

STUDENT SUMMER INTERNSHIP TECHNICAL REPORT

Regulatory Reform: A Summer Experience

DOE-FIU SCIENCE & TECHNOLOGY WORKFORCE DEVELOPMENT PROGRAM

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ABSTRACT

During the summer of 2018, I was given an opportunity to participate in an internship at the Department of Energy (DOE) Headquarters in Washington D.C. Although I was assigned to the Forrestal Building, my office and daily tasks were usually carried out in the 270 Building in Germantown, Maryland. My project consisted of many various tasks which, under the mentorship of Robert Seifert, the Director of Regulatory Compliance, included participation on the Annual Summary Report Review team for the Low-Level Waste Disposal Facility Federal Review Group (LFRG); organization of a National Environmental Policy Act (NEPA) Webpage; discussions on Interstate Technology & Regulatory Council (ITRC) document standardization; organization of a Regulatory Compliance Binder; attendance at various workshops; and other invaluable experiences. I also had the opportunity to work alongside other mentors who accompanied the other interns and myself to workshops and meetings.

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1. INTRODUCTION

The summer as a Department of Energy intern began as a mentee to Mr. Robert Seifert, the Director of Regulatory Compliance at the U.S. Department of Energy's Office of Environmental Management (DOE-EM), who assigned various tasks including:

- ⇒ Support to the Hanford Environmental Restoration Disposal Facility Performance Assessment (ERDF PA) Annual Summary Review Team
- ⇒ NEPA Website Support
- ⇒ Regulatory Reform Strategy Support
- ⇒ 435.1 Revision
- ⇒ MODARIA II Working Group 1 Interim Report Support

Mr. Seifert gave me the liberty of getting to know all the staff members within these tasks, shadowing him to understand the ins and outs of intergovernmental groups, and allowing me to choose my own projects. I accompanied Mr. Seifert to his meetings to understand the processes behind the executive decisions that are made which involve each of the Department of Energy's sites, which led to my cooperation with review teams and the updating of certain practices within the Environmental Branch.

2. EXECUTIVE SUMMARY

This research work has been supported by the DOE-FIU Science & Technology Workforce Initiative, an innovative program developed by the US Department of Energy's Office of Environmental Management (DOE-EM) and Florida International University's Applied Research Center (FIU-ARC). During the summer of 2018, a DOE Fellow intern, Ximena Lugo, spent 10 weeks doing a summer internship at the Department of Energy's Headquarters under the supervision and guidance of Robert Seifert, the Director of Regulatory Compliance. The intern's project was initiated on June 2, 2018, and continued through August 10, 2018 with the objective of learning the various roles and processes involved in the decision making within the Environmental Management Branch of the Department of Energy.

3. RESEARCH DESCRIPTION

During the first week, an orientation was organized for the interns to understand the expectations for the ten-week internship. Julianne Parker was another intern also assigned under Mr. Robert Seifert with me to work on the same topics but separate tasks. Julianne and I would plan our day by looking at Mr. Seifert's calendar and planning out which meetings we would attend. The first few meetings involved us listening in on discussions of regulatory work, which usually involved the Environmental Protection Agency (EPA), Department of Defense (DOD), NEPA, or DOE sites. After each meeting Mr. Seifert would spend time with us to review and explain what was accomplished and his expectations. The first two weeks were mostly spent with Mr. Seifert explaining to us everything about his branch including its history. He also ensured that we understood his expectations and the goals of all the meetings.

Faculty meetings were usually a call-in conference with the Forrestal team, the team Julianne and I often worked with. Mr. Seifert would start the meetings by updating both the Germantown and Forrestal teams on his progress throughout the week and then everyone else did the same. During the first faculty meeting, Julianne and I were assigned our first ERDF Report. We also learned a lot about state and tribal representatives being more engaged in meetings in order to introduce a more state-wide perspective in the decision making. Long-term stewardship (LTS) meetings were to indicate DOE-EM's position and path forward. The team explained to us the importance of 7th generation, which explains the commitment DOE-EM has towards tribal presence and Natural Resource Damages (NRDs). It was also explained that there were usually Department of Justice (DOJ) arbitrators present to give unbiased perspectives, essentially the government's lawyers.

Mr. Seifert also explained many intergovernmental agencies to us. NEPA issues evaluations before any remediation and serves as a regulatory agency for DOE since DOE is self-regulating. NEPA has a review process with three different levels of analysis including Categorical Exclusion (CX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as the Superfund Act, also evaluates DOE's decisions and funds cleanup projects and sites. We also worked with the Resource Conservation and Recovery Act (RCRA). CERCLA focuses more on clean-up while RCRA focuses on solid waste. States can implement RCRA but not CERCLA, however both are federal statutes.

Julianne and I were also introduced to the Low-Level Waste Disposal Facility Federal Review Group (LFRG) and one assignment of ours was based on this group. LFRG is comprised of federal employees and led by EM which serves to enforce requirements for radioactive waste disposal facilities and tank closures. LFRG regulates DOE within the department itself. LFRG does work with other regulatory programs that will be mentioned later on.

Julianna and I sat in a meeting with Chris Kemp in Washington State to discuss PERMAfix being permitted, the presence of dimethyl mercury in the Hanford Double Shell Tank (DST), and combining separate approaches into one document which required better language to satisfy both sides. Robert Seifert ensures that both offices follow NEPA procedures and directs Hanford towards site procedures that ensure regulatory compliance, avoidance of missing files, and

completion of drafts. He also explained that there are 2 NEPA Compliance Officers (NCOs) assigned to Hanford while most sites have 1.

The Manhattan Project (1942-1946) was also explained to us extensively by Mr. Seifert. The Cold War technology (1985-1991) ended in 1989 when the Berlin Wall came down. Dwight D. Eisenhower opened the Nuclear Science & Technology program from 1953-1990 with specific mission areas. These included nuclear facility decommissioning, soil & water cleanup, liquid radioactive waste processing & disposition, solid radioactive waste, nuclear materials and spent nuclear fuel management. Each site was named differently and out of order to confuse enemies during World War 2 and Cold War. This program had many accomplishments which included the clean-up/closure of 91 sites out of 107 taking 28 years. The projected date for program completion is 2070 with an estimated cost of \$250 billion. The EM Robotics Program Overview, which was held in the form of a videoconference led by Mr. Rodrigo Rimando that included all the national labs, explained this history as well. There was a unique period of hastened innovation for the 4th Industrial Revolution which included a fusion of technology that blends the physical, digital and biological spheres. CBRNEE was also discussed with mention of the National Aeronautics and Space Administration (NASA) trying to add an extra “E” to the acronym. This program involves chemical, biological, radioactive, nuclear, explosive, and extraterrestrial materials which also need decontamination.

I attended another meeting with Idaho National Lab which explained U.S. Remote Handling including long-handed tools for remote handling, a masterslave manipulator, and a through the wall manipulator. We were introduced to the Robot Operating System (ROS), the Power Arm primarily used by bomb squads, and the spallation neutron source (SNS). We also got to understand the Human Machine interface which ergonomics applied to control room design, the Remote Control Excavator (a joint DOE/DOD operation), and 3D printed Chevy Cobra-printed large polymer objects.

Robert Seifert also explained to us the financial distributions for sites and programs. Currently, EM is budgeted to \$7.1 billion and costs are projected to \$123.78 billion. 37% of funds go towards tank farms, 27% towards deactivation and decommissioning, 16% towards nuclear fuel, 10% towards soil remediation, and 10% towards site services. There has been EPA tension because of insufficient budget allocated for soil remediation.

Another NEPA meeting that we attended also discussed NEPA and its involvement with respect to the plutonium surplus. The agenda for disposal of surplus plutonium in the Waste Isolation Pilot Plant (WIPP) was discussed.

Robert Seifert also held a biweekly meeting with Hanford during which Julianne and I were both present. The meeting served to gather feedback on issues related to Hanford’s needs and wants to present to Anne White, Assistant Secretary for Environmental Management (EM-1). We discussed the documents needed to avoid legalities, lawsuits, etc., which stakeholders were in agreement with. Before these decisions are made, discussions are held with the nearby tribes which generally generate no feedback as the common goal is to get everything out of the tanks.

The Hanford Challenge that DOE faces are checks & balances for Hanford by the stakeholders (lobbyists, paid citizens, etc.), trying to get rid of High Level Waste (HLW), the proximity to the Columbia River, the opposition to the Department of Energy's decisions, and environmental lawyers that go together with advocacy groups.

Julianne and I attended an LFRG meeting with Justin Marble and Sherri Ross during which we discussed the Annual Summary Review we would be working on. We also talked about the order in which LFRG managed radioactive waste, compliance evaluators for sites, and sites evaluating and submitting reports which then go to DOE. LFRG deals with high level waste farms, closing these farms and grouting for permanent disposal, and having reviews submitted to headquarters. These summary reviews are done annually and conclude if sites comply. Checklists go to three people for review then are returned and referenced.

Our next assignment was to work with Bill Ostrum and Alexandra Gilliland on the NEPA webpage and updating the site all together. I worked on researching more on DOE-EM's relationship with NEPA, specifically using references from the NEPA library set up in headquarters, and wrote a two-paragraph summary introduction for the website. The purpose was to construct and create more links that may be necessary so the webpage could be more easily navigated.

I attended a meeting with Oak Ridge National Laboratory and Tribe State and Federals at Forrestal discussing the water management issue with ETTP, implementation of rods, plans to create an exit strategy if pump and treat decisions are concluded, certification that DOE criteria met, and finally ensuring that meetings are held with groundwater experts.

Melissa Ryder organized a Resume Workshop which was extremely helpful with tips on how to apply for government jobs, pinpointing what it is that employers look for. Items such as job experience, semester hours, education and major must be verified. Resumes must include outcomes tailored to each job, with experience in reverse chronological order, , in plain language avoiding acronyms, etc. She gave us several resume examples for each position we were interested in.

The project that Julianne and I focused on primarily was the compliance binder, which consisted of preparing an outline as to what could be found in this binder. The purpose of the binder was to compile all documents that explain the background of each site and their regulatory procedures, as well as the staff in charge of compliance. Because most employees are looking to retire, the issue for the new hires is to understand all processes and efficiently work towards the same goal, so the binder would serve to provide access to preliminary info on questions regarding regulatory compliance from a practitioner's standpoint. The table of contents was developed and relevant text was compiled for each of the sections.

Skip Chamberlain took Julianna, Silvia and I to the Nuclear Regulatory Commission (NRC) Radon Barriers Workshop, "A Timeline of NRC Activities on Engineered Surface Barriers Used at Disposal Sites for Radioactive Materials." Many different speakers presented their research on surface covers preventing exposure, engineered covers for waste containment, and soil architecture and how it is affected. Evapotranspiration covers were presented that initiated the Enhanced Cover Assessment Project (ECAP) to evaluate effects of natural processes on cover performance and

sustainability since the 1990's. There was also a biased study site selection that chose places that included the largest flux of radon. This tested for ecological succession, turmoil activity, design vulnerability, and climate activity. These field evaluations from radon barriers resulted in seasonal ponding from water saturation, changes to soil architecture, and a low permeability radon barrier layer with low hydraulic properties.

Skip Chamberlain also took some interns to the Environmental Protection Agency (EPA) to discuss document standardization with the Interstate Technology Regulatory Council (ITRC). The purpose was to make all documents standardized with a search bar to scan all documents, make navigation easier, compare templates and choose the best layout. All interns got to discuss ideas and spend the day in the office finally gathering solutions that were suggested to EPA.

Jean Pablo Pabon also took the initiative to ensure that interns got to visit a site, which gave us the opportunity to go to Savannah River Site (SRS) in Aiken, South Carolina. Interns were introduced to many different departments and facilities, including the Fixative Mock-Up Test Facility on which Tristan Simoes Ponce presented his research, the Additive Manufacturing – 3-D Printing facility, the P & C Reactors, the Virtual Reality facility and the Plutonium Fuel Form Facility (PuFF). We also understood more about the Deactivation and Decommissioning (D&D) process thanks to Mike Serrato who gave us a tour of most of SRS.

4. CONCLUSION

Beginning this internship, I believed I was interested in policy and regulation and now I really have an amazing grasp on what that entails. I have enjoyed the aspect of interconnectedness within the Department of Energy and how agencies regulate DOE ensuring that the government is doing its best to protect the environment and ensure that cleanup is being conducted rightfully. I appreciated the dedicated mentoring Robert Seifert gave Julianne Parker and myself. It was interesting to see how much work and the procedures that have to be followed to make even the smallest decision, which gives me confidence that radioactive waste is being handled properly. I believe the internship gave me greater insight as to what I would like to pursue my Master's degree in and focus my career on and am grateful for the opportunity.

APPENDIX A.



Figure 1. Group Picture with DOE Interns



Figure 2. Environmental Management Branch



Figure 3. Pre-Interview with FIU in DC



Figure 4. Forrestal Building Lobby



Figure 5. Post-Interview with FIU in DC