OFFICE OF INSPECTOR GENERAL

U.S. Department of Energy

Management Challenges at the Department of Energy - Fiscal Year 2021

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Department of Energy
Washington, DC 20585

November 18, 2020

MEMORANDUM FOR THE SECRETARY OF ENERGY

SUBJECT: INFORMATION: Special Report on "Management Challenges at the Department of Energy - Fiscal Year 2021"

In compliance with the Reports Consolidation Act of 2000, the Office of Inspector General annually identifies what it considers to be the most significant management challenges facing the Department of Energy. The Office of Inspector General's goal is to focus attention on significant issues with the objective of working with Department officials to enhance the effectiveness of agency programs. The Management Challenges Report should be a valuable tool to assist the Department to successfully fulfill its mission of ensuring America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions.

Historically, our Management Challenges Report identified broad areas of concern for the Department. This year, the Office of Inspector General significantly revised how the Management Challenges Report was compiled and presented to focus on more specific goals and challenges that the Department is facing. We coordinated with Department mission elements to identify the most pressing challenges, with an eye toward better focusing on practical issues where near-term progress is achievable. Our intent is to provide the Secretary and other policymakers with a more useful document containing specific and actionable challenge areas where meaningful improvements may be realized in the near term.

We hope that the new methodology used to identify management challenges within this report will prove more useful to senior Department officials and will enable action to address the issues they are facing.

Teri L. Donaldson
Inspector General

cc: Deputy Secretary
Chief of Staff
Acting Under Secretary of Energy
Under Secretary for Science
Acting Administrator, National Nuclear Security Administration
Chief Information Officer
Deputy Chief Financial Officer

*Cover photo courtesy of the U.S. Department of Energy

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Management Challenges at the Department of Energy - Fiscal Year 2021 At a Glance

What are Management Challenges?

In accordance with the Reports Consolidation Act of 2000, the Office of Inspector General (OIG) reports annually on the most serious management challenges the Department faces. The management challenges process is an important tool that assists us in focusing our finite resources on what we consider to be the Department's most significant risks and vulnerabilities.

The Department of Energy's Mission

The Department of Energy's mission is to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions. Through 17 national laboratories, 113,000 Federal and contractor personnel, and an annual appropriation of approximately $35 billion, the Department engages in cutting-edge research that expands the frontiers of scientific knowledge, generates new technologies to address the country's greatest energy challenges, and strengthens national security by maintaining and modernizing the nuclear stockpile.

What the OIG Did

This year, we significantly revised how the management challenges report was compiled and presented. While we continued to leverage the OIG's past audits, inspections, and investigative works, we have also proactively collaborated with Department officials to aid us in identifying more specific vulnerabilities. Our intent is to provide the Secretary and other policymakers with a more useful document containing specific and actionable challenge areas where meaningful improvements can be realized over the next fiscal year.

What the OIG Found

Based on the results of our body of work over the past year and in collaboration with Department officials, fiscal year 2021 management challenges are more specific than what has been previously reported. These challenges include:

- Office of Science/Artificial Intelligence and Technology Office – Establishing the Department of Energy as a Federal Enterprise Leader in Developing and Deploying Artificial Intelligence
- National Nuclear Security Administration – Restoring Plutonium Pit Production Capability
- Office of Environmental Management – Managing Tank Waste
- Cross-Cutting Challenges – Reducing Fraud, Waste, and Abuse

ESTABLISHING THE DEPARTMENT AS A FEDERAL ENTERPRISE LEADER IN DEVELOPING AND DEPLOYING ARTIFICIAL INTELLIGENCE

Office of Science/
Artificial Intelligence and Technology Office

Oak Ridge National Laboratory's Summit Supercomputer — The Department of Energy

Photo courtesy of the U.S. Department of Energy

"Continued American leadership in AI is of paramount importance to maintaining the economic and national security of the United States and to shaping the global evolution of AI in a manner consistent with our Nation's values, policies, and priorities."
– Donald Trump, President of the United States

In February 2019, the U.S. President directed the Department and other Federal agencies to pursue several strategic objectives to promote and protect American advancements in Artificial Intelligence (AI). These objectives include, among others, sustained investment in AI research and development (R&D) in collaboration with industry; enhanced access to high-quality and fully traceable Federal data, models, and computing resources; and minimized vulnerability to AI-enabled attacks from malicious actors. The Executive Order states:

> Maintaining American leadership in AI requires a concerted effort to promote advancements in technology and innovation, while protecting American technology, economic and national security, civil liberties, privacy, and American values and enhancing international and industry collaboration with foreign partners and allies.

As an emerging strategic technology, AI has the potential to transform many aspects of discovery and applied technology science; manufacturing, infrastructure, finance, and commerce;

government operations; and national security. For example, the Department's Summit supercomputer at the Oak Ridge National Laboratory, which has unsurpassed AI capabilities, has played an important role in the Department's urgent COVID-19 pandemic investigations of the virus and potential therapeutic responses. Maintaining American leadership in AI will require a "whole-of-government approach" that will include meaningful contributions from Department and other Federal agencies working in partnership with private and academic sector experts.

As the custodians of the most advanced high-performance supercomputers and massive multimodal data sets stemming from diverse research, the Department is well-situated, working in conjunction with its national laboratories, to take a leading role in developing and deploying AI. Moreover, because the Department is charged with wide-ranging and complex missions in environmental stewardship, energy infrastructure, and national security, the deployment of advanced AI technologies is vital to enhancing its operations and resisting threats arising from adversarial use of AI. Meeting these goals will require a coherent, enterprise-wide strategy, excellent intradepartmental collaboration, and large-scale investments.

The Department's investment in AI research, development, and demonstration has been largely uncoordinated. Such efforts have been made by various Departmental elements drawing on their respective resources for research or operations, which are not dedicated exclusively to AI. This has meant that choices for AI investment have competed with other important initiatives sharing the same resource pools, such as quantum information science and the Exascale Computing Initiative. While investments in those projects can further AI development, those benefits are often incidental to the primary purpose of the projects. Likewise, some of the Department's investments in cybersecurity R&D encompass elements of AI technology, but not exclusively so. Such a balkanized approach to AI investment poses the risk that the Department will miss opportunities to leverage all of its resources strategically.

Realizing the Department's goal of AI leadership will require cross-cutting, enterprise-wide efforts, with contributions from such diverse elements as: the Office of Science; the Office of Cybersecurity, Energy Security, and Emergency Response; the Power Marketing Administrations; the Office of the Chief Information Officer; and, among others, the National Nuclear Security Administration (NNSA) and the Department's national laboratories. Achieving success in such an effort is inherently challenging given the scope of the subject matter and the manner in which the Department conventionally operates.

As part of the Department's efforts, in September 2019, the Secretary of Energy established the Artificial Intelligence and Technology Office (AITO) as a new element reporting directly to the Under Secretary for Science. The secretarial order establishing AITO specifies that this new office will foster the strategic coordination and development of AI activities across the Departmental complex by serving as a central point of coordination. In addition, AITO is tasked with enhancing the Department's sector-specific agency role and responsibility, and providing support to its national security platforms. As its vision, AITO has adopted the goal of

transforming the Department into the U.S. Government's lead agency in the civilian use of AI by accelerating its research, development, delivery, and application. The first Director of AITO was recruited from industry and joined the Department in February 2020.

In order to coordinate strategic research priorities and ensure investment decisions were effectively leveraged, the Deputy Secretary established the Research and Technology Investment Committee (RTIC) to convene the principal leaders of the Department's R&D activities on a regular basis. At the RTIC's quarterly meeting in November 2019, AITO demonstrated that the AI data available to leaders responsible for coordination was incomplete. Specifically, AITO presented data showing that the sum of Department-wide AI investments increased from $102.8 million in fiscal year (FY) 2019 to an estimated $161.9 million in FY 2020. Notably, these amounts did not include investments at the Department's national laboratories funded either by laboratory-directed R&D (LDRD) or by third parties through collaborative R&D agreements and partnerships. Additionally, although AITO identified almost 300 distinct AI projects, it estimated that these represented only about half of all AI projects by various Departmental elements that were planned, underway, or recently completed. As a result of these shortcomings, and in accordance with RTIC guidance, AITO is establishing a comprehensive database, the AI Exchange (AIX), to provide a complete picture of the Department's AI projects and to facilitate their coordination for strategic advantage. Additionally, AITO has assigned an AI Exchange coordinator to manage the comprehensive database and has proposed a directive to Department leadership to require enhanced reporting of data on AI projects through that database.

Between July and October 2019, the Office of Science organized a series of AI for Science town hall meetings at three national laboratories and in Washington, DC, which were attended by over 1,300 scientists from the Department's 17 national laboratories, 39 private enterprises, and over 90 universities. The goal of these meetings was to examine scientific opportunities in the coming decade in the areas of AI, big data, and high-performance computing. Scientific opportunities resulting from those discussions were captured in a report published in March 2020 outlining the research and infrastructure needed to advance AI methods and techniques for science applications.

Achieving the ambitious goal of establishing the Department as a leader among Federal agencies in developing and deploying AI technology will require well-coordinated initiatives, including focused cross-cutting investments. One such initiative is the Exascale Computing Project, which is a collaboration among Oak Ridge, Argonne, Lawrence Livermore, Los Alamos, Sandia, and Lawrence Berkeley National Laboratories. The laboratories and the Department (including NNSA) are working to bring the next-generation of world-leading, AI-optimized supercomputers online. One of these, the Frontier supercomputer, is scheduled to be commissioned in calendar year 2021.

Additionally, in September 2020, the Advanced Scientific Computing Advisory Committee recommended a major strategic initiative for AI research, which would be a 10-year "AI for Science" plan that emulates the Department's Exascale Computing Initiative. The recommended

initiative would be structured around four major R&D themes: AI enabled applications, AI algorithms and foundational research, AI software infrastructure, and new hardware technologies for AI. It is anticipated that the recommended initiative would include a near-term incubation phase that would coincide with the expected commissioning of the Department's latest supercomputing resources (including exascale machines), followed by the pursuit of the resulting AI R&D goals over the remainder of the decade.

Despite the recommended initiative for the AI for Science research, it represents just one arena for Departmental leadership in AI. The Department's full potential as a leader in AI will be realized only if it develops and deploys the technology in a wide range of its missions. For example, opportunities exist for the Department to deploy advanced AI technology to optimize its power marketing operations, such as the Bonneville Power Administration; to enhance the defense of agency, national laboratory systems, and infrastructure against cyberthreats; to monitor financial records to detect potential waste or improper billings by Departmental contractors; and so forth.

The Department also needs to identify and consider making investments in cross-cutting AI opportunities that do not fall solely within the arena of a single program yet have the potential to benefit several Departmental elements and stakeholders. While the Department plans to continue addressing these challenges, resources for AITO staff and sponsorship of cross-cutting AI R&D projects are necessary in order to mitigate these challenges.

RESTORING PLUTONIUM PIT PRODUCTION CAPABILITY

National Nuclear Security Administration

"One of NNSA's highest priorities is to reconstitute plutonium pit production. The infrastructure and critical skills required for pit production and other plutonium activities are essential to sustaining the safety and effectiveness of our nuclear deterrent and strengthening our national security. Given the uncertainties regarding plutonium aging and the evolving geopolitical landscape, the United States cannot postpone reestablishing this critical capability." – Dr. William A. Bookless, Acting NNSA Administrator and the Department's Under Secretary for Nuclear Security

Molten Plutonium

Photo courtesy of Los Alamos National Laboratory, https://creativecommons.org/licenses/by-nc-nd/2.0/legalcode

NNSA is responsible for maintaining a safe, secure, reliable, and effective nuclear weapons stockpile. During the Cold War, more than 1,000 plutonium pits, a critical component in nuclear warheads, were produced at various facilities across the United States per year. However, after

the Cold War ended, sites refocused their missions on other areas critical to national security, with the exception of the Rocky Flats Plant, which eventually halted pit production in 1989 as a result of environmental and regulatory concerns. Due to factors such as aging, safety and security advancements, global risk, and weapons modernization, these pits periodically need to be replaced. For 3 decades, the U.S. Government has not had the capability to produce pits in the quantities required for the nuclear weapons stockpile.

The Department's FY 2020 Stockpile Stewardship and Management Plan addresses pit production requirements found in the 2018 Nuclear Posture Review, which tasked the Department with establishing an enduring capability and capacity to produce pits at a rate of no fewer than 80 per year during 2030. To provide resiliency for pit production operations and to mitigate risk in the event of a shutdown or disruption, the Department plans to utilize a two-site approach, producing 30 pits per year during 2026 at the Los Alamos National Laboratory (LANL) and no fewer than 50 pits per year during 2030 at the Savannah River Site.

In an effort to meet these quantities, the Department faces challenges associated with staffing, and the construction and modernization of required facilities. Currently, the Nuclear Security Enterprise only has one plutonium facility, which is located at LANL. Due to the significant lapse in pit production, the Nation lost much of its expertise in pit manufacturing following the closure of Rocky Flats. The Department must develop and maintain an expert workforce of sufficient size and quality to meet the challenging and changing needs of new processes, prototype demonstrations, capacity production, and the building of special items for the growing subcritical plutonium experiment program. Additionally, the Department must simultaneously complete the modernization of the Plutonium Facility within the Los Alamos Plutonium Pit Production Project at LANL, while repurposing the former Mixed Oxide Fuel Fabrication Facility at the Savannah River Site.

To exemplify the magnitude of this undertaking, the Department's FY 2021 budget request has projected current and outyear funding (through FY 2025) for the Plutonium Modernization Program, including the Chemistry and Metallurgy Research Replacement project, at $10.3 billion, which will provide resources for efforts across the National Security Enterprise to restore the Nation's capability to produce 80 pits per year during 2030.

While the Department has until the end of 2030 to ramp up pit production to the required 80 pits per year, interim milestones will need to be met to remain on schedule. Complicating this mission-critical initiative, the Department must manage extensive modernization and expansion of the pit production capability at LANL, and repurposing the former Mixed Oxide Fuel Fabrication Facility at the Savannah River Site.

At LANL, the Department continues to fabricate development pits to support a transition to the prove-in phase, which is when all production activities are verified to prove that a product can be mass-produced. In order to manufacture and qualify the first war reserve pit in 2023, the Department has also continued addressing aging infrastructure and systems by recapitalizing facilities and equipment (i.e., acquiring, installing, configuring, and authorizing equipment for operation). Additionally, the Department has approved baselines and is on schedule to complete

two subprojects (by 2022) of the Chemistry and Metallurgy Research Replacement project, which will replace Cold War-era facilities while maintaining continuity in analytical chemistry and materials characterization capabilities.

At the Savannah River Site, the Department has begun developing design documentation to create a pit production capability to meet the requirements of the 2018 Nuclear Posture Review. To this end, the Department has developed and submitted a Final Environmental Impact Statement for the plutonium pit production at the Savannah River Site in South Carolina. The Environmental Impact Statement includes analyses of proposed actions and alternatives, and the associated potential direct and indirect environmental impacts related to geology and soils, water resources, air quality, waste management, and human health.

According to the 2020 Stockpile Stewardship and Management Plan, a modern, responsive, and resilient capability to process and handle plutonium is essential to assessing and maintaining the nuclear weapons stockpile. A responsive plutonium infrastructure requires proper storage facilities, safe and secure disposal pathways, and unique equipment and facilities for R&D activities. In order to provide the enduring capability and capacity to produce plutonium pits at a rate of no fewer than 80 pits per year during 2030, the Department must take significant action.

As a path forward, the Department intends to fabricate 5 process prove-in pits at LANL, while continuing to invest in equipment to achieve 10 pits per year production capability by 2024.

In FY 2021, the Department plans to complete the conceptual design and Critical Decision 1 for both the Savannah River Plutonium Processing Facility and the Los Alamos Plutonium Pit Production Project. This vital decision point serves as a determination that the selected alternative and approach is optimized to meet the mission need. Key elements of the evaluation include the project's conceptual design, cost and schedule range, and general acquisition approach. The results of this evaluation will assist the Department in determining the necessary investments in pit production equipment required to meet the 30 pits per year production requirement capability in 2026 at LANL, as well as the 50 pits per year requirement in 2030 at the Savannah River Site.

MANAGING TANK WASTE

Office of Environmental Management

A process vessel being delivered to the Effluent Management Facility, which is part of the Hanford Site's Waste Treatment and Immobilization Plant being built to vitrify some of Hanford's tank waste.

Photo courtesy of the U.S. Department of Energy

"With the risk reduction work and the transformative progress on the tank waste mission, 2020 represents an inflection point for Hanford. The work being accomplished puts the site on a clear path to tank waste treatment and additional risk reduction in the years ahead."
– William "Ike" White, Senior Advisor to the Under Secretary for Science

The Department's Office of Environmental Management (EM) is responsible for addressing the environmental legacy of decades of nuclear weapons production and government-sponsored nuclear energy research. This mission includes the safe, effective, and cost-efficient management, treatment and disposition of waste (known as "tank waste") generated through legacy spent nuclear fuel reprocessing and other plutonium processing activities. EM manages a total inventory of approximately 91 million gallons of tank waste, which is a primary environmental risk at most of the sites where it is located. At the Hanford, Savannah River, and Idaho sites, the remaining tank waste is stored in aging underground tanks, many of which are well past their design life. At the Hanford Site, as many as 58 tanks are believed to have leaked into the underlying soil.

In addition to the environmental risks, tank waste also represents a significant financial burden to the U.S. Government. The Department is the top contributor to the Federal Government's overall environmental liabilities. EM's current total environmental liability is approximately $406 billion (in current year dollars), according to the Department's FY 2020 Agency Financial Report. As such, the Department expends significant resources to safely and effectively treat the nation's tank waste.

Since EM was established, the Department has taken noteworthy steps to address tank waste at sites across the U.S. For instance, at the West Valley Demonstration Project, the Department has vitrified 600,000 gallons of reprocessing waste into 275 canisters for long-term storage and eventual disposal. Additionally, in 2019, the Department successfully completed the demolition of the West Valley site's Vitrification Facility, marking the first time in the Department's history that such a facility has been successfully constructed, operated, and demolished. At the Savannah River Site, the Defense

Waste Processing Facility has produced approximately 4,200 canisters of vitrified tank waste, representing half of the anticipated total. Further, approximately 18 million gallons of decontaminated salt solution taken from Savannah River's underground tanks has been processed for onsite disposal through stabilization via grout.

In addition to actions taken thus far, the Department continues to push forward with constructing and commissioning a complex, first-of-a kind, multi-billion-dollar facilities to treat tank waste. The Department successfully completed verification of operational readiness, obtained CD-4 and Authorization to Operate the Salt Waste Processing Facility in August 2020, and began initial radiological operations. This facility will significantly ramp up the ability to treat the remaining tank waste at the site. At the Idaho National Laboratory Site, the Department is in the final stages of startup and commissioning of the Integrated Waste Treatment Unit, which will treat the remaining liquid tank waste at the site. The Department anticipates that this facility, which was completed in 2012, will be operational in 2021, with waste treatment expected to take 5 to 7 years to complete. In August 2020, the Hanford Waste Treatment and Immobilization Plant's Analytical Laboratory was transitioned from startup to commissioning. Additionally, construction on the Waste Treatment and Immobilization Plant's Low-Activity Waste Facility is due to be completed by the end of the calendar year.

Along with ensuring the completion and commission of the necessary tank waste treatment facilities, the Department has instituted new polices and approaches that have the potential to open new disposition pathways for tank waste. In 2019, the Department issued its new interpretation of the term, "high-level waste." This interpretation represents a science-driven approach to managing tank waste via its radioactive constituents, and not by how it was generated, as was the previous practice. The high-level waste interpretation will enable the Department to more appropriately manage and disposition tank waste in a risk-based and more cost-effective manner that remains fully protective of human health and the environment. The first application of the high-level waste interpretation was completed in September 2020, with

eight gallons of Savannah River Site Defense Waste Processing Facility recycle wastewater shipped to the Waste Control Specialists, LLC low-level radioactive waste disposal facility in Andrews Texas.

The safe and efficient management and disposition of tank waste will require sustained commitment and leadership by the Department. While progress has been made in establishing the capabilities to treat tank waste for final disposition, significant work remains. At the Hanford Site, the Department will need to complete the construction, startup, and commissioning of those facilities involved in the Direct Feed Low-Activity Waste approach. In addition, with the Direct Feed Low-Activity Waste approach estimated to treat approximately 40 percent of the low-activity inventory of tank waste, the Department will need to identify and select additional treatment options to fully address this inventory. The Department also needs to identify and develop technically achievable, cost-effective, and viable approaches for treating the high-activity inventory of tank waste at the Hanford Site for disposition. The current program of record would use the Waste Treatment and Immobilization Plant's Pretreatment and High-Level Waste facilities to prepare and vitrify the high-level waste for eventual final disposition. However, work on those sections was suspended due to the need to resolve remaining technical issues, and analyses performed by the Department and the Army Corps of Engineers have determined that it is unlikely the Pretreatment and High-Level Waste facilities will be completed and in operation in time to meet current commitments. Currently, the Department is finalizing an Analysis of Alternatives on potential options for high-level tank waste treatment as efficiently as possible.

At the Savannah River Site, the Department will need to continue operations of the Defense Waste Processing Facility and demonstrate the long-term reliability and availability of the Salt Waste Processing Facility. To enable completion of the bulk of the tank waste mission at the site in the next decade, the Department will need effective management of the spent nuclear fuel processing mission at the Savannah River H-Canyon facility, which contributes to the tank waste mission at the site.

At the Idaho National Laboratory Site, the Department will need to complete facility modifications, startup testing, commissioning the Integrated Waste Treatment Unit and initiate operations. When the facility confirms its ability to treat the remaining tank waste at the Idaho National Laboratory Site, the Department will also need to demonstrate the reliability and availability of this facility as the startup and commissioning process has encountered challenges. Finally, the Department will need a pathway for the disposal of the calcined material currently stored at the Idaho National Laboratory Site.

In addition to the remaining efforts outlined above, the Department will also need to work to identify and develop final disposition pathways for all types of treated tank waste.

CROSS-CUTTING CHALLENGES – REDUCING FRAUD, WASTE, AND ABUSE

Office of Inspector General

As the largest civilian contracting agency in the Federal Government, the Department spends approximately 90 percent of its annual budget on contracts to operate its scientific laboratories, engineering and production facilities, and environmental restoration sites. Due to the Department's reliance on contractors to execute much of its mission, the OIG focused its efforts this year on cross-cutting management challenges in order to modernize and improve the Department's oversight of its contractors. Realizing improvements within these areas will help protect the Department from fraud, waste, and abuse.

Modernizing Oversight by Continuing to Access Department and Contractor Systems for the Purpose of Running Data Analytics

"As software extracts more and more ore from the mine of information, people will always have work turning it into gold."
– Bill Gates

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The Fraud Reduction and Data Analytics Act of 2015 (FRDAA) was passed to improve Federal agency financial and administrative controls, and procedures to assess and mitigate fraud risks. Additionally, the FRDAA was enacted to improve agencies' development and use of data analytics for the purpose of identifying, preventing, and responding to fraud, including improper payments. To comply with the FRDAA, the Department has undertaken the development and implementation of a Fraud Risk and Data Analytics Framework (Framework). Using a three-phased approach, the Department plans to establish this Framework over the next 5 years.

An immediate challenge complicating the Department's implementation of the Framework is its limited oversight resources, including limited personnel with the associated skill sets needed to operate a data analytics program. To address these immediate challenges, the Department intends to leverage industry best practices through contracting services.

Another significant challenge facing the Department is to identify the various data systems in use by the Department and its contractors. Once the relevant data systems are identified, the next set of challenges will be accessing the data and determining the strategy for analyzing it. The potential use of AI in this area is an exciting prospect which could save the taxpayers millions and perhaps billions of dollars in the long term.

Although much work remains, the Department has taken initial steps towards establishing and implementing the Framework. Officials have defined the purpose of the Framework and its placement within the organization, and established a leadership hierarchy to guide the effort. To assist in the development of the Framework, the Department has awarded a contract to ensure the incorporation and use of industry best practices, and has begun to establish collaborative relationships with its management and operating contractors (M&O) to identify the available data. Moving forward, the Department plans to utilize current year fraud risk occurrences and control test failures to update and refine their Fraud Risk Profile. Further, the Department proposes to construct an Antifraud Strategy considering recommended actions from risk owners and supporting offices, annual updates to the Fraud Risk Profile, and newly confirmed fraud activities.

On a parallel track, the OIG is moving swiftly into the area of data analytics. Over the past 2 years, the OIG has developed and implemented a data analytics function focusing on two initial goals: (1) to identify and directly access relevant Department and contractor systems, and (2) to analyze high-risk areas, such as labor, pay, and contract charges.

Historically, the OIG, despite having the clear legal right to directly access Federally-owned systems, relied on Federal and contractor employees to provide records and data to support audits, inspections, and investigations. This hands-off approach resulted in a lack of complete knowledge by the OIG as to the systems being utilized and the data available. Since its inception in 2019, the OIG's Office of Technology, Financial, and Analytics has been gradually gaining direct "read only" access to Federal and contractor systems. Notably, direct access is the only path that has the potential to identify fraud, waste, and abuse in real time. Real time, or near-immediate detection of fraud, is the most powerful use of data analytics.

Moving forward, the OIG's Data Analytics team will continue to identify and obtain direct access to relevant systems, and implement risk models to identify adverse trends and possible fraud, waste, and abuse. During FY 2020, the OIG Data Analytics team supported more than 20 ongoing audits, inspections, and investigations, including the analysis of the largest fraud investigation in the Department's history.

Improving Audits of Costs Incurred and Claimed

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The Cooperative Audit Strategy, adopted by the Department in 1994, gives M&O contractors the responsibility to perform the required incurred cost audit work, with minimal oversight from both the Federal Contracting Officer and the OIG. Over the course of the 25 years that the Cooperative Audit Strategy has been in place, stakeholders, such as the U.S. General Accountability Office and Department of Defense, have expressed concerns about independence, conflict of interest, and the appropriateness of contractors auditing their own incurred costs.

For several years, the OIG has been evaluating whether the Cooperative Audit Strategy has been functioning as intended. Beginning in 2016, the OIG performed a number of audits of incurred costs, essentially performing the work that would normally be performed by the M&O contractor's internal audit groups. In FY 2020, the OIG performed additional audits of M&O contractors and non-M&O prime contractors. The results of these audits identified significant findings which question the functioning of the Cooperative Audit Strategy.

For example, the OIG found that not all internal audit groups adequately evaluated incurred costs for allowability, allocability, and reasonableness. Additionally, the OIG noted weaknesses in internal audit's design of the audit risk assessment and sampling approach. We also found that M&O contractors were not always compliant with Cost Accounting Standards. We are currently drafting a Special Project Report on this subject.

Building a Stronger Suspension and Debarment Program

"Integrity is doing the right thing, even when no one is watching."
– C.S. Lewis

Photo courtesy of Shutterstock.com, 2020

Federal contractors may be suspended or debarred from entering into new Federal contracts for a period of time in order to protect the U. S. Government from conducting new business with contractors lacking business integrity. The most typical use of these remedies would be based upon a criminal conviction or a serious civil offense. The Department of Energy is second only to the Department of Defense in the amount of Federal dollars annually spent on contractors. The Department spent more than $30 billion on contractors in FY 2019.

Other Federal agencies with a smaller contracting presence operate robust suspension and debarment programs. These programs protect the rest of the Government from continuing to do business with contractors that have committed criminal or civil offenses, or otherwise lost the trust of the Federal Government. In FY 2019, for example, the General Services Administration suspended 49 parties and debarred 84. Likewise, the Department of Housing and Urban Development suspended 40 parties and imposed 97 debarments. The only Department with a larger contracting budget than the Department, the Department of Defense, suspended 267 parties and debarred 442 in FY 2019.

In comparison, the Department issued only 5 suspensions and 19 debarments in FY 2019.[1] Along the same lines, the Department issued only 25 suspensions and 30 debarments in FY

[1] The Department of Energy self-reported these suspension and debarment numbers to the Interagency Suspension and Debarment Committee.

2018.[2] These numbers are lower than one would expect from a Federal agency with the Department's contracting presence. Notably, within this same time period from 2018 through 2019, the OIG experienced an approximated 30 percent increase in the volume of criminal investigations being conducted within the Department's contractor complex. Several of these investigations involve substantially larger alleged losses when compared to historic investigations. These are troubling trends. As these ongoing matters continue to be resolved, the Department should be prepared to timely consider and process suspension and debarment referrals in order to protect the U.S. Government from continuing to give new business to contractors lacking business integrity.

A lack of detailed policy and procedures may be contributing to the Department pursuing a lower than expected number of suspensions and debarments. Both the U.S. Government Accountability Office and the Council of Inspectors General on Integrity and Efficiency have identified several elements of robust suspension and debarment programs. Two key elements of active programs are full-time staff dedicated to suspension and debarment actions, and the publishing of detailed policies and procedures. The Department has neither. Suspending and Debarring Officials at the Department have substantial competing duties. Likewise, staff assisting with suspension and debarment matters at the Department also have multiple priorities that may crowd out suspension and debarment work. While the Department has put some suspension and debarment procedures in place, those procedures do not provide guidance on many of the essential subjects included in the procedures that are used by other agencies with more robust programs.

For these reasons, the OIG began an audit of the Department's suspension and debarment programs in 2018. That audit has concluded and will be the subject of an upcoming OIG Special Report in the coming months. The OIG has also undertaken a strategic initiative to enhance its own capabilities in the making of timely referrals for suspension and debarment. In conclusion, it should be noted that the Department has made some progress in 2020, according to the latest informal statistics. We look forward to reporting additional successes in FY 2021.

[2] Interagency Suspension and Debarment Committee FY 2018 report issued under Section 873 of P.L. 110-417. https://www.acquisition.gov/sites/default/files/page_file_uploads/FY%202018%20873%20Report%20-%20Final%2010%2030%202019.pdf

Enforcing the Mandatory Disclosure Rule

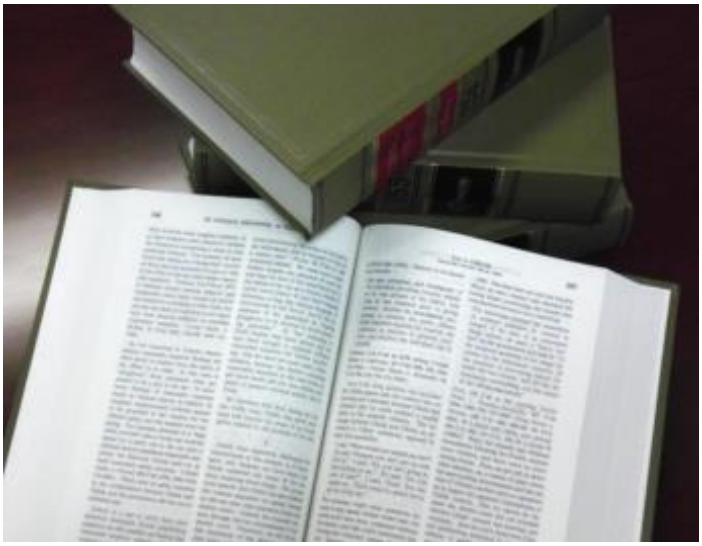

Photo courtesy of the U.S. Department of Energy

"If everyone is moving forward together, then success takes care of itself."
– Henry Ford

Given the Department's reliance on contractors to execute its mission, it's imperative that the Department's contractors conduct their business operations with integrity. For this reason, the Federal Acquisition Regulation requires contractors' internal programs to include an ethics and compliance system with practices aimed at preventing and detecting misconduct, and promoting an organizational culture that encourages ethical conduct and a commitment to compliance with the law. Contractors who conduct work for the Department must establish and maintain an Employee Concerns Program suitable for the organization to accept, process, and resolve employee concerns related, but not limited to, fraud, waste, and abuse. A critical feature of this compliance strategy is the Mandatory Disclosure Rule.

The Mandatory Disclosure Rule requires Government contractors and subcontractors to disclose in writing to the Inspector General any matter where there is credible evidence of certain criminal violations, a violation of the civil False Claims Act, or a significant overpayment in connection with the award, performance, or closeout of a Government contract or subcontract. Of particular interest to Inspectors General are any credible allegations of fraud, waste, or abuse. Inspectors General across the Federal government rely on these timely written mandatory disclosures to protect Government interests and taxpayer funds.

In early 2020, the OIG examined its own records to determine the volume and sufficiency of any written mandatory disclosures filed by the Department's contractors during the preceding 5-year period. Fewer than 10 such mandatory disclosures had been made in writing to the OIG during the 5-year period. Furthermore, many of those disclosures did not contain the information required by the Mandatory Disclosure Rule. These early results were troubling.

In order to follow up on the issue, the OIG next conducted an informal benchmarking exercise. In order to benchmark the volume of mandatory disclosures that a Federal OIG might reasonably

expect to receive, the OIG examined the volume of mandatory disclosures received by the Department of Defense over the same period of time, and adjusted that volume for dollars spent in order to benchmark an anticipated volume of mandatory disclosures for the Department. The result of this informal benchmarking effort indicated that the Department should have approximately received a 90 percent higher volume of written mandatory disclosures during the 5-year period. While this informal benchmarking was not intended to produce a scientifically sound result, it informed our decision to further evaluate the matter.

In July of 2020, the OIG initiated an inspection to acquire some preliminary data about how eight of the Department's contractors have been managing specific employee concerns that would appear to trigger the Mandatory Disclosure Rule requirements. This inspection work is ongoing, but the OIG has already discovered numerous violations of the Mandatory Disclosure Rule. For example, the OIG located data commemorating fraud activities where contractors terminated employees. It's unlikely that contractors would terminate employees based on incredible evidence. By not reporting these issues, the contractors withheld information that may have prompted an OIG investigation revealing more substantial problems. Such violations of the Mandatory Disclosure Rule may expose the Department to fraud, waste, and abuse. As a result of our ongoing work, the OIG will make specific recommendations to improve the enforcement of this important rule.

Using All Available Tools to Combat the Theft of Intellectual Property

"At DOE, we have taken actions to tighten compliance with respect to international science and technology cooperation across our National Laboratory research complex. We will continue to promote our national innovation base while protecting our technological advantage from adversaries." – Dan Brouillette, Secretary of Energy

Photo courtesy of Shutterstock.com, 2020

The Department of Energy is the largest Federal sponsor of basic research in the physical sciences, and awards approximately $6.6 billion in grants and contracts annually that support 25,000 researchers at over 300 institutions and its 17 National Laboratories. The Department funds cutting-edge research and the deployment of innovative technologies, and encourages collaboration and cooperation between industry, academia, and government to create a vibrant scientific ecosystem.

The Department's prominent role in advanced research and development across multiple scientific disciplines, combined with its key role in nuclear weapons development, makes it particularly attractive to theft from foreign governments. Due to the economic and scientific value of the research and intellectual property developed within the Department, foreign governments have intensified their efforts to extract information from our institutions.

Foreign governments attempt to acquire U.S.-funded research through "talent recruitment" programs, targeting scientists, engineers, academics, researchers, and entrepreneurs working or being educated in the United States. Targeted individuals are offered rewarding and prominent opportunities at leading foreign research institutions in exchange for transferring their knowledge and expertise to foreign countries, which is often funded with Departmental dollars. Talent recruitment programs are sponsored by many countries designated by the Department as "countries of risk." Such programs threaten the economic interests of the U.S. Government by steering cutting-edge, taxpayer-funded research to foreign adversaries for the benefit of their economies.

To highlight the magnitude of this challenge, the OIG currently has numerous active investigations directly involving threats to intellectual property by foreign adversaries. The OIG

has seen an increase in caseload of 114 percent since 2016 regarding instances of the theft of intellectual property. In response, the OIG has been aggressive in the enforcement of this crime, working with our partners in the law enforcement community, and in concert with the Department of Justice, to carry out a variety of enforcement actions nationwide.

Due to the open nature of the scientific community, research and development conducted on behalf of the Department is inherently vulnerable to the unauthorized transfer of intellectual property to foreign governments. It is critical that the Department takes appropriate actions to mitigate these risks. For this reason, the OIG has initiated a Special Project, led by the OIG's Office of Counsel, to review the most effective legal and practical strategies being used by other Federal agencies vulnerable to this type of theft. In the coming months, the OIG will issue a Special Project Report which will include recommendations to ensure that the Department is using a "whole-of-government" approach to improve its management of these issues, and to utilize the full range of available tools, including criminal, civil, and administrative remedies.

FEEDBACK

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