Office of Enterprise Assessments
Fiscal Year 2018
Independent Oversight Activities Overview

Report to Congress
February 2019

United States Department of Energy
Washington, DC 20585
Message from the Secretary

The Office of Enterprise Assessments (EA) reflects the commitment of the Department of Energy (DOE) to the protection of national security assets and health and safety of DOE employees and the public. That commitment is integral to the DOE mission. EA provides an internal management assessment function that examines activities relating to security (physical and cyber), the environment, health, safety (nuclear and industrial), and other critical functions of the DOE enterprise.

This report contains an overview of EA independent oversight activities, findings, and recommendations for Fiscal Year 2018 as requested in House Report 114-91.

This report is being provided to the following Members of Congress:

- **The Honorable Nita M. Lowey**
  Chairwoman, House Committee on Appropriations

- **The Honorable Kay Granger**
  Ranking Member, House Committee on Appropriations

- **The Honorable Marcy Kaptur**
  Chairwoman, Subcommittee on Energy and Water Development
  House Committee on Appropriations

- **The Honorable Mike Simpson**
  Ranking Member, Subcommittee Energy and Water Development
  House Committee on Appropriations

- **The Honorable Richard Shelby**
  Chairman, Senate Committee on Appropriations

- **The Honorable Patrick Leahy**
  Ranking Member, Senate Committee on Appropriations

- **The Honorable Lamar Alexander**
  Chairman, Subcommittee on Energy and Water Development
  Senate Committee on Appropriations

- **The Honorable Dianne Feinstein**
  Ranking Member, Subcommittee on Energy and Water Development
  Senate Committee on Appropriations

If you have any questions or need additional information, please contact me or Ms. Bridget Forcier, Associate Director of External Coordination, Office of the Chief Financial Officer, at (202) 586-0176.

Sincerely,

Rick Perry
Executive Summary

The Office of Enterprise Assessments (EA) is responsible for implementing an Independent Oversight Program for security and safety within the U.S. Department of Energy (DOE) in accordance with DOE Order 227.1A, Independent Oversight Program. Effective oversight, including independent oversight, of DOE Federal and contractor operations is an integral element of the Department’s responsibility as a self-regulating agency to provide assurance for security and safety posture to leadership, workers, and the public. The purpose of this report is to provide to the Energy and Water Development Appropriations Committee, as requested in House Report 114-91, an overview of independent oversight activities, findings, and recommendations for Fiscal Year (FY) 2018.

Sixty-six independent oversight assessment reports documenting 71 safety and security assessments conducted at 28 DOE (including the National Nuclear Security Administration (NNSA) and Power Marketing Administration (PMA)) locations were produced in FY 2018. EA did not identify any immediate or major risks that warranted shutdown of operations. Overall, DOE’s security and safety programs are effective, and DOE consistently fulfills its responsibilities for protecting workers, the public, and national security, although continued attention and improvement are needed in some areas.

Independent oversight assessment reports are provided to DOE Senior managers, applicable DOE Program and line managers, contractor managers, and other DOE stakeholder organizations, i.e., Offices of Environment, Health, Safety and Security; the Inspector General; the Chief Information Officer; the General Counsel; and Public Affairs. Recommendations and areas for improvement identified in assessment reports pertained to:

- Continued senior level management attention to safety and security performance;
- Line management attention to contractor oversight;
- Improvements in risk assessment/analysis, mitigation, and acceptance;
- Implementation of evolving safety and security requirements;
- Improvements in safety, cyber and physical security and emergency management programs.

This report contains a summary of the DOE Independent Oversight Program; a summary of FY 2018 independent oversight activities; a listing of independent oversight assessment reports completed in FY 2018; and overall conclusions and recommendations.
OFFICE OF ENTERPRISE ASSESSMENTS
FISCAL YEAR 2018
INDEPENDENT OVERSIGHT ACTIVITIES OVERVIEW

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I. Legislative Language

This report responds to a request by the House Committee on Appropriations in House Report 114-91, which accompanied the Energy and Water Development Appropriations Bill, 2016. The report states:

The Office of Independent Enterprise Assessments is directed to continue to provide [to the House Committee on Appropriations] an annual report of its oversight activities, findings, and recommendations for the previous fiscal year.

II. Independent Oversight Program

The Office of Enterprise Assessments (EA) is responsible for implementing an Independent Oversight Program for security and safety within the U.S. Department of Energy (DOE) in accordance with DOE Orders 227.1A, Independent Oversight Program, and 226.1B, Implementation of Department of Energy Oversight Policy. To carry out this responsibility, EA conducts independent oversight assessments to identify gaps and vulnerabilities in safeguards and security, cyber security, safety, and emergency management programs and performance to assist in the prevention and mitigation of events that could negatively impact workers, the public, the environment, and/or national security.

Independent oversight activities are selected and tailored to the unique needs of each DOE program and site office, and consider relative risks and past performance in determining specific activities. Independent oversight assessments are designed to complement, not replace, DOE line management’s responsibility to monitor and oversee contractor security and safety programs and performance, manage contracts, and conduct self-assessments.

Safeguards and security and cyber security independent oversight assessments gauge the effectiveness of security-related policies and programs throughout the Department. These assessments are performed to provide assurance that nuclear weapons and weapons components, special nuclear material, classified matter, and classified and sensitive information are being protected from theft, sabotage, diversion, loss, or unauthorized disclosure. Follow-up assessments are performed as appropriate to evaluate progress and effectiveness in implementing corrective actions for previously identified issues.

The safeguards and security assessments generally evaluate the following functional areas, as described in EA protocols:

- Program planning and management;
- Personnel security;
- Protective force;
- Physical protection;
• Material control and accountability; and
• Information Security.

Cyber security assessments evaluate foundational cyber security program elements such as:

• Risk management;
• Configuration management;
• Contingency planning;
• Continuous monitoring;
• Identity and access management;
• Vulnerability management; and
• Technical implementation (through announced and unannounced penetration testing).

Environment, safety and health (ES&H) independent oversight assessments evaluate nuclear safety, selected facility and worker safety programs, integrated safety management performance, and emergency response capabilities to determine the status and provide feedback to line management for needed improvements. These assessments are performed to ensure adequate protection of the public, workers, and the environment, particularly at DOE sites with nuclear facilities or conducting nuclear or radiological activities.

Site Leads are assigned to monitor specific DOE nuclear operations in order to plan and coordinate assessment activities. ES&H assessment activities are primarily focused on:

• Evaluating the status of nuclear safety at DOE nuclear facilities, including functionality of vital safety systems and other nuclear safety programs and functions;
• Conducting reviews of design and construction of new or significantly modified nuclear facilities;
• Conducting targeted, multi-site nuclear safety reviews of selected focus areas that are of interest due to known performance deficiencies, high risks, or recent changes in requirements;
• Evaluating emergency management capabilities at DOE sites with nuclear activities and significant quantities of hazardous materials;
• Conducting reviews of safety programs at sites or within organizations where performance may present significant risk (e.g., less than expected safety performance and/or serious or recurring incidents or violations of requirements); and
• Evaluating line management feedback and improvement processes.

The Independent Oversight Program assessment processes are described in protocols available on the EA website1. The protocols provide a disciplined and consistent approach to monitoring, evaluating, and reporting the status of the implementation of security and safety programs

within DOE. The processes have been developed and refined over time and tested through repeated use during many different types of assessments.

EA constantly strives to improve its internal processes as part of a continuing effort to improve its products and the value it provides to DOE. EA managers are expected to solicit information from team members and line management personnel that can be used to improve these processes.

III. Activities and Findings

A broad range of assessments were conducted at sites critical to DOE’s missions in order to evaluate the effectiveness of physical and cyber security programs; nuclear safety and worker safety and health programs; and emergency management programs. EA safeguards and security and cyber security assessments focused on DOE operations and systems that manage special nuclear material (SNM), classified matter (both physical and information), national security information, and other sensitive assets entrusted to the Department. EA focused significant effort on safety assessments of high-hazard nuclear construction design projects and operations at the Hanford Site Waste Treatment and Immobilization Plant Project and Tank Farm, the Y-12 National Security Complex Uranium Processing Facility, and the Savannah River Site Salt Waste Processing Facility.

The information contained in the following sections was derived from independent oversight assessment reports issued in fiscal year (FY) 2018. Some referenced reports pertain to assessments conducted in the later part of FY 2017. Some assessments conducted in the later part of FY 2018 are not referenced in this report as the assessment reports will not be issued until later in FY 2019.

In previous annual reports, safeguards and security assessments of field intelligence elements and special access programs were categorized as “information security assessments.” These assessments are now included in the safeguards and security or cyber security assessments categories, as applicable.

A. Safeguards and Security Assessments

Twenty-three safeguards and security assessments were completed at 17 DOE locations in FY 2018. Nine of the locations possessed Category I quantities of SNM\(^2\). Eight assessments were conducted at field intelligence units (four of which were conducted in combination with cyber

\(^2\) Category I SNM means in any combination a quantity of: 2 kg or more of plutonium; 5 kg or more of U-235 (contained in uranium enriched to 20 percent or more in the U-235 isotope); 2 kg or more of U-233; or 5 kg or more in any combination computed by the equation grams = (grams contained U-235) + 2.5 (grams U-233 + grams plutonium). This is often referred to as a formula quantity.
security assessments); and two special access programs (SAP) were assessed. The table at the end of this section identifies the locations of these assessments except for the field intelligence units and SAPs.

Security performance was evaluated by focusing on the adequacy of security programs protecting Category I quantities of SNM; special access, national security and intelligence information programs; and other national security assets. This was accomplished by performing comprehensive multi-topic assessments (including force-on-force exercises) and limited notice performance testing.

Assessment results indicated that SNM and other national security assets entrusted to the Department were adequately protected by protective forces that were generally well-equipped, well-trained, and capable of performing their mission supported by defense-in-depth physical protection measures consistent with DOE tactical doctrine philosophies. In addition, many sites demonstrated the ability to maintain and generate accurate SNM inventories and perform emergency-related inventories. Assessment results also indicated that continued management attention was needed to address: deteriorating/outdated physical security systems, cyber security threats to computerized security systems, corrective action effectiveness, and implementation of the Design Basis Threat policy security requirements. Specific findings, recommendations and areas for improvement are contained within the specific assessment reports.

Assessments of classified mater protection and control systems indicated that DOE organizations were adequately controlling and protecting classified information and the personnel who administer information protection programs were capable of performing their mission requirements. EA observed that line management was reducing classified material holdings and/or implementing electronic accountability systems to better protect classified matter. However, miscellaneous compliance and performance deficiencies continued to impact the effectiveness of classified matter protection and control against insider threats, and identification and appropriate marking of classified matter needed continued management attention. Specific findings, recommendations and areas for improvement are contained within the specific assessment reports.

B. Cyber Security Assessments

Sixteen cyber security assessments at 13 DOE locations and two cross-cut assessments (comprised of results from several locations) were completed in FY 2018. Five assessments were conducted at field intelligence units (four in combination with safeguards and security assessments). The table at the end of this section identifies the specific locations of these assessments except for the field intelligence units.

Cyber security assessments focused on providing a risk-based, representative review of classified and unclassified networks used throughout the Department. EA operated a cyber security testing network that was used to conduct announced penetration tests of DOE
computer networks to evaluate external threats; and unannounced penetration tests, conducted by a red team that assumed the role of an adversary, to identify weaknesses that could expose a network to a cyberattack. In addition, EA conducted its annual assessments of DOE Office of Intelligence and Counterintelligence and National Security Information Systems’ associated cyber security programs in support of meeting Federal Information Security Modernization Act requirements.

Vulnerability scans of a Power Marketing Administration supervisory control and data acquisition (SCADA) system in a production environment was also conducted. The scans were completed successfully without interruption to systems or users and proved again that testing within these critical networks is possible with careful planning and preparation.

Assessment results indicated that, in general, DOE organizations provided adequate protection for classified systems, networks, and data. Improvements were evident in many unclassified cyber information systems management processes regarding risk identification and mitigation, continuous monitoring, and analysis of impact to mission if critical information assets were unavailable. The development and implementation of effective phishing awareness exercises at some locations to provide more comprehensive cyber security training for Federal and contractor employees was also noted. Observations indicated that additional management attention is needed to fully implement aspects of a risk management program uniformly throughout the Department to ensure that cyber vulnerabilities are identified and addressed, and to implement new and/or updated cyber protection requirements. Specific findings, recommendations and areas for improvement are contained within the specific assessment reports.

C. Nuclear Safety and Environment Assessments

Fourteen nuclear safety assessments at six DOE locations; and three lessons learned / best practices assessments were completed in FY 2018. The table at the end of this section identifies the specific locations of these assessments.

Nuclear safety assessments focused on implementation of nuclear safety management programs, engineered safety systems, and DOE and contractor feedback and improvement processes. Integration of safety into design and construction quality of DOE’s major nuclear design and construction projects, and operations at the Waste Isolation Pilot Plant were also evaluated. In addition, three crosscut assessment reports were published regarding good practices in improving disciplined operations at DOE nuclear facilities, integration of safety into design of new DOE nuclear facilities, and lessons learned from assessments of low-level radioactive waste management and disposal practices at DOE nuclear facilities.

Assessment results indicated that DOE nuclear facilities generally meet applicable nuclear safety requirements. Technical safety requirements and required safety management processes (e.g., maintenance, system engineering) are well defined and mature at most nuclear facilities. Safety systems at operating nuclear facilities continue to be well maintained and
operate in a way that ensures the systems can perform their safety functions. While most major nuclear facility projects adequately integrated safety into design, some weaknesses in hazard and accident analysis, hazard controls, and functional and performance requirements were identified. Low level radioactive waste management activities at assessed facilities were conducted in a manner that protects the health and safety of workers, the environment, and the public. Specific findings, recommendations and areas for improvement are contained within the specific assessment reports.

D. Worker Safety and Health Assessments

Six worker safety and health assessments at seven DOE locations (including follow-up assessment at the Hanford Site regarding tank vapors) were completed in FY 2018. The table at the end of this section identifies the specific locations of these assessments.

Worker safety and health assessments focused on the effectiveness of Integrated Safety Management (ISM) processes in establishing controls to protect workers from hazards at DOE facilities, including radioactive materials, beryllium, other hazardous chemicals, and physical hazards. In addition, a follow-up assessment of progress on actions taken to address tank vapor concerns at the Hanford Site, and targeted assessments of injury and illness recordkeeping and reporting were conducted.

Assessment results indicated that DOE sites have adequately implemented core processes and requirements to protect workers, and sites continue to make improvements based on operational experience and had implemented effective ISM processes to enhance safety performance. Despite the overall effectiveness of ISM processes, controls for some hazards were missed. Continued management attention is needed to ensure that required controls are established for all workplace hazards. Specific findings, recommendations and areas for improvement are contained within the specific assessment reports.

E. Emergency Management Assessments

Four emergency management assessments at four DOE locations and one lessons learned assessment were completed in FY 2018. The table at the end of this section identifies the specific locations of these assessments.

Assessments evaluated emergency management programs and emergency management response organization performance demonstrated during exercises. Followed-up assessments were also conducted to observe corrective actions to previously identified findings. In addition, a crosscut assessment report pertaining to lessons learned from emergency management assessments conducted in 2017 was also published.

Assessment results indicated that sites had developed and effectively implemented many aspects of their emergency management programs, but some specific areas of weakness prevented the programs from being fully effective. Issues associated with exercise scenarios,
exercise evaluation, response performance, and issue management, including effectively closing previously identified findings, were observed. Specific findings, recommendations and areas for improvement are contained within the specific assessment reports.

F. **EA FY 2018 Independent Oversight Assessments by DOE Location / Entity**

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**SCIENCE and ENERGY**

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<th>Safeguards &amp; Security</th>
<th>Cyber Security</th>
<th>Nuclear Safety &amp; Environment</th>
<th>Worker Safety &amp; Health</th>
<th>Emergency Management</th>
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<td>D-III D National Fusion Facility</td>
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<td>Oak Ridge National Lab.</td>
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<td>Pacific Northwest National Lab.</td>
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**ENVIRONMENTAL MANAGEMENT**

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<th>Nuclear Safety &amp; Environment</th>
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<td>Moab Uranium Mill Tailings Remedial Action Project</td>
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<td>Paducah Gaseous Diffusion Plant</td>
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<td>Portsmouth Gaseous Diffusion Plant</td>
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<td>Savannah River National Lab.</td>
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<td>Savannah River Site</td>
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<td>Waste Isolation Pilot Plant</td>
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**WESTERN AREA POWER ADMIN.**

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<th>Nuclear Safety &amp; Environment</th>
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<td>Crosscut/Leasons Learned/Best Practice Assessments</td>
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IV. Independent Oversight Reports Listing

This section contains a list of independent oversight assessment reports issued in FY 2018 in chronological order by discipline, except as otherwise noted. The reports identified in the safeguards and security and cyber security sections contain classified and/or controlled unclassified information and, therefore, are not available to the public. Titles of safeguards and security assessments of NNSA special access programs and Office of Intelligence and Counterintelligence field intelligence elements are not identified in this report or on the EA public website. Nuclear safety and environment, worker safety and health, and emergency management report titles in this report are linked to the EA public website.

A. Safeguards and Security
   1. (U) Office of Enterprise Assessments Results of the Protective Force Focused Assessment at the Brookhaven National Laboratory Conducted August 29-31, 2017, October 11, 2017
   2. (U) Office of Enterprise Assessments Safeguards and Security Assessment at the Idaho National Laboratory, December 19, 2017
   3. (U) Results of Limited-Notice Performance Tests at the Savannah River Site, Conducted November 28-29, 2017, January 5, 2018
   4. (U) Office of Enterprise Assessments Safeguards and Security Assessment at the Sandia National Laboratories, California, January 24, 2018
   5. (U) Addendum to the Office of Enterprise Assessments Safeguards and Security Assessment at the Hanford Site, February 7, 2018
   6. (U) Results of Limited-Notice Performance Tests at the Pantex Plant, Conducted February 13-15, 2018, March 14, 2018
   7. (U) Office of Enterprise Assessments Safeguards and Security Assessment at the Lawrence Livermore National Laboratory, March 28, 2018
   8. (U) Results of Limited-Notice Performance Tests at the Los Alamos National Laboratory, Conducted April 17-19, 2018, May 18, 2018
   9. (U) Results of Limited-Notice Performance Tests at the Oak Ridge National Laboratory, Conducted May 8-9, 2018, June 1, 2018
  10. (U) Office of Enterprise Assessments Security Assessment at the Office of Secure Transportation Headquarters and Agent Operations Western Command, June 21, 2018
  11. (U) Office of Enterprise Assessments Limited Security Assessment at the U.S. Department of Energy Headquarters, June 27, 2018
  12. (U) Office of Enterprise Assessments Review of the Material Control and Accountability Program at the Portsmouth Gaseous Diffusion Plant, July 16, 2018
  13. (U) Results of Limited-Notice Performance Tests at the Idaho National Laboratory, Conducted August 28-29, 2018, September 19, 2018

B. Cyber Security
   1. Independent Assessment of the Oak Ridge National Laboratory Unclassified and Classified Cyber Security Programs, October 2017
   2. Technical Assessment of the Cyber Security Program at Pacific Northwest National Laboratory, November 2017
   3. Technical Assessment of the Cyber Security Program at the Western Area Power Administration Sierra Nevada Region, December 2017
4. Technical Assessment of the Cyber Security Program at the DIII-D Facility, January 2018
5. Independent Assessment of the Y-12 National Security Complex Unclassified and Classified Cyber Security Programs, January 2018
6. Independent Assessment of the National Nuclear Security Administration Information Assurance Response Enter Cyber Security Program, February 2018
7. Independent Assessment of the National Nuclear Security Administration Headquarters Unclassified and Classified Security Program, April 2018
8. Independent Assessment of the Office of Environmental Management Cyber Security Program at the Savannah River Site, May 2018
10. Independent Assessment of the National Nuclear Security Administration Cyber Security Program at the Los Alamos National Laboratory, August 2018
11. Independent Assessment of the Office of Environmental Management Cyber Security Programs at the Hanford Site, August 2018

C. Nuclear Safety and Environment
1. Assessment of the DOE Readiness Assessment Process for Restart of the Transient Reactor Test Facility at the Idaho National Laboratory – November 2017
2. Assessment of Conduct of Engineering at the Waste Isolation Pilot Plant – November 2017
3. Assessment of the Hanford Site Waste Treatment and Immobilization Plant Construction Quality – November 2017
5. Enterprise Assessments Targeted Assessment of the Hanford Site Tank Farms Low Activity Waste Pretreatment System Preliminary Safety Design Basis – December 2017
8. Enterprise Assessments Assessment of the Uranium Processing Facility Construction Quality – Structural Concrete – February 2018
9. Enterprise Assessments Assessment of the Hanford Site Waste Treatment and Immobilization Plant Construction Quality – March 2018
10. Enterprise Assessments Lessons Learned from Assessments of Integration of Safety into Design of New U.S. Department of Energy Nuclear Facilities – April 2018
11. Enterprise Assessments Assessment of the Development and Maintenance of Safety Bases at Los Alamos National Laboratory – April 2018
12. Enterprise Assessments Assessment of Conduct of Engineering at the Los Alamos National Laboratory – May 2018

3 High-hazard nuclear construction project assessment.
13. Enterprise Assessments Assessment of the Pantex Plant Gravel Gerties Aging Management – July
15. Enterprise Assessments Assessment of the Hanford Site Waste Treatment and Immobilization Plant Construction Quality – August 2018 ¹
16. Enterprise Assessments Assessment of Conduct of Engineering at the Idaho National Laboratory – August 2018

D. Worker Safety and Health
   1. Enterprise Assessments Assessment of Work Planning and Control at the Savannah River Site Salt Waste Processing Facility – November 2017 ⁴
   2. Enterprise Assessments Assessment of Work Planning and Control at the Savannah River National Laboratory – November 2017
   3. Enterprise Assessments Follow-up Assessment of Progress on Actions Taken to Address Tank Vapor Concerns at the Hanford Site – February 2018 ⁴
   4. Enterprise Assessments Assessment of Occupational Injury and Illness Recordkeeping and Reporting at the Lawrence Livermore National Laboratory – June 2018
   5. Enterprise Assessments Assessment of the Pantex Plant Work Planning and Control Program – June 2018
   7. Enterprise Assessments Assessment of Sandia National Laboratories/New Mexico Fire Protection Program Implementation – July 2018
   8. Enterprise Assessments Assessment of Occupational Injury and Illness Recordkeeping and Reporting at the Savannah River Site – August 2018

E. Emergency Management
   1. Assessment of Emergency Management at the Paducah Site – November 2017
   2. Enterprise Assessments Assessment of the Emergency Management Exercise Program at the Idaho Site – January 2018
   3. Enterprise Assessments Assessment of Emergency Management at the Waste Isolation Pilot Plant – February 2018
   4. Enterprise Assessments Lessons Learned from Assessments of Emergency Management Programs at DOE Sites - March 2018
   5. Enterprise Assessments Assessment of Sandia National Laboratories/New Mexico Emergency Management Exercise Program – August 2018

¹ High-hazard nuclear construction project assessment.
V. Conclusions and Recommendations

Sixty-six independent oversight assessment reports documenting 71 safety and security assessments conducted at 28 DOE (including the NNSA and PMAs) locations were produced in FY 2018. EA did not identify any immediate or major risks that warranted shutdown of operations. Overall, DOE’s security and safety programs are effective, and DOE consistently fulfills its responsibilities for protecting workers, the public, and national security, although continued attention and improvement are needed in some areas.

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