meetings are primarily informational addressing the status of the State's nuclear industry and nuclear nonproliferation issues as related to the specific parties.

Support of the NRC's domestic safeguards program

- Coordinated the complete review and revision of all MC&A inspection procedures for nuclear fuel cycle facilities possessing Category I and Category III quantities of special fissionable materials.
- Participated in routine MC&A inspections to evaluate nuclear safeguards and security programs at fuel cycle facilities for compliance with regulations and licensee requirements as part of the U.S. Nuclear Regulatory Commission's fuel cycle facility inspection program.

MC&A Physical Scientist (2006 – 2008)

- Participated in routine MC&A inspections to evaluate nuclear safeguards and security programs, plans and procedures at fuel cycle facilities for compliance with regulations and licensee requirements as part of the U.S. Nuclear Regulatory Commission's fuel cycle facility inspection program.
- Reviewed the Fundamental Nuclear Material Control Plans for the mixed-oxide fuel fabrication and laser enrichment commercial facilities under construction.

- Mentored MC&A inspectors during their two year qualification program providing technical guidance concerning the observation, analysis and resolution of domestic safeguards issues.

Independent Consultant

2004 - 2006

Provided a variety of consulting services concerning security programs, focusing on administrative controls, nuclear material control and accountability, and physical protection.

Accomplishments

- Developed a transportation security program and procedures for the shipment of low-level radioactive waste materials from a facility undergoing decommissioning and remediation to the final disposal facility.
- Conducted a Management Assessment of the nuclear safeguards program at the Fluor Hanford Plutonium Finishing Plant (PFP), in conjunction with PFP and another subcontractor that identified multiple opportunities to improve the efficiency and/or achieve cost savings as part of daily operations.
- Assisted in the preparation of the Safeguards and Security Plan for the Process Gas Equipment Segmentation Shop in the K-25/K-27 Buildings, Oak Ridge, Tennessee and the Nuclear Materials Control and Accountability Plan for the American Centrifuge Oak Ridge Project.

CH2MHILL Mound, Inc., Miamisburg, OH

1984 - 2005

CH2M HILL Mound, Inc. was the Federal Contractor for the U. S. DOE Mound Facility, formerly operated by BWXT of Ohio, EG&G Mound Applied Technologies and Monsanto Research Corporation.

Manager, Security/Emergency Management

2003 - 2005

Personnel Security Administrator (2004 – 2005)
Vulnerability Assessment Team Leader (2000 – 2005)
Cyber Security Coordinator (1999 – 2005)
Nuclear Materials Representative (1992 – 2005)

Served as the Manager of Security/Emergency Management for CH2MHILL Mound, Inc. completing the reduction (and eventual elimination) of the site's security programs and transition of the existing Emergency Management program to a base level. Responsible for maintaining all Security and Emergency Management related plans and procedures to ensure compliance with applicable DOE Orders, and directives.

Accomplishments

- Terminated the formal safeguards and security program at the DOE Mound facility, including the successful completion of the security termination survey by systematically tracking and eliminating all major security interest from the site.
- Developed and implemented a Site Reconfiguration Plan to allow removal of portions of the site's perimeter fence creating a more open and accessible site to foster further privatization and economic development of the site property. This plan established four basic types of areas within the site (General Site Property Area, Construction/Regulatory Areas, Property Protection Areas, and Limited Security Areas) and establish the appropriate access measures for each area based upon DOE directives, regulatory requirements and/or other hazards and risks present.
- Managed the access control system for the facility, including the fabrication, encoding and issuance of site badges, establishing access control zones and monitoring employee and visitor access records.

Led a team that utilized vulnerability assessment methodologies in the design and evaluation of a proposed storage and production facility for the site's plutonium-238 program for the DOE Office of Nuclear Energy. The results were validated by personnel from DOE's Office of Security and then presented to multiple targeted audiences including site senior staff, various levels of local elected officials, U.S. Congressional Aids and DOE Headquarters personnel.

- Served as part of a three-member team that conducted a vulnerability assessment review of all facilities and hazardous materials at the site immediately following the terrorist attacks on September 11, 2001. Each facility was evaluated to determine the potential impact a terrorist attack could have to the employees, site, community and environment.
- Saved \$1.6M by developing and overseeing the implementation of a plan that reconfigured the site's inventory of Special Nuclear Material (SNM) and broadened the application of existing administrative procedures to achieve a reduction in safeguards category level for the site allowing a significant reduction in the Protective Force and associated costs.
- Identified vulnerabilities in the site's Cyber Security program and implemented an enhanced cyber security program including an intrusion detection system, enforcement of hardened passwords, monitoring Internet utilization, upgrading the existing firewall, installation of an automatic Web Site refresher, and installation of a virtual private network to significantly enhance the program.
- Reviewed the site plutonium and uranium inventory holdings as a member of the Site Assessment Team for the Department of Energy (DOE) Plutonium Working Group Report and Highly Enriched Uranium Working Group Reports.

Senior Math Statistician

1989 – 1992

Managed the site's nuclear materials accounting database utilized for tracking information concerning the storage, use and shipment of all nuclear materials for the site. Maintained the site's Measurement Control Program developed to provide assurance that valid measurement methods and techniques were utilized to verify the presence and quantities of nuclear materials on inventory.

Accomplishments

- Managed the site's nuclear materials accounting database utilized for tracking information concerning the storage, use and shipment of all nuclear materials for the site. This included submission of all inventory change data related to the site to the U.S. State Systems of Accounting for and Control of Nuclear Material (SSAC) and monthly reconciliation of the site database with the SSAC.
- Maintained the site measurement control program to monitor all instruments used to perform measurements establishing nuclear material accountancy values. This program monitored scales and balance mass measurements, mass spectrometer analysis of light gases, alpha and gamma ray spectroscopy of plutonium and uranium isotopes and calorimetry measurements of tritium and plutonium.
- Conducted formal inquiries into nuclear material inventory differences to determine the cause of the anomalous situation. These inquiries evaluated whether there was an actual loss of material through possible theft or diversion, or an apparent loss caused by identified abnormal conditions, accounting discrepancies, measurement errors and/or biases.

Development Chemist

1984 – 1989

Responsible for testing the performance of various classified prototype weapons component designs, including test facility equipment design and fabrication, component testing, data acquisition and reduction, report generation and presentation. Served as primary nuclear material custodian for three material balance areas, including two tritium gas handling systems and numerous classified parts.

Accomplishments

- Increased productivity in the tritium development laboratory testing program by more than 50 percent while decreasing radiation exposure to workers by over 75 percent and exceeding all safety goals.
- Developed a method for scanning radiographs and utilizing computer enhancements to convert the gray-scale images to color allowing for improved visualization and detection of density gradients within the compacted materials.

EDUCATION

Master of Science, Analytical Chemistry

1985

Wright State University, Dayton OH

Master's Thesis, *Chemically Modified Teflon Tubing for Use in Gas Chromatographic Capillary Columns*

Thesis Director, Dr. James E. DiNunzio, Ph. D.

Bachelor of Science, Chemistry

1982

Wright State University, Dayton OH

PROFESSIONAL MEMBERSHIPS

Institute of Nuclear Materials Management (Member since 1991)

American Chemical Society (Member since 1982)

ASIS International (Member since 2004)

RELATED TRAINING

Assessing Safeguards Performance

Vulnerability Assessment Fundamentals

Security Risk Assessment Methodology for Water Utilities (RAM-W)

Facilitated Risk Analysis for Business and Security

Network Vulnerability Assessments

Measurement Control for Nuclear Safeguards

MC&A Statistical Course I

MC&A Statistical Course II

Calorimetric Assay Training

Institutional Protection Manager Training

Conduct of Operations for Managers

Management Oversight and Risk Tree (MORT) Based Root Cause Analysis

Introduction to Performance Testing

Performance Based Training

Operational Readiness Reviews and Performance-Based Assessments

Fundamentals of Nuclear Forensic Science