

# SUMMER INTERNSHIP TECHNICAL REPORT

## Supporting DOE EM 4.31, Office of Regulatory Compliance

### DOE-FIU SCIENCE & TECHNOLOGY WORKFORCE DEVELOPMENT PROGRAM

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## **ABSTRACT**

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This report provides an overview of the 2017 summer internship served with the Department of Energy's Office of Environmental Management, DOE EM 4.31 Office of Regulatory Compliance, based in the Germantown, Maryland headquarters. Over the duration of the internship, the tasks assigned focused on supporting the existing regulatory compliance projects, specifically the revisions of the National Environmental Policy Act (NEPA), DOE Order 435.1 Radioactive Waste Management Regulation, the National Dialogue and a composite analysis from the Savannah River Site. This report will explore each of the tasks to provide a brief overview of the entire internship experience.

## TABLE OF CONTENTS

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ABSTRACT.....	iii
TABLE OF CONTENTS.....	iv
LIST OF FIGURES .....	v
1. EXECUTIVE SUMMARY .....	1
2. INTERNSHIP DESCRIPTION AND RESULTS .....	2
3. CONCLUSION.....	8
4. REFERENCES .....	9

## **LIST OF FIGURES**

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Figure 1. The Nuclear Safety Framework at the Department of Energy..... 4

## **1. EXECUTIVE SUMMARY**

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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 Environmental Management (DOE-EM) and Florida International University's Applied Research Center (FIU-ARC). During the summer of 2017, DOE Fellow intern Christine Wipfli spent seven weeks conducting a summer internship at DOE EM headquarters in Germantown, Maryland under the supervision and guidance of Mr. Robert Seifert, Director of the Office of Regulatory Compliance. The intern's project was initiated on June 19, 2017, and continued through August 4, 2017, with the objective of supporting the main projects under DOE EM Office 4.31.

## 2. INTERNSHIP DESCRIPTION AND RESULTS

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Over the duration of the summer internship at the DOE EM headquarters, Ms. Christine Wipfli had the opportunity to work alongside the Director of the Office of Regulatory Compliance. The range of tasks completed over the duration of the internship reflects the broad array of projects that the Office is currently undertaking, and the Director, Mr. Rob Seifert, is overseeing. Ms. Wipfli was therefore fortunate to gain exposure to numerous ongoing projects pertaining to the DOE's obligation to maintain compliance with environmental orders, statutes, and other forms of U.S. legislation. This report aims to provide an overview of the main projects that were worked on during the summer internship, as well as to offer additional information that is fundamental in understanding how those tasks fit into the bigger picture of environmental compliance within the U.S. DOE.

DOE has several offices that incorporate environmental policies and legislation into daily operations (e.g., Offices of Fossil and Nuclear Energy); however, the Office of Environmental Management (EM) has an especially extensive set of environmental compliance requirements. This is due to EM's responsibility to clean up the legacy of the nuclear weapons complex that took place over several decades across the U.S., and specifically, to manage the radioactive and hazardous waste that was created as a result of the weapons production, storage, and disposal of those materials. There are vast efforts underway to decontaminate and dismantle former facilities, to clean up contamination that has entered the soil and groundwater around the sites, as well as to mitigate former disposal areas that are considered inadequate in meeting today's standards. All of these tasks are completed with the ultimate effort of ensuring the safety of the public residing near the sites and the workers cleaning them up; therefore, a vast set of environmentally related statutes, regulations, directives and guidance are incorporated into the clean-up process.

DOE EM does not work alone in these clean-up efforts. Therefore, the hundreds of companies contracted by the DOE, at sites across the U.S., are also required to comply with environmental regulations in their daily operations. Additionally, each site has additional layers of environmental compliance from local, state, and federal agencies. DOE EM also cooperates with several other federal agencies involved in similar clean-up activities, such as: the Army Corps of Engineers, the Department of Defense, the Nuclear Regulatory Commission and the Environmental Protection Agency.

The Office of Regulatory Compliance (4.31), plays a crucial role in managing projects, including: ensuring the Agency stays up to date with the latest compliance requirements, revising the compliance documentation when it becomes outdated, overseeing the measureable milestones, ensuring legal obligations are met, and assisting site personnel in meeting the requirements (including personnel training), with the overall objective of supporting DOE EM meet its clean-up objectives.

It is important to note that the DOE is not a regulatory agency; therefore, Office 4.31 does not issue fines or penalties for non-compliance at the sites. However, the Office does act as an enabler to ensure all compliance requirements are met, and it provides DOE with the resources to self-regulate the radioactive and hazardous materials. The compliance enforcement at each DOE

site comes from external local, state, and federal agencies, in which non-compliance can result in fines and penalties.

To add to the complexity, each DOE site has different levels of compliance requirements depending on its location and former function. Some U.S. states have stricter environmental requirements which require greater efforts to meet them, and some DOE sites have unique circumstances that warrant that environmental compliance considerations takes center stage throughout all of the clean-up operations. For example, this can be a result of a particular contaminant of concern that behaves abnormally with the geophysical characteristics of the area, which requires a unique set of clean-up operations to ensure worker and public safety.

The U.S. Environmental Protection Agency is one of the main environmental compliance enforcement agencies which monitors the operations at numerous DOE sites, specifically where high emitting radioactive waste is handled and stored. Their main objective is to ensure that people (including workers at the site) and the environment are protected from any hazardous substances that could compromise their health, and to ensure that federal laws are enforced.

Two of the most significant federally mandated environment regulations are known as the Resource Conservation and Recovery Act (RCRA) of 1976 and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980. While both Acts involve numerous other principles and considerations, overall they achieve the same basic clean-up objectives; RCRA focuses on managing hazardous waste at facilities that are still in use, while CERCLA focuses on managing clean-up efforts at non-operating (decommissioned) sites. Office 4.31 ensures that the requirements under these Acts are met by the operations and personnel at every DOE managed site. In addition to RCRA and CERCLA, the majority of the site clean-up is executed under Federal Facility Agreements, and through various consent orders, agreements, and decrees with individual states.

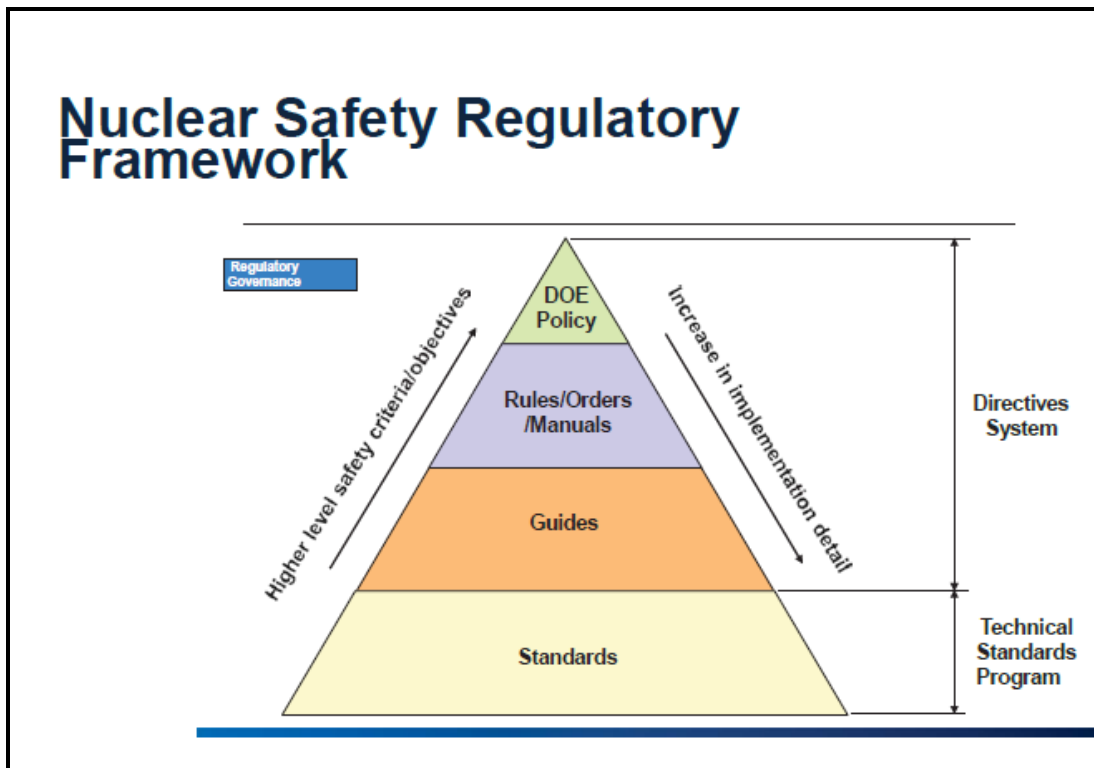
These agreements and orders identify milestones associated with clean-up actions and present a timeline for which those milestones are to be met. DOE has approximately 40 agreements and orders in place with its State and Federal regulators dealing with EM's clean-up mission. The enforceable milestones have fixed and mandatory due dates presented in a progress report, which often represents the progress of the clean-up at each site. Each quarter, DOE EM updates their progress reports, providing a snapshot of the complex-wide environmental compliance performance.

The DOE is also responsible for following established Orders drafted by DOE senior officials and the General Council. These orders establish certain requirements and criteria for the organizations' internal operations, in order to adhere to all federal laws and regulations. These Orders influence the entire organization, but several touch on environmental compliance related requirements which are managed by Office 4.31. One in particular that is currently in the process of being revised and will be discussed later in this report, is DOE Order 435.1, covering radioactive waste management.

With all of the compliance requirements that exists within the Agency, it is vital to maintain a clear focus on the significance of each type of documentation and their relationship to each other.



Figure 1 provides a hierarchical representation of these documents and their role within the organization.



**Figure 1. The Nuclear Safety Framework at the Department of Energy.**

The documents range in level of detail as well as level of authorization. The standards, for instance, at the bottom of the pyramid, offer valuable information which act as recommendations that should be followed, but are not mandatory. DOE Policy at the top of the pyramid, however, is fundamental to the missions and objectives of the Agency, and must be incorporated into all respective areas of the organization.

Throughout Ms. Wipfli’s summer internship with the Office of Regulatory Compliance, the tasks performed touched on several of these different layers of documentation. This cross-cutting exposure provided valuable insight into the complexity of environmental compliance within a federal organization.

The main objectives during the summer internship can be categorized into the following subgroups:

- 1) To gain a better understanding of the role of EM’s Office of Regulatory Compliance, within the DOE framework and mission;
- 2) To support all Regulatory Compliance personnel in fulfilling their individual project objectives; and

- 3) To focus on four significant ongoing projects, coordinate with the respective points of contacts for those projects, and carry out steps which continue to progress each forward. Those ongoing projects included:
  - a. DOE Order 431.5 revisions
  - b. National Environmental Policy Act (NEPA) regulatory reform
  - c. National Dialogue
  - d. Low-Level Waste Disposal Facility Federal Review Group (LFRG)

### **DOE Order 431.5 Revisions**

As previously mentioned, one of the principle goals of Office 4.31 is to ensure that the regulatory compliance documentation that is used throughout DOE EM is updated to reflect the most current knowledge and acceptance criteria. In the case of DOE Order 435.1, which pertains to the self-regulation of radioactive waste management, the Order had not been revised in over twelve years. Many of the revisions focused on streamlining the Order to improve management of the waste, and to specify radioactive waste management criteria for the different levels of radioactive waste, including: low level waste, high level waste, and transuranic (TRU) waste. In 2010, a process had been initiated to inform the public of the suggested revisions, and to get feedback on the modifications to be made. Office 4.31 is working on these revisions, which continue to gather input and approvals from other departments and agencies, to move them to the finalization phase and to eventually implement them into the Agency compliance requirements.

Ms. Wipfli's role in these efforts required coordination with the DOE Order 435.1 revision team, to review the Order as it stood, and provide feedback on the suggested revisions. Ms. Wipfli also participated in the ongoing meeting discussions to plan the sequential phase in the finalization process which consisted of training programs. Throughout the DOE EM complex, a Waste Management Oversight Implementation Plan was underway to provide personnel training relevant to the updates to the DOE 435.1 Order, in addition to the implementation of the DOE Oversight Policy. As a deliverable, Ms. Wipfli's task involved developing the training material for this implementation plan which would be presented in workshops across the DOE complex.

### **NEPA Regulatory Reform**

The second project that Ms. Wipfli worked on during her summer internship dealt with the National Environmental Policy Act (NEPA). This is a law that was created in 1970, and requires federal agencies to assess any environmental impact a project may have, before the project is actually implemented. Any federal project that could impact the environment is subject to NEPA, including highways and infrastructure, land management actions, and permit decisions and applications, as just some examples. The NEPA process requires agencies to evaluate the environmental and related social and economic effects of their proposed actions, and it also provides a platform for the public to get informed and comment on those proposals. The Department of Energy has an Office devoted to NEPA Policy and Compliance which works closely with the Office of Regulatory Compliance to ensure that the Department's proposed actions comply with the letter and spirit of the National Environmental Policy Act, and as mentioned, to assist the interested public in reviewing the DOE NEPA documents.

The DOE NEPA Order 451.1B is also currently in the revision process, incorporating feedback and comments from multiple departments and agencies. Ms. Wipfli's role in this project was to support the NEPA Compliance Officer with relevant tasks in support of these efforts. This included reviewing relevant documents, providing feedback, participating in relevant discussions, compiling and consolidating pertinent information, and reaching out to various parties across the agency to capture relevant input.

### **National Dialogue**

The third project supported during the summer internship was called the National Dialogue. The National Dialogue is an established cooperative agreement between the Department of Energy, the Environmental Protection Agency, and several state regulatory agencies. The goal of this Dialogue is to bring together senior leadership from each organization in order to promote clean-up objectives at specific DOE sites. This is accomplished by aligning clean-up operations and priorities, streamlining processes, and identifying and tackling any issues which hinder clean-up progress at a site.

Ms. Wipfli's role in this project focused on reviewing relevant documentation, providing input and feedback, and supporting the upcoming National Dialogue meeting which took place in New Mexico immediately after the internship period was completed. Efforts like the National Dialogue are critical to the success of the Agency because they provide open channels with external agencies to not only improve operations and reduce overlap, but also to strengthen trust in interagency relationships.

### **Low-Level Waste Disposal Facility Federal Review Group**

The last major project worked on during the summer internship supported the Low-Level Waste Disposal Facility Federal Review Group (LFRG). LFRG is an independent group within DOE's Office of Environmental Management; it ensures that DOE EM, along with the National Nuclear Security Administration (NNSA) provide oversight reviews of radioactive waste disposal facilities to ensure the protection of the public and environment. LFRG directly supports the DOE Order 435.1 Radioactive Waste Management, and DOE's commitment to the Integrated Safety Management System process. The group has several roles and functions, one of them being to conduct reviews and weigh-in on decisions made at DOE sites that could impact the sites' ability to meet environmental compliance commitments and milestones. During Ms. Wipfli's internship, a project surfaced that consisted of a proposal from the Savannah River Site pertaining to a groundwater flow model utilized by site personnel. A previous review of the site questioned the effectiveness of the currently used groundwater flow models, and recommended that a regional groundwater flow model be adopted. The personnel at the site responded in a position paper stating why they believed a regional groundwater flow model was unwarranted due to the capabilities of the existing models, coupled with what they believe to be an unjustified investment of time, effort, and over \$8 million for the recommended regional model.

Ms. Wipfli's role in this project consisted of reviewing the exchange of correspondence and reports including the position paper and composite analysis, and to provide input and feedback on the matter. Over the course of the internship, Ms. Wipfli participated in several discussions with the point of contact to discuss the following course of action. The final deliverable of this task was a draft conclusion memo based off of Ms. Wipfli's observations and recommendations.

The memo was submitted to and reviewed by senior leadership for incorporation into the final decision made by the LFRG group.

Outside of these four projects, several additional tasks were spread though out the internship which included: attending weekly departmental meetings, attending external meetings and presenting a summary to the department and supervisor, coordinating with colleagues to initiate action on dormant projects, attending several informational presentations, and participating in internship related activities.

### 3. CONCLUSION

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As time passes, information and accepted standards change drastically. Technology advancements lead to more accurate data, pilot studies shed light on effective techniques, lessons learned provide insight on areas where improvements are necessary, more restrictive legislation is created, and general opinions on what is considered safe can change over time. There are numerous ways in which currently accepted information is no longer valid or becomes outdated. The obligation of environmental compliance within an organization such as the Department of Energy is to adapt, review, revise, and maintain accordance with this new information.

This internship experience provided invaluable insight into the role of DOE EM's Office of Regulatory Compliance. By working alongside the Director and Office 4.31 colleagues, it became evident just how vital the Office's contributions are to the entire organization. The Office is working to not only update this outdated information, but to facilitate the organizations ability to meet milestones, to fulfill legal obligations, and to meet clean-up mission objectives. Office 4.31 also has a tremendous obligation to ensure that all of the environmental compliance measures are in place and fully functional at each site to keep the public and workers safe. With over 107 DOE EM clean-up sites spread across the U.S., and thousands of federal and contractor employees carrying out the clean-up operations, this is an intensive but fundamental part of the process.

Working on the four projects described in this report provided Ms. Wipfli with the insight to better understand the depth of the role of this Office, and the complexities that come with managing a function that reaches every corner of the Agency.

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