

Inspector General's Assessment of the Most Serious Management and Performance Challenges Facing the Nuclear Regulatory Commission in Fiscal Year 2020 OIG-20-A-01 October 29, 2019



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# AT A GLANCE

*WHY WE DID THIS REPORT* The *Reports Consolidation Act of 2001* (Public Law 106-531) requires us to annually update our assessment of NRC's most serious management and performance challenges facing the agency and the agency's progress in addressing those challenges.

*WHAT WE FOUND* The Nuclear Regulatory Commission (NRC) is viewed as the world leader among nuclear regulatory bodies as it licenses and regulates the Nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety, to promote the common defense and security, and to protect the environment. The NRC's proposed FY 2020 budget is \$921.1 million, including 3,062 full-time equivalent employees located in five primary locations in the United States. Beyond its nuclear safety and security mission, as a Federal agency, NRC must be a responsible steward of taxpayer dollars and expend its budgeted funds properly.

This year we are introducing a new design for the Management Challenges report, in which we use a single-page format to identify each challenge, actions taken by the agency, and work left to do. Based on feedback from the agency and our desire to improve the specificity and clarity of the challenges we believe should receive the NRC's attention, we have modified the challenge areas identified in our FY 2019 Management Challenges report and have identified the following 7 areas representing more focused and actionable challenges.

- 1. NRC and Agreement State Coordination on Oversight of Materials and Waste
- 2. Continuous Improvement Opportunities for Information Technology (IT) and Information Management (includes internal IT security)
- 3. Management and Transparency of Financial and Acquisitions Operations
- 4. Strategic Workforce Planning
- 5. Strengthening Oversight of External Security
- 6. Readiness for Advanced Reactor Technologies
- 7. Strengthening Risk Informed Oversight

Effective responses to these challenges will continue to position NRC to work towards the effective and efficient execution of its mission, achievement of its strategic goals, and to achieve the highest level of accountability over taxpayer dollars.

AGENCY RESPONSE TO MANAGEMENT CHALLENGES FOR FY 2019 NRC has worked to respond to a number of OIG report recommendations through the year and is engaging in agency-wide transformation efforts to prepare for the immediate, near term and future regulatory landscape. The agency is seeking to become leaner and more efficient by re-organizing and recombining the Offices of New Reactors and Nuclear Reactor Regulation. NRC leadership's input to OIG for management challenges has noted its own assessment of key challenges for the agency.

## FOR FURTHER INFORMATION, CONTACT US AT:

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# Introduction

*From the Deputy Inspector General:* I am pleased to present our assessment of the most significant management and performance challenges facing the NRC in Fiscal Year (FY) 2020.

The *Reports Consolidation Act of 2001* requires us to annually update our assessment of NRC's "... most serious management and performance challenges facing the agency ... and the agency's progress in addressing those challenges." In this report, we summarize what we consider the most critical management and performance challenges to NRC, and we assess the agency's progress in addressing those challenges.

NRC leads the world as an innovative agency dedicated to effective regulation of nuclear materials while ensuring public health and safety and protection of the environment. Beyond its licensing and regulatory missions, as a Federal agency, NRC must be a responsible steward of taxpayer dollars and distribute scarce research funds properly.

# About the Inspector General:

In accordance with the 1988 amendment to the *Inspector General Act of 1978*, the NRC's Office of the Inspector General (OIG) was established on April 15, 1989, as an independent and objective unit to conduct and supervise audits and conduct investigations relating to NRC's programs and operations. The purpose of OIG's audits and investigations is to prevent and detect fraud, waste, abuse, and mismanagement, and promote economy, efficiency, and effectiveness in NRC programs and operations. In addition, OIG reviews existing and proposed regulations, legislation, and directives, and provides comments, as appropriate, regarding any significant concerns. The Inspector General serves under the general supervision of the NRC Chairman but operates with personnel, contracting, and budget authority independent of the NRC. The IG keeps the Chairman and the Congress fully and currently informed about problems, recommends corrective actions, and monitors NRC's progress in implementing such actions.

# About the NRC:

The NRC's mission is to license and regulate the Nation's civilian use of radioactive materials to protect public health and safety, promote the common defense and security, and protect the environment. The NRC's vision is to carry out the mission as a trusted, independent, transparent, and effective nuclear regulator. The NRC's two strategic goals, Safety and Security, are to ensure the safe and secure use of radioactive materials.

The NRC is headed by a group of up to five Commissioners appointed by the President and confirmed by the Senate for five-year terms. One of them is designated by the President to be the Chairman and official spokesperson of the Commission. The Commission formulates policies and regulations governing nuclear reactor and materials safety, issues orders to licensees, and adjudicates legal matters brought before it. The Executive Director for Operations (EDO) carries out the policies and decisions of the Commission and directs the activities of the program offices. The offices reporting to

the EDO strive to ensure the commercial use of nuclear materials in the United States is safely conducted. As part of the regulatory process, the four regional offices conduct inspection, enforcement, and emergency response programs for licensees within their regions.

The NRC's FY 2018–2022 Strategic Plan describes the agency's mission, vision, principles of good regulation, along with strategic goals, objectives, and strategies. The Safety strategic goal is to Ensure the Safe Use of Radioactive Materials. The Security strategic goal is to Ensure the Secure Use of Radioactive Materials.

The NRC carries out its safety and security activities through two major programs: Nuclear Reactor Safety, consisting of the Operating Reactors and New Reactors business lines; and, Nuclear Materials and Waste Safety, consisting of the Fuel Facilities, Nuclear Materials Users, Decommissioning and Low-Level Waste, Spent Fuel Storage and Transportation, and High Level Waste business lines. The agency accomplishes its mission to provide reasonable assurance of adequate protection for public health and safety through regulatory activities that include licensing, oversight, and rulemaking. The NRC's event response activities prepare for and respond to emergencies involving radioactive materials. The following narrative highlights the agency's progress during FY 2018 in achieving its Safety and Security goals.

NRC has taken significant action to mitigate challenges faced in various areas. Some examples are listed below.

- Agreement State Procedure SA-10, "Oversight of the National Materials Program" was issued on May 21, 2019. This procedure is intended to address long standing communication and coordination challenges between the NRC and the States.
- Agreement State and NRC materials program performance, as measured by the Integrated Materials Performance Evaluation Program (IMPEP), has been consistently strong.
- A working group established by the office of Nuclear Materials Safety and Safeguards (NMSS) to re-evaluate the scope and roles and responsibilities of the National Materials Program completed its review and made various program improvement recommendations.
- The staff established technical controls to monitor the NRC network for unauthorized access to reduce the risk of unauthorized transactions, changes to data, audit logs and configurations.

NRC has also made significant progress in a number of areas. For example,

- NRC conducted a major computer refresh program.
- The agency proactively assessed the security state of systems through NRC's IT security continuous monitoring program.
- In October 2018, NRC set in motion the Futures Assessment effort as a way of ensuring that the NRC continues to effectively meet its mission in the future, 2030 and beyond. The Futures Assessment report factored in the U.S. nuclear power demand and level of global nuclear reactor innovation. The impacts of potential future scenarios were explored for each of the NRC's business lines, including new and operating reactors, nuclear materials, spent fuel storage and transport, and fuel facilities and reprocessing. The report also explores implications for various functions in the NRC, such as event response, rulemaking, licensing, research, stakeholder relations, human resources, financial management, administrative services, and information technology.
- In June 2019, the agency conducted an "NRC Futures Jam", which was a multi-day collaborative agency-wide discussion in a virtual environment covering future scenarios such as

Increasing Agility, Enhancing Strategy, Governance, and Culture, Preparing for Human Capital Changes, Increasing Efficiency through Technology, and Engaging with Stakeholders. NRC management have indicated they are processing all the ideas received and formulating plans and strategies informed by this input.

Additionally, the cybersecurity area presents a myriad of potential and unknown risks that cannot be fully anticipated and will, therefore, continue to test NRC's ability to respond and mitigate threats. In light of the ever-evolving nature of cybersecurity risks, it is important for NRC to consider information technology and information management a management priority.

Other significant regulatory activities during the first half of FY 2019 included proposed changes to the NRC's regulations for licensing, inspection, special project, and annual fees that the agency would charge applicants and licensees for FY 2019. The Commission also affirmed a final rule for mitigating beyond-design basis events at U.S. reactors based on lessons learned from the March 2011 accident at Japan's Fukushima Dai-ichi plant. The rule makes generically applicable the orders that the NRC issued in March 2012 and requires most U.S. nuclear power plants to comply with its requirements within 2 years and 30 days of the rule's publication in the Federal Register.

#### Other Noteworthy NRC Activities:

In late September 2018, the *Nuclear Energy Innovation Capabilities Act of 2017* was signed into law. The Act requires the U.S. Department of Energy (DOE) and the NRC to enter into a memorandum of understanding (MOU) on specific topics related to advanced reactors and authorizes the agencies to enter into an MOU on additional advanced reactor topics. The NRC staff has been working with DOE to develop an MOU to implement provisions of the Act.

On October 17, 2018, the Radiation Source Protection and Security Task Force submitted its fourth report to the President and Congress as required by the *Energy Policy Act of 2005*. The task force, chaired by NRC, is comprised of staff from 14 Federal agencies and one state organization with broad authority over all aspects of radioactive source control, including regulatory, security, intelligence, and international activities. The task force report indicated that substantial progress has been made since the events of September 11, 2001, to enhance the protection of radioactive sources from terrorist threats, and that there are no significant gaps in the area of source protection and security that are not already being addressed through continued attention by appropriate task force agencies.

In November 2018, the NRC released its FY 2018 financial report, providing audited financial statements of the agency's management of resources from October 1, 2017, through September 30, 2018. The report documents continued reductions in the NRC's budget, reflecting adjustments for the agency's workload and the implementation of efficiencies that reduce the cost of operations.

In January 2019, the *Nuclear Energy Innovation and Modernization Act* (NEIMA) was signed into law. The Act includes provisions on a variety of topics related to the NRC, such as the annual budget request, fees, reports to Congress, performance metrics and milestone schedules for "requested activities of the Commission," and the licensing process for commercial advanced reactors and research and test reactors. NRC stated the agency is progressing in each area to ensure timely implementation of NEIMA's requirements and submitted the first set of congressional reports required by the Act in April 2019.

In March 2019, about 3,000 people from the United States and 33 other countries attended the NRC's 31st annual Regulatory Information Conference, which focused on innovation and transformation. Technical sessions featured discussions of significant domestic and international issues such as cybersecurity, risk-informed analysis, advanced and small modular reactors, spent fuel research activities, recent reactor material issues, and the Reactor Oversight Process.

Finally, from October 2018 through March 2019, the agency conducted more than 500 public meetings, in the Washington, DC area and in States and communities with NRC-licensed or proposed facilities, to address a full range of NRC issues.

#### Challenges for FY 2020

This year, we have identified seven areas representing challenges NRC must address to better accomplish its mission. We have compiled this list based on our audit, evaluation and investigative work; general knowledge of the agency's operations; and evaluative reports of others, including the U.S. Government Accountability Office (GAO) and input from NRC management. We identify management challenges as those that meet at least one of the following criteria:

- 1. The issue involves an operation that is critical to the NRC Mission or an NRC Strategic Goal.
- 2. There is a risk of fraud, waste, or abuse of NRC or other Government assets.
- 3. The issue involves strategic alliances with other agencies, the Office of Management and Budget, the Administration, Congress, or the public.
- 4. The issue involves risk of a legal or regulatory requirement not being met.

The following list represents seven areas of the most critical management and performance challenges for the NRC in FY 2020. It is followed by more detailed discussion of each challenge in the new single page format.

- 1. NRC and Agreement State Coordination on Oversight of Materials and Waste
- 2. Continuous Improvement Opportunities for Information Technology and Information Management (includes internal IT security)
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# Challenge 1: NRC and Agreement State Coordination on Oversight of Materials and Waste

# Why is this a serious management and performance challenge?

This challenge involves sustained, high level coordination between NRC and 39 Agreement States to ensure a consistent understanding and implementation of regulations associated with oversight of materials and waste.

NRC is responsible for maintaining an established regulatory framework for the safe and secure use of nuclear materials; medical, industrial, and academic applications; uranium recovery activities; and high-level and low-level radioactive waste. Part of NRC's regulatory framework includes Agreement States. These are states that have entered into an agreement with NRC to regulate certain radioactive materials and limited quantities of special nuclear material. The State must demonstrate that its regulatory program is adequate to protect public health and safety, and the environment and is compatible with NRC's program. Currently, with the 2019 addition of Vermont, there are 39 Agreement States. Together, the broad collective effort of the NRC and Agreement States to carry out their respective regulatory programs is called the National Materials Program (NMP).

To ensure a consistent understanding of regulatory functions, NRC routinely provides training courses for Agreement State personnel. These courses serve an important role in supporting the Agreement State program within the larger construct of the National Materials Program. Many of the training courses are part of formal qualification programs for license reviewers and inspectors and NRC funds the costs associated with Agreement State personnel to attend the training, including travel. Recently, OIG did a series of three audits focused on the effectiveness and efficiency of the National Materials Program (NMP) framework including NRC's process for managing Agreement State training and funding. These audits identified opportunities for improvement with the efficiency and effectiveness of NRC's oversight of the NMP, as well as the internal NRC processes associated with providing and funding Agreement State training.

# **Completed Actions**

- Staff issued State Agreement (SA)-10, Joint Oversight of the National Materials Program.
- The State of Vermont was approved as the 39th Agreement State, effective September 30, 2019.

## **Ongoing Actions**

NRC is continuing to review State requests to be admitted into the Agreement State Program.
NRC and Agreement States are working cooperatively to evaluate the recommendations proposed by the NMP Working Group to improve communications, risk inform NMP activities, develop training, and explore the role of Agreement States in addressing technical and regulatory issues.



**Looking Ahead:** OIG will conduct audits related to oversight of materials and waste in FY 2020 including an audit of NRC's Integrated Materials Performance Evaluation Program (IMPEP) reviews, as well as of NRC's Material Control and Accounting Inspection Program for Special Nuclear Material.

Challenge 2: Continuous Improvement Opportunities for Information Technology and Information Management (includes internal IT security)

Why is this a serious	Technology continues to advance rapidly. The challenge
management and performance	is supporting a future-ready workforce equipped with
challenge?	modern tools, technologies, skills, and knowledge
	necessary to meet both current and future mission needs.

NRC must continue to meet the regulatory and statutory Federal mandates for Information Technology/Information Management (IT/IM). The responsibility of the NRC's IT/IM program is to maintain and enhance services and infrastructure to enable the mission. This goal reflects the NRC's commitment to openness and is essential for effective agency operations. NRC manages information and employs information technology (IT) to enhance information access and strengthen physical security and agency performance in carrying out its mission. NRC must continue to use robust, proactive measures to protect its infrastructure – the buildings, personnel, and information – from both internal and external threats. Moreover, as the nature of the threat continues to evolve, NRC faces challenges with oversight of the protection of operating facilities and facilities undergoing decommissioning, the use of nuclear materials, sharing of sensitive information, emergency preparedness and incident response. The biggest challenge to IT in the future is security. Security could negatively impact connectivity to public networks. Key internal security oversight challenges for NRC include the following:

• Increasing numbers, types, and sophistication of cyber threats highlight the need to reinforce the security over NRC's information systems. For example, advanced persistent threats where an adversary that possesses sophisticated levels of expertise and significant resources can attack using multiple means such as cyber, physical, or deception to achieve its objectives, pose increasing risks.

Directing agency-wide information resource planning to help the agency select and manage information technology, information management, and information technology security resources to provide maximum value.
Executing the insider threat prevention and detection program for detecting, deterring, and mitigating insider

threats to address protection of classified and safeguards information from exploitation, compromise, or unauthorized disclosure.

• Managing risk-based information security strategies to protect against sophisticated cyber-attacks.

• Executing the *Federal Information Security Modernization Act of 2014*, to strengthen security of computer networks.

## **Completed Actions**

 NRC implemented corrective actions responsive to OIG recommendations from prior FISMA evaluations.

#### **Ongoing Actions**

 NRC is continuing to strengthen their IT workforce skills and knowledge. In addition, efforts are underway to implement the Information Technology Acquisition Reform Act which promotes Federal IT modernization.

**Looking Ahead:** Continuing efforts to analyze the security over NRC's network and the ability of agency systems to allow staff to improve the efficiency of their work.

# Challenge 3: Management and Transparency of Financial and Acquisitions Operations

# Why is this a serious management and performance challenge?

Sound financial management is vital for Federal agencies to accomplish their missions in an effective and efficient manner. Moreover, strong acquisition management increases the likelihood the agency is hiring the right contractors for the assigned tasks and that contracting actions are being monitored in accordance with regulations.

NRC is required by the *Omnibus Budget Reconciliation Act of 1990* to collect fees totaling approximately 90 percent of its annual budget authority. NRC is required to establish a schedule of charges that fairly and equitably assesses the fees to license holders and license applicants. In recent years, NRC has been reducing its budget and full-time equivalents because of ongoing changes in the nuclear industry. To improve efficiency, NRC has initiated projects to improve its fee calculation process and fee billing structure. To maintain transparency, NRC must continue to implement solid internal controls over financial management and reporting. Sound acquisitions practices are also an important aspect of NRC operations. The agency has continued to promote sound acquisition award practices, improvements in the management of contracts and timely closeout of contracting actions. In addition, the agency must continue to administer their grants program in accordance with the prescribed Federal regulations.

Key financial and acquisition challenges include the following:

- Developing and implementing the agency's budget in accordance with Federal laws, regulations, and guidelines.
- Maintaining a fee structure in accordance with laws and regulations and that is fair to agency licensees.
- Improving controls over license fee billing.
- Maintaining effective controls over financial reporting, contracts, and grants.
- Improving agency guidance for decommissioning programs.
- Continue exploring ways to improve the award, management and timely closeout of acquisition actions.

# **Completed Actions**

- NRC made improvements to their improper payment identification and reporting practices.
- NRC completed the implementing corrective actions related to previous OIG audits affecting the agency's contracting function.

## **Ongoing Actions**

- NRC continues to make improvements to its fee billing process.
- In accordance with Federal internal control guidelines, NRC continues to spearhead various internal control efforts that involve agency management and promote sound financial management.



**Looking ahead:** OIG is continuing efforts to analyze the agency's financial and budgeting information, in addition to identifying needed improvements to the agency's contract administration actions.

# CHALLENGE 4:

Strategic Workforce Planning

Why is this a seriousSmanagement and performancehchallenge?a

Strategic workforce planning is critical to the NRC because it will help to maintain a focus on longer-term workforce development and organizational goals.

NRC's enhanced Strategic Workforce Planning (SWP) is a structured and data-driven process. The SWP process develops short- and long-term strategies and action plans that enable the NRC to recruit, retain and develop a skilled and diverse workforce with the competencies, and agility to address emerging needs and workload fluctuations. Office and regional directors with their management and in partnership with the Office of the Executive Director for Operations (OEDO) and the Office of Chief Human Capital Officer implement the SWP process and execute the strategies generated. The SWP process takes place on an annual cycle to develop strategies to address workforce needs in both budget execution year +1 and budget execution year +5.

The NRC's proposed FY 2020 budget is \$921.1 million, including 3,062 full-time equivalents. To support the agency's technical staff, NRC provides corporate support services such as contract support and multiple human resource programs. While NRC has implemented multiple programs to support agency staff, NRC continues to operate in a Federal Government environment of reduced full-time equivalents with only a recent small increase in the budget request for FY 2020. Because of this, the agency needs to have an appropriate balance between administrative functions and technical needs. In addition, NRC must be able to effectively recruit, train, and transfer knowledge to new hires, if applicable. This includes maintaining up-to-date guidance to effectively transfer knowledge and train current staff. NRC continued its Project Aim efforts with the purpose of, among other things, identifying inefficiencies in work processes, and right-sizing the agency to retain skill sets needed to accomplish the agency's mission.

# **Completed Actions**

- In response to Recommendation 1 of OIG Audit of NRC's Cyber Security Inspections at Nuclear Power Plants, OIG-19-A-13, NRC has completed pilot SWP efforts and has developed insights from the SWP process to inform their development of strategies for strengthening the work force.

- The planned merger of the Office of Nuclear Reactor Regulation (NRR) and the Office of New Reactors (NRO) was effective October 13, 2019.

# **Ongoing Actions**

-NRC is building competency models to improve qualifications programs, build employee skill sets, enable employees to move between roles as workloads shift, and to help them in their career planning.

- OEDO and Regions I-IV are developing strategies to sustain a robust cyber security inspection workforce informed by the insights drawn from the SWP process.

**Looking Ahead:** OIG will initiate an audit of NRC's Knowledge Management Program in FY 2020.

# Challenge 5: Strengthening Oversight of External Security

# Why is this a serious management and performance challenge?

At NRC, force-on-force and cyber security are two dynamic security inspection program areas that are in a state of flux. More specifically, 2018 signaled changes for the commercial power reactor force-on-force program.

In 2018, the Commission voted to modify the power reactor force-on-force inspection program to include one NRCconducted force-on-force exercise and an enhanced NRC inspection of a licensee-conducted annual force-on-force exercise. In 2019, the staff submitted a framework that incorporates the approved changes into the force-on-force inspection program. This framework is being reviewed by the Commission. The years 2018 and 2019 marked NRC's first inspections of the full implementation of licensee cyber security programs at nuclear power plants. These inspections, along with a series of stakeholder engagements, culminated in a staff led assessment of the cyber security inspection program.

NRC staff is in the process of completing an assessment report to evaluate the cyber security inspection program for nuclear power plants based on the lessons learned and stakeholder engagements from throughout the year. Additionally, the Commission continues to deliberate the final rule and regulatory guidance for cyber security inspections at fuel cycle facilities. In total, present and forthcoming regulatory and programmatic changes to these security inspection programs will test NRC's ability to be an effective, efficient, and risk informed regulator.

## **Completed Actions**

- NRC approved modifications to the operating reactor force-on-force inspection program to include one NRC-conducted force-on-force exercise and an enhanced NRC inspection of a licensee-conducted annual force-on-force exercise.
- NRC assessed the power reactor cyber security program based on feedback from various stakeholders and inspection findings.
- NRC revised the inspection procedure for the fuel cycle facility force-on-force program to complete target set area inspections

## **Ongoing Actions**

-NRC is reviewing revised baseline security inspection program framework that implements force-on-force inspection program changes.

-NRC is conducting the remaining inspections of the full implementation of licensee cyber security programs at nuclear power plants.

-NRC is completing an assessment report and developing an action plan to implement cyber security inspection program assessment changes and enhancements.

-NRC is developing a cyber security rule and implementation guidance for fuel cycle facilities. -NRC is developing a procedure to ensure that classified information is handled and secured properly during forceon-force inspections for Category I fuel facilities.

**Looking Ahead:** OIG will continue to monitor issues to identify risk areas associated with NRC's oversight of operating reactors and conduct audits and/or investigations that lead to NRC program improvements.

#### Challenge 6: Readiness for Advanced Reactor Technologies

Why is this a serious management and performance challenge?

Industry development of new technologies to extend the life of existing reactors, combined with Congressional support for development of new reactor and fuel technologies, will require NRC to adapt existing licensing processes and capabilities.

Unfavorable electric power market conditions have effectively slowed construction of new commercial nuclear power plants in the United States, as evidenced by the sudden cancellation in July 2017 of the V.C. Summer construction project. In addition, two nuclear power plants closed during 2019 for economic reasons, and several more plants face certain or potential closure by 2025 due to economic and policy factors. Nevertheless, some domestic utilities have expressed interest in alternative reactor designs, which could produce electricity at lower cost with greater scalability than current operating reactors. Domestic utilities are developing technologies that can extend the operating lifetimes of existing reactors, and Congress has passed legislation designed to facilitate research, development, and licensing of new reactor technologies. The technical complexity of these initiatives, combined with their experimental nature, has challenged NRC to adapt its regulatory processes to accommodate technologies that cannot be readily assessed using existing approaches.

#### **Completed Actions**

- NRC staff completed an early site permit safety review for the small modular reactor at Clinch River, TN.
- NRC updated the branch technical position addressing software common cause failure in digital instrumentation and controls.

#### **Ongoing Actions**

- NRC will partner with the Department of Energy to support the *Nuclear Energy Innovation Capabilities Act.*
- Staff will assess pilot results from accident tolerant fuel lead test assemblies.
- NRC will address congressional interest in generic environmental impact statements for advanced nuclear reactors.
- Staff will draft new language for emergency preparedness rules governing advanced reactors.

**Looking Ahead:** OIG will continue to monitor developments in this area through the course of the year, to inform its audit planning work.

# Challenge 7: Strengthening Risk Informed Oversight

Why is this a serious management and performance challenge?	NRC's increasing emphasis on risk informed regulation necessitates guidance changes, as well as efforts to raise staff awareness of these changes and ensure regulatory consistency. NRC must also engage external stakeholders to ensure transparency of resulting changes to the Reactor Oversight Process.

It has been NRC policy since 1995 to inform regulatory activities with risk insights, thereby balancing deterministic engineering judgement with quantitative analysis based on operating experience. The agency has placed increasing emphasis on this policy in recent years as risk analysis models have become more sophisticated, and as nuclear power licensees have increasingly used probabilistic safety risk assessment to support changes to their license conditions. Nevertheless, NRC and the nuclear industry have methodological differences in their respective approaches to probabilistic risk assessment, and agency staff sometimes disagree on the use of risk analysis in regulatory actions such as license amendments and inspection findings. In light of these challenges, agency management has prioritized updates to existing guidance and procedures, as well as staff training on risk informed decision-making in the regulatory environment.

## **Completed Actions**

- NRC's Office of Nuclear Reactor Regulation completed its Risk-Informed Decision-making Action Plan and issued internal guidance (LIC-206) to support risk-informed licensing.
- NRC revised RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to The Licensing Basis."
- NRC developed and presented a new course for NRC managers, "Perspectives on Risk-Informed Decision-making for NRC Managers."

## **Ongoing Actions**

- NRC is updating position-specific qualification requirements to include the newly developed "Risk-Informed Thinking Workshop" for reactor program staff.
- NRC is evaluating improvements to the realism of fire probabilistic risk assessment models.
- NRC is developing a graded approach for using risk information more broadly in operating reactor licensing reviews.
- NRC regional offices are developing Risk-Informed Decision-making action plans



Looking Ahead: OIG will continue the assessment of NRC's Surveillance Test Inspection activities, which was initiated in the fourth quarter of FY 2019.

# TO REPORT FRAUD, WASTE, OR ABUSE

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# **COMMENTS AND SUGGESTIONS**

If you wish to provide comments on this report, please email OIG using this link.

In addition, if you have suggestions for future OIG audits, please provide them using this link.