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Director, Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Document Control Desk  
11555 Rockville Pike  
Rockville, Maryland 20852-2738

Subj: License Number SNM-95; Docket Number 070-0113

I am writing to update Penn State University's license SNM-95, Docket Number 070-0113, by appointing a new Radiation Safety Officer. Due to recent organizational changes, I request that Jeff Leavey be appointed as the new RSO for this license effective July 22, 2013. He replaces Eric J. Boeldt as Penn State University's Radiation Safety Officer.

Attached please find Mr. Leavey's resume demonstrating his qualifications to meet the requirements of our license through his CHP certification, his advanced degree in Nuclear Engineering and over eleven years of experience in Health physics/radiation protection as Radiation Safety Officers with broad scope licenses at Cornell University, Columbia University and IBM Corporation. He has also held health physics/radiation protection positions at Knolls Atomic Power Laboratory and IBM Corporation.

Please contact Maurine G. Claver at [mgc3@psu.edu](mailto:mgc3@psu.edu) or 814-865-6391 if you have any questions or require additional information.

Sincerely,

Henry C. Foley

cc: Maurine G. Claver, Director, Environmental Health and Safety

NMSSD1

# Jeffrey A. Leavey, CHP

## ***ABHP Professional Certification***

Comprehensive Certification - American Board of Health Physics, 1988 to present.

## ***Professional Experience***

### **Consultant – Northeast Health Physics**

**August 1984 to present** – Owner/operator of a private health physics consulting business providing custom targeted training, safety and shielding systems design, dosimetry assessments, licensing services, and survey services for commercial, academic, and medical clients. Expertise in radiation equipment, radioactive materials, lasers, RF/microwave, and magnetic fields.

### **Radiation Safety Officer for Research – Columbia University**

**September 2012 to present** – Radiation Safety Office, Environmental Health and Safety, Columbia University, 601 W. 168<sup>th</sup> St., New York, NY. Responsible for the development and management of a comprehensive radiation safety program for a major university. Closely interface with University research faculty and staffs to ensure the safe use of radioactive materials, x-ray units, LINACS, PET cyclotrons, and sealed sources in biology, medicine, chemistry, and physics programs. Developed new customized, targeted training to faculty, staffs, and students. Currently manage two radiation safety direct reports and provide technical management and mentorship of a large support team in a matrix-managed organization.

RSO for all research applications which includes *in vitro*, *in vivo* (human use research), and animal use. A separate RSO position manages the clinical and hospital radiation safety program at the Columbia University Medical Center.

### **Principal Radiological Health Engineer – Knolls Atomic Power Laboratory, Bechtel Marine Propulsion**

**August 2011 to September 2012** – Principal Engineer, Radiological Control, River Road, Niskayuna, NY. Senior engineering level support to the mission of KAPL to provide naval nuclear propulsion capability to the US Navy. Responsible for providing on-site NVLAP external and internal dosimetry, radiation instrument calibration, on-site and off-site radiological safety analysis, team leader for local medical emergency response, and broad cross-site support in health physics for the Naval Reactor program.

Holder of DOE L clearance.

### **Radiation and Non-Ionizing Safety Officer – Cornell University**

**February 2008 to August 2011** – Radiation Safety Officer, **May 2006 to February 2008** – Assistant RSO, Environmental Health and Safety, Ithaca, NY, 14853. Responsible for the development and management of the University's ionizing and non-ionizing radiation safety programs. The University maintains a broad scope radioactive materials license for 120 research laboratories involved in bio, cellular, plant, animal and physical science research. Cornell is the home of the Cornell High Energy Electron Synchrotron (CHESS) performing

elementary particle research. Other radiation sources include veterinary use of CAT, MRI, LINAC and x-ray diagnostic and therapeutic use equipment.

Interfaced with University faculty and staff to facilitate successful short term goals and long term missions. Short term goals includes issuing radioisotope use permits, performing inspections, solving protocol implementation problems, and ensuring proper waste disposal practices are followed. Long term missions included the regulatory management of three Cs-137 high activity irradiators, managing the increased use of micro-CT and portable x-ray research equipment, the development of a new fMRI suite for human research, and strategic planning to integrate other aspects of environmental health and safety management principles and practices into radiation safety.

Non-ionizing radiation safety officer responsible for creating and implementing laser, magnetic, and radio-frequency safety programs. Ensured that laboratories properly complied with program requirements and that new and developing projects were performed safely and in conformance with applicable standards and regulations. The University operated all laser classes, laboratory super-conducting MRI magnets, and the Arecibo radio-telescope.

Haz Mat Radiological Team Leader responsible for managing a team of three health physics responders, training and practice drill development, cross-training with chemical and biological response teams, and training campus and local support teams (police, EMS, local medical center, etc.)

Manager of a team of three to five professional and technician direct report staff in day-to-day operations as well as strategic planning. Responsible for performance assessment and professional development of a highly dedicated team supporting radiation safety at the University.

### **Advisory Engineer – IBM Corp.**

**January 2002 to May 2006** - IBM 300mm Semiconductor Manufacturing Facility, East Fishkill, NY, 12533. Lithography process engineer responsible for the design, start-up, and implementation of integrated macro lithography defect detection and inspection tools and x-ray fluorescence thin film measurement tools. Also responsible for leading an overall program for litho defect reduction. Acted as technical lead for the 300mm semiconductor development engineering team supporting all process sectors.

Author and instructor for the Fishkill site in ionizing radiation and laser safety covering radioactive materials, radiation equipment and class 1 to 4 lasers. Health physics consultant to Fishkill and other IBM location Occupational Health and Safety departments since November 1991.

HP consultant and author/instructor for ionizing radiation equipment and laser safety (class 1 to 4) for Philips Semiconductors and NXP Semiconductors, East Fishkill, NY.

**January 1999 to January 2002** - IBM Advanced Semiconductor Technology Center, East Fishkill, NY, 12533. Lead engineer for lithography defect control. Responsible for creating and leading a defect inspection and control team of engineers and technicians for both micro- and macro-defects. Obtained inspection and review tools needed to fulfill the team's mission. Significant improvements in chip defect levels have been demonstrated.

**November 1991 to January 1999** - IBM Advanced X-ray Lithography Facility (ALF), East Fishkill, NY, 12533. Lead engineer for advanced contamination control and X-ray mask and wafer inspection and cleaning development. Created advanced excimer laser cleaning techniques and tooling for proximity X-ray membrane mask cleaning. Patent awarded for novel clean transport container. Responsible for contractual demonstrations of defect free lithography and overlay control of ALF's SVG X-ray stepper. Performed process development needed to complete multi-thousand wafer demonstrations.

Also responsible (since 1987) for managing all safety aspects (radiation, cryogenic, laser, RF and general safety) of ALF housing a 700 MeV superconducting electron synchrotron for X-ray lithography. Performed shielding analysis,

dose assessments, safety program development and auditing, radiation and cryogenic safety education program development and teaching, and procedures development and implementation. Provided technical direction to the contractor retained to assist in radiation safety reviews.

Developed and implemented a reliability/availability assessment program for tracking synchrotron and overall facility performance.

### **Radiation and Laser Safety Officer / Staff Industrial Hygienist - IBM**

**July 1984 to November 1991** - IBM Thomas J. Watson Research Center, Yorktown Heights, NY. Responsible for providing comprehensive radiological safety services to a large, broad-scope license research laboratory generating radiation from isotopes, accelerators, ion implanters, X-ray machines, and electron beam equipment and microscopes. Developed and managed safety programs for all aspects of radiation use including isotope handling and disposal, X-ray equipment upgrades, and interfacing with NY regulators. Also responsible for developing and managing comprehensive safety programs for non-ionizing radiation sources: lasers (Class 1 - 4), radio-frequency (RF), and magnetic fields. Designed, implemented and managed a major laser safety upgrade for approximately 60 advanced Class 4 laser laboratories.

Performed safety reviews for new construction and laboratory modifications, shielding analysis and design, internal and external radiation dose assessments, specified and implemented radiation monitoring programs (personnel, equipment, and area). Developed, authored and taught radiation, laser and RF/magnetic safety education courses.

Provided health physics consulting (ionizing and non-ionizing radiation) to other IBM locations and corporate headquarters. Performed audits, safety reviews, shielding design, dose assessments, monitoring services, and provided overall radiation safety program direction.

Health physics consultant for the 700 MeV electron synchrotron Advanced Lithography Facility located at the IBM East Fishkill site. Responsible for radiation safety since the program's inception in 1987. Reviewed and designed shielding, designed facility radiation safety systems, developed safety procedures, and responsible for reviewing non-radiation safety issues (e.g. cryogenic, electrical, general safety).

Industrial Hygiene (IH): member of the Research Emergency Response Team (ERT) responsible for responding to and mitigating fire, chemical, and general emergencies. Wrote and taught radiation safety classes to the ERT and Research Medical staffs. Responsible for IH at two off-site research buildings which included: exhaust requirements, IH sampling, indoor air quality, safety/chemical auditing, and ergonomics. Produced a video for use in new employee orientation as a comprehensive introduction to industrial hygiene and safety at IBM Research.

**Managerial experience:** approximately one year total as acting technical manager of the Industrial Hygiene and Safety Department. Responsible for all department operations (other than personnel issues) as well as interfacing with Research management on employee safety issues and concerns.

### **Health Physics Research Assistant - RPI**

**May 1983 to July 1984** - Rensselaer Polytechnic Institute, Troy, NY. Developed and implemented a health physics program for the RPI Materials Irradiation Program. This program established material handling and radioactive material release criteria for commercial and research irradiation of materials using the RPI 100 MeV accelerator. Additional responsibilities included providing health physics support to the RPI campus where isotopes and X-ray machines are used in a research environment. Managed the RPI personnel TLD dosimetry system. Obtained experience in isotope handling under a broad scope license, in operational health physics for high energy accelerators and X-ray generators, and zero power reactor operations and health physics.

## **Nuclear Engineer - CE**

**June 1981 to May 1983** - Combustion Engineering, Inc., Windsor, CT. Conceptual designer and lead programmer for a computerized health physics information processing system for nuclear power plants. The system computerized and correlated the information flows of the dosimetry and radiation work permit functions with outage planning information. Radiation exposure trends could be generated for various jobs performed during a plant outage. The system was developed as part of a federal DOE contract to reduce radiation exposures at nuclear power plants.

## **Radiological Engineer - EB**

**June 1980 to June 1981** - General Dynamics Corp., Electric Boat Division, Groton, Ct. Responsible for providing health physics and radiological engineering support to a nuclear submarine shipyard. Performed shipyard and environmental monitoring. Supervised the training of Electric Boat's Radiological Emergency Technical Team. Experience obtained in isotope handling, emergency response, ALARA engineering, and reactor health physics.

## **Education**

### ***Master of Business Administration***

***(Concentration in Finance)***

Marist College, Poughkeepsie, NY (May 2000)

### ***Master of Engineering in Nuclear Engineering***

Rensselaer Polytechnic Institute, Troy, NY (May 1983 - May 1984)

### ***Bachelor of Science in Nuclear Engineering***

Rensselaer Polytechnic Institute, Troy, NY (September 1976 - May 1980)

## **Patents**

Patent 5843196 Ultra-clean Transport Carrier, December 1, 1998.

## **Professional Activities**

American Board of Health Physics Panel of Examiners Part II - Membership term 1993 - 1997

Chair of ANSI N43-1 Subcommittee *Radiation Safety for X-ray Diffraction and Fluorescence Equipment* - ANSI N43.2-2001, since 1991

Health Physics Society - Plenary member since 1980

## **Publications**

Leavey, J.A., J. Boyle and A. Skumanich, *Advanced Process Control Based on Lithographic Defect Inspection and Reduction*, IEEE/SEMI Advanced Semiconductor Manufacturing Conference, pp. 33-40, 2000.

Leavey, J.A., J. Boyle and A. Skumanich, *Lithography Process Control and Optimization Based on Defect Capture and Reduction*, Proc. Of SPIE Vol. 3998, Metrology, Inspection, and Process Control for Microlithography XIV, pp. 294-299 (Mar. 2000).

Leavey, J.A. *Overview and Current Mask Status of X-ray Mask Usage at IBM*, Poster presentation at XEL Conference, Yokohama, Japan, November 1998.

Leavey, J.A. and Lesoine, L.G. *IBM Advanced Lithography Facility: The First Five Years*, Solid State Technology, July 1998, pp.101-115.

Leavey, J.A. and P.J.S. Mangat, *Mask and Wafer Inspection and Cleaning for Proximity X-ray Lithography*, Proc. of SPIE 23<sup>rd</sup> Annual International Symposium on Microlithography, February 22-27, 1998.

Leavey, J.A., C. Capasso, A. Pomerene, W. Chu, A. Lamberti, S. Hector, J. Oberschmidt, and V. Pol *X-ray induced mask contamination and particulate monitoring in x-ray steppers*, Journal of Vacuum Science Technology B, Vol. 14 No. 6, 1996, pp. 4336-4340.

Leavey, J.A. and Lesoine, L.G. *Design Considerations for the IBM X-ray Lithography Facility*, IBM Journal of Research and Development, Vol. 37 No. 3, May 1993, pp.385-393.

Archie, C., J. Granlund, R. Hill, K. Kukkonen, J. Leavey, G. Lesoine, J. Oberschmidt, A. Palumbo, C. Wasik *Installation and Early Operating Experience with the HELIOS compact Synchrotron X-ray Source*, Journal of Vacuum Science Technology, Vol. 10 No. 6, 1992, pp. 3224-3228.

Leavey, J.A., L.G. Lesoine and K.W. Kukkonen *ALF: A Facility for X-ray Lithography II - A Progress Report*, Electron-Beam, X-ray, and Ion-Beam Submicrometer Lithographies for Manufacturing II, Proceedings of the Society of Photo Optical Instrumentation Engineers, Vol. 1671, 1992.

Leavey, J.A., L.G. Lesoine and K.W. Kukkonen *ALF: A Facility for X-ray Lithography* Electron-Beam, X-ray, and Ion-Beam Submicrometer Lithographies IX, Proceedings of the Society of Photo Optical Instrumentation Engineers, Vol. 1263, 1990.

Leavey, J.A. and Rooney, F.P. *Safety and Health Considerations of an X-ray Lithography Source*, Hazard Assessment and Control Technology in Semiconductor Manufacturing, Lewis Publishers (ACGIH Industrial Hygiene Science Series), 1989.

## **Contact Information**

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