Frank Riley

Education

2017 B.S., Interdisciplinary Studies (Organizational Development/Human Behavior)

Tennessee Tech University, Cookeville, TN

1988 A.A.S, Chemical Engineering Technology

Northeast State Community College, Blountville, TN

Professional Experience

**Oak Ridge National Laboratory (ORNL), UT-Battelle, Oak Ridge, TN**

*Group Lead, Target Production and Infrastructure Development* 2020-present

*Radiochemical Technical Professional,* Radiochemical Science and Engineering Group 2018-2020

*Irradiation Engineering Technician*, Thermal Hydraulics and Irradiation Engineering Group 2010-2018

*Radiochemical Lab Technician*, Nuclear Materials Processing Group 1993-2010

*Nuclear Operations Technician,* Radiochemical Engineering Development Center 1988-1993

A senior technical professional tailoring experience with NQA-1, DOE Conduct of Operations, and Configuration Change Management to support nuclear technical operations at ORNL for more than thirty years.

Currently, I am Group Lead of efforts to fabricate irradiation bound experiments supporting among others – the Californium 252 and Plutonium 238 Programs as well the efforts to upgrade and expand the operations/production portfolio equipment and capability.

Also, since 2018, I provide support to the Pu-238 Supply Program. I do so through three primary avenues: manage administrative and operational efforts for the product load out glove box line, develop new designs and control strategy for hot cell-based processing equipment, and by authoring/publishing program support and strategy documents.

Supporting the glove box line that will package and ship product requires networking with numerous support staff (design, facility, NDE, welding, safety) residing in other divisions (and national laboratories), setting and maintaining deliverable timeframe expectations, authoring numerous documents that will direct handling and packaging, and instructional operations while preparing for a readiness assessment to inaugurate the use of this facility change within a DOE Hazard Category 2 facility.

The process operations supporting the purification and oxide preparation for the plutonium happens within hot cells. I leverage my remote operations experience alongside senior operations staff to develop novel designs to update, upgrade or repair remote equipment, to date, supported the design, fabrication and testing of two ion exchange columns, a solvent contactor, a furnace, and the conversion of a spare access port to one providing electrical, fiber optic, gas, and thermocouple capability.

The program is new and needed a document that not only defined what equipment was required to meet milestones, but what was the current state of that equipment, and the risk of interruption or loss to the program. After roughly a year of investigation, interviews, and an in-depth draft process, the document was published. I also support the program in creation of process strategies that propel the program from research to production.

My entire technical career has been with ORNL, now more than thirty years. The first twenty-five was performing technical support in growing measures in that same Hazard Category 2 facility. Adopting a “make yourself indispensable” mindset, I began to gather knowledge and experience about every aspect of that facility – how it runs to what happens inside. I have performed basic batchwise chemical process operations in both hot cells, and glove boxes. I have dispensed isotopes for customers. I have assembled or oversaw the fabrication of one hundred curium targets for californium/heavy element production. I was a qualified rigger/operator to move the carrier holding those curium targets. The growing experience over time allowed me to become a problem-solving resource – how to design and perform a hazardous experiment safely and efficiently. My last activity with my mentor at the facility was to purify and prepare the material that would become element 117.

My time in irradiation engineering was fruitful (about six years), as I understood what quality rigor is applied to irradiation experiments. I won a laboratory award for building more than one hundred irradiation capsules in a year. Also having contamination management/mitigation experience, I expanded this group’s ability to work with depleted uranium irradiations. The greatest achievement in that group was the charge to resurrect a facility that supports in-situ reactor irradiation experiments. This facility, via umbilical, could measure and control experiment condition temperature via gas type and flow. There were more than one thousand items in this experiment undergoing irradiation. The effort to reestablish the capability that lay dormant for more than a decade required me going “native” at the HFIR. I became a task leader in their organization and began to build working trust. Networking with facility, safety, operations, and document control, after one year the facility was connected to the experiment and I oversaw the operation of the irradiation for the next six reactor cycles. Being a task lead was critical. I could develop the work documents and direct the efforts of the support staff.

Publications

C.E. Porter, F.D. Riley, Jr., R.D. Vandergrift, L.K. Felker “Fermium Purification Using TEVA™ Resin Extraction Chromatography,” *Separation Science and Technology*, 32, (1-4), pp.83-92, 1997.

Yu. Ts. Oganessian, F.Sh. Abdullin, P.D. Bailey, DE. Benker, M.E. Bennett, S.N. Dmitriev, J.G. Ezold, J.H. Hamilton, R.A. Henderson, M.G. Itkis, Yu.V. Lobanov, A.N. Mezentsev, K.J. Moody, S.L. Nelson, A.N. Polyakov, C.E. Porter, A.V. Ramayya, F.D. Riley, J.B. Roberto, M.A. Ryabinin, K.P. Rykaczewski, R.N. Sagaidak, D.A. Shaughnessy, I.V. Shirokovsky, M.A. Stoyer, V.G. Subbotin, R. Sudowe, A.M. Sukhov, Yu.S. Tsyganov, V.K. Utyonkov, A.A. Voinov, G.K. Vostokin, and P.A. Wilk “Synthesis of a New Element with Atomic Number Z = 117,” *Physical Review Letters*, PRL 104, 14502, 2010.

Awards

**UT-Battelle Awards Night 2015**

Technical Support for Research

For outstanding contributions in the fabrication, assembly, and disassembly of more than 100 irradiation experiments this year, helping set utilization records at HFIR and supporting critical national and international programs. More than 35 irradiation campaigns were conducted in the midst of meeting stringent deadlines and overcoming numerous unforeseen problems, all while still meeting the highest QA standards.

**Significant Event Award 2012**

Irradiation of single pellet targets to support the Pu-238 supply project

**Significant Event Award 2000**

Outstanding effort to design and build unique irradiation targets for research reactor uses. A novel approach to meeting quality assurance demands, and creation of additional procedures led to success of the project.

**Distinguished Achievement in Technology Development 1999**

Providing extremely pure samples to customer, overcoming great challenges in chemical separations and purification due to short half-life. Customer achieves unparalleled success in product analysis not heretofore performed.