

U.S. House of Representatives House Energy and Commerce Committee
Subcommittee on Oversight and Investigations
“DOE’s Mounting Cleanup Costs: Billions in Environmental Liability and Growing”
Questions for the Record Submitted to the Honorable Anne White

May 1, 2019

QUESTIONS FROM REPRESENTATIVE FRANK PALLONE, JR. (D-NJ)

- Q1. Your testimony indicated that the Office of Environmental Management (EM) is working on a root cause analysis. What steps or process did the Department of Energy’s (DOE) root cause analysis involve?
- Q1a. When will this analysis be completed?
- A1a. An initial analysis and plan was completed in May 2019; final analysis is expected by September 2020.
- Q1b. What steps or process did DOE's root cause analysis involve?
- A1b. EM is following root cause analysis protocols from DOE Order 414.1D, Quality Assurance, and EM-QA-001, the EM Quality Assurance Program directive, which requires an authoritative methodology for root cause identification and personnel trained in root cause analysis techniques. EM reviewed GAO Financial Audit Manual (GAO-18-626G) and Government Auditing Standards (GAO-18-568G) were reviewed. EM developed system process flow charts to understand and analyze potential barriers, and to identify administrative and procedural controls that should have prevented the occurrence.
- Q1c. Who in EM is responsible for overseeing the completion of EM’s root cause analysis?
- A1c. The EM Office of Budget and Planning is responsible for overseeing EM’s root cause analysis, which is being conducted by the EM Consolidated Business Center Office of Cost Estimating.
- Q2. To what extent does EM have the capacity to do its work, including resources such as having sufficient staff and staff with the right skill sets? What additional resources, if any, does EM need to address these management challenges?
- A2. EM has a highly technical and qualified workforce. EM uses DOE training programs to ensure its staff maintains the required competencies to do this work. EM is exploring reinstating an intern program to bring in recent graduates in our Mission Critical

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Occupations to ensure staff is available and continue the mission in the future. EM is also currently working on a workforce staffing analysis to determine what, if any, additional resources may be necessary.

Q3. Your testimony referred to “end-state contracting” as important initiative for EM.

Q3a. What does “end state contracting” mean?

A3a. In the summer of 2018, EM shifted to the End State Contracting Model (ESCM) with the objective of reinvigorating the completion mindset and reforming the way EM does business in the management of environmental cleanup. The ESCM utilizes a single award Indefinite Delivery Indefinite Quantity (IDIQ) contract structure, which provides EM the needed flexibility to task its contractors using a risk-based approach to better define discrete scopes of work for site closure or end states for more realistic, reliable pricing and appropriate incentive structures to yield significant reductions in EM’s environmental financial liability. The ESCM employs a two-step process using a competitive qualifications-based Request for Proposal (RFP) to select the offeror representing the best value and subsequent single source, Task Order(s) negotiations through effective partnering. The selection process utilizes a streamlined evaluation of representative sample scopes of work typically consisting of a year or less in duration instead of previously used detailed proposal evaluation of up to 10 years of scope. Additionally, EM is moving back towards Cost Plus Incentive Fee (CPIF) contracts with greater fee earning potential than that of recently awarded Cost Plus Award Fee (CPAF) contracts. While the fee potential is higher, the contractor assumes more risk under the CPIF contract. The ESCM IDIQ approach also provides EM with an off-ramp earlier in the Period of Performance without contract termination liability if contractor performance is subpar. While this number is subject to change, EM currently has seven (7) active acquisitions that will use some form of this approach: Hanford Central Plateau Cleanup Contract (CPCC), Hanford Tank Closure Contract (TCC), Oak Ridge Reservation Cleanup Contract (ORRCC), Nevada Environmental Program Services Contract (NEPSC), Idaho Cleanup Project Contract (ICPC), Savannah River Integrated Mission

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Completion Contract (SRIMCC), and Portsmouth Decontamination and Decommissioning (Ports D&D).

- Q3b. How will “end state contracting” differ from EM’s current approach to contracting?
- A3b. The ESCM will primarily utilize Cost Plus Incentive Fee (CPIF) versus Cost Plus Award Fee as the contract type. The CPIF has a greater fee potential while the contractor assumes more risk. The additional fee earning potential is expected to motivate cost efficiencies and accelerate end state completion or closure which will reduce or eliminate hotel costs/liabilities. The source selection process is much more streamlined with the ESCM. The size of proposals has been significantly reduced and the selection process utilizes representative sample scopes of work typically consisting of a year or less in duration instead of a detailed proposal evaluation of up to 10 years of scope. The approach utilized by ESCM should be shorter in duration and less costly to industry. Finally, the previous contracting approach required contractors to propose the cost for 10 years of scope which included many unknown variables. The ESCM shifts to IDIQ, where the majority of the cost will be negotiated after contract award through Task Orders which will be for discrete scopes of work that eliminate most if not all of the unknown variables over a longer time horizon. A key component of the negotiation will be a partnering approach which was effectively utilized at other DOE clean-up sites such as Rocky Flats, Oak Ridge, Mound, and Fernald.
- Q3c. How will "end state contracting" address DOE's growing environmental liability?
- A3c. The emphasis of ESCM will be on end states that measurably reduce environmental risk and financial liability. The IDIQ model allows for better contract management and tasking of discrete scopes of work for more realistic, reliable pricing and appropriate incentive structures to yield significant reductions in EM’s Environmental Financial Liability. The ESCM enables industry to be more innovative in approaches to cleanup and additional fee earning potential should motivate cost efficiencies and accelerate end state completion or closure, which will reduce or eliminate hotel costs/liabilities.

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- Q4. The department created a few years ago the position of Chief Risk Officer, who is supposed to oversee and mitigate high risks throughout DOE.
- Q4a. What is the role of the Chief Risk Officer in overseeing EM activities especially given the size and significant growth in EM’s environmental liabilities?
- A4a. The Chief Risk Officer works with the Department’s Program Offices in providing assistance with how risks are identified and mitigated.
- Q4b. What specific steps has the Chief Risk Officer taken in this area?
- A4b. For the EM program specifically, the Chief Risk Officer has suggested that EM use its life-cycle cost information reported annually in the Congressional Budget Request over the past 15 years to identify lifecycle cost changes that have occurred over time and provide a description of the reasons that EM sites had decreases and increases in their reported environmental liabilities. The Chief Risk Officer also recommended that EM develop alternatives which can potentially mitigate the increases with an emphasis on the Hanford Site, EM’s highest liability.
- Q5. Under the *National Defense Authorization Act for fiscal year 2011*, EM must annually report estimated costs and detailed funding needs for future cleanup activities. However, in January 2019, the Government Accountability Office (GAO) reported that EM's 2017 submission to Congress was only the second one since 2011, and it did not include a detailed list of upcoming activities or funding needed to meet those activities.
- Q5a. Why hasn’t EM submitted the required reports to Congress?
- A5a. EM successfully released the FY 2012 and FY 2017 “Future Years Report” to address the NDAA requirement. However, due to the extensive information required for this report, and the timing of the budget request and associated Hill hearings, EM has faced challenges in submitting subsequent reports to Congress in a timely manner. Often, the information is overtaken by more current congressional budgetary information, therefore rendering the report out of date before it can be released.

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- Q5b. Why haven’t these reports included accurate information, such as estimated future costs for the next four years?
- A5b. All EM reports include publically available information based on the most current data at that point in time. The reports have not covered the next four years because EM is required by the Office of Management and Budget to submit an annual, not multiyear, budget.
- Q5c. What does EM plan to do to provide such information to Congress in the future in a timely and accurate manner?
- A5c. EM appreciates working with Congress as it exercises its oversight role of our important mission. We will continue to provide regular and proactive communications with this committee on our activities, needed funding, and other resources.
- Q6. We understand that DOE has yet to a make decision on how it will treat Hanford’s supplemental low-activity waste. GAO reported in 2016 that DOE may be able to reduce certain risks and save tens of billions of dollars by adopting alternative approaches to treat a portion of its low-activity radioactive waste at the Hanford Site.
- Q6a. What options, if any, is Hanford considering for treating Hanford’s supplemental low-activity waste, and what are the expected costs for these options?
- A6a. The Department has not made a decision for treating supplemental low-activity waste and has not yet completed an options analysis for the treatment and disposal of these wastes.
- Q6b. When does DOE expect to decide on how it will treat supplemental low-activity waste?
- A6b. There is no specific date for making the decision on the supplemental treatment of low-activity waste. Section 3134 of *the National Defense Authorization Act for 2017* tasked the Federal Facility Research and Development Centers (FFRDC) with providing an assessment of treatment options for supplemental low-activity waste. In this case, the FFRDC consists of several DOE National Laboratories working together to include Savannah River National Laboratory, Oak Ridge National Laboratory, Sandia National Laboratories, and Pacific Northwest National Laboratory; they provided the results of

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their review in July 2019. Using the results of their report, the National Academies will make a recommendation for treating supplemental low-activity waste following a public comment period and in consultation with the State of Washington.

- Q6c. To what extent, if any, has DOE analyzed alternatives to vitrification for treating supplemental low-activity waste, as GAO recommended in May 2017, and what are the results of the analyses?
- A6c. DOE has not conducted an analysis of treatment options but is awaiting the results of the FFRDC report and NAS recommendations.

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QUESTIONS FROM CHAIRWOMAN DIANA DEGETTE (D-CO)

- Q1. The U.S. Government's environmental liabilities are included on GAO's High Risk List. In particular, GAO notes that DOE has not met criteria for capacity, having an action plan, monitoring, or demonstrating progress. What steps is the Office of Environmental Management (EM) taking in each of these areas?
- A1. EM has taken a number of steps to address GAO recommendations including: performing an options analysis to evaluate the current approaches to cleanup and other recently identified opportunities across the complex that could reduce risk and life-cycle costs through more efficient and innovative approaches; conducting independent cost analysis of the remaining cleanup of the Hanford Site to ensure that the cost estimates for the cleanup were bounded; implementing a new end state contracting model that will provide EM the needed flexibility to task its contractors using a risk-based approach to better define discrete scopes of work for site closure or end states for more realistic, reliable pricing and appropriate incentive structures to yield reductions in EM’s environmental liability; developing an integrated schedule using an enterprise system to allow for more informed decision-making across the EM complex; and analyzing high-level waste case-by-case in a risk-based, rather than source-based manner.
- Q2. In your written statement you said that EM is preparing a "10-year strategic planning options analysis."
- Q2a. What will this strategic planning options analysis entail?
- A2a. The Alternatives Analysis will identify opportunities for accelerating site closure and potential means for reducing the EM environmental liability. Three alternatives are analyzed, including the current baseline, the Optimized Alternative, and the Unconstrained Alternative. The analysis is performed for EM sites, with a focus on sites that have the potential for acceleration by Fiscal Year 2028. The analysis considers the following key factors: completion date of legacy waste cleanup; remaining costs, technical and project risks; regulatory and stakeholder acceptance; transuranic waste disposal at WIPP; and spent nuclear fuel and nuclear material management.

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- Q2b. How can EM do an “options analysis” when it has not yet prepared a strategic plan?
- A2b. As mentioned above, the Alternatives Analysis is conducted to identify opportunities for accelerating site closure and potential means for reducing the EM environmental liability. The information developed from the Alternatives Analysis will be used to inform the EM strategic planning for Fiscal Year 2021 and beyond.
- Q3. Over the last 2 decades, several organizations—including the National Academies, the DOE Office of Inspector General, the Consortium for Risk Evaluation and Stakeholder Participation, and GAO—have recommended that DOE adopt a risk-informed approach to decision-making.
- Q3a. How does DOE define risk-informed decision-making?
- A3a. First and foremost, EM always seeks to address any issues posing an immediate risk to human health or the environment. The rationale for cleanup prioritization is based on achieving the highest risk reduction benefit while also recognizing EM’s regulatory compliance commitments.
- Q3b. What steps has DOE taken to take a risk-informed approach to decision-making?
- A3b. Much of the cleanup of the EM complex is governed by multiple federal and state laws, such as the *Comprehensive Environmental, Compensation and Liability Act (CERCLA)*, which uses a risk-based approach to decision making. EM pursues its cleanup objectives within a framework of regulatory compliance commitments. Taking many variables into account, EM has generally prioritized its cleanup activities as follows:
- Activities to maintain a safe, secure, and compliant posture;
 - Radioactive tank waste stabilization, treatment, and disposition;
 - Spent (used) nuclear fuel receipt and storage;
 - Special nuclear material consolidation, stabilization, and disposition;
 - Transuranic and mixed/low-level waste disposition;
 - Soil and groundwater remediation; and
 - Excess facilities deactivation and decommissioning.

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EM is looking to identify the barriers to success and how they can be mitigated to drive to completion faster in a manner that is protective of human health and the environment by considering a range of possibilities in terms of what could be achieved at sites across the complex, assumptions that need reassessed, and consider new approaches and disposal options. This includes a focus on risk reduction.

Q3c. To what extent does DOE have a framework for sites to follow to ensure that decisions are risk-informed?

A3c. Sites prioritize work using the framework described above and maintain a site-level Integrated Priority List (IPL). The site-level IPLs are assessed and integrated into an EM program IPL for program planning and formulating the annual budget request. Thereby, funding is focused on projects that offer the highest returns in terms of risk reduction, which is why retrieval, treatment and disposition of tank waste receives the largest share of cleanup funding.

Q3d. What challenges, if any, prevent DOE from taking a risk-informed approach to decision-making?

A3d. EM does use a risk-informed approach in decision-making as described above. Like any program of this size and complexity, executing a risk-informed approach considers uncertainty and most significantly, the complexity of the regulatory and legal framework associated with each site.

Cleanup of the EM complex is governed by multiple federal and state regulatory agreements. Collectively, there are approximately 40 such agreements in place throughout the EM program, some of which have been in place for decades and cover decades into the future.

Q4. GAO reported recently that EM does not manage its work as a program, does not have a strategic plan, does not follow program or project management best practices, does not track changes to cleanup milestones, and the data it uses to monitor its performance is not reliable.

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- Q4a. What is EM’s plan to require that its work conform to program and project management best practices?
- A4a. EM is reviewing the July 2017 EM Cleanup Program policy to include program and project management requirements to determine appropriate changes. Cleanup activities with specific scopes and start and completion dates will follow best management practices. EM will review and revise EM’s 2017 cleanup policy to include program and project management leading practices by January 31, 2020.
- Q4b. What is EM’s plan to fix its performance monitoring data, including its earned value, performance metrics and milestone data, as recommended by GAO?
- A4b. EM has conducted a study of its internal Integrated Planning, Accountability, and Budgeting System (IPABS) database, and senior EM leadership is evaluating the study’s recommendations for implementation and continuous improvement. Additionally, EM plans to roll out a plan for contractors to submit their earned value management (EVM) and cost data directly into the DOE databases such as IPABS and the Project Assessment and Report System (PARS) to eliminate input errors.
- Q4c. The data that GAO has found unclear and unreliable is also the data EM has presented regularly to Congress. What is EM doing to ensure that the data it provides to Congress is accurate and provides the information Congress needs to do its job?
- A4c. As stated earlier, EM has commenced an initiative to evaluate its current database systems such as IPABS and PARS to determine best options and methods to ensure data accuracy. This study is ongoing and is expected to be completed in early FY 20. EM submits Corporate Performance Measures reports to Congress annually. These reports include progress in cleaning up sites measured against targets. EM has directed a data validation study to determine revised methodologies to track cleanup progress against the annual targets included in budget requests. This report is expected in FY 20, and will include recommended actions to provide for direct upload of data from contractor’s

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systems into a database, as well as standardizing the data templates to ensure uniformity of information across EM site reporting.

- Q5. In 2019, GAO found that the data EM uses to monitor its performance is not reliable. What is EM’s plan to fix its performance monitoring data, including its earned value performance metrics and milestone data, as recommended by GAO?
- A5. EM has conducted a study of its internal financial management and project tracking tool, Integrated Planning, Accountability, and Budgeting System (IPABS). The study resulted in several recommendations that are being evaluated by senior leadership in EM’s budget and planning team for implementation and continuous improvement. Additionally, there are actions in development for contractors to submit their earned value management (EVM) and cost data directly into the DOE databases such as IPABS and PARS to eliminate input errors.
- Q6. In 2017, DOE undertook a 45-day review, which was intended to identify opportunities to improve its mission operations.
- Q6a. What is the status of the 45-day review, and how, if at all, were the findings from that review used by EM?
- A6a. The review enabled EM to evaluate opportunities to advance work that had been in progress, and in some instances to make decisions that were supportive of advancing cleanup. Some examples of decisions made include a decision to complete Waste Incidental to Reprocessing Evaluation for C-Tank Farm at Hanford and begin the NRC consultation process; a decision to develop a business case analysis for the Advanced Mixed Waste Treatment Facility that informed a decision on the future use of the facility; and a decision to initiate a Hanford Tribal Forum with the tribal nations to consult on interests for tribal access to the Hanford Site. These decisions included, when appropriate, notifications to Congress, tribal nations, state and local officials and other stakeholders.
- Q6b. Does DOE plan to make the 45-day review public, and if so, when?

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- A6b. The decisions resulting from the review were made a part of the public record.
- Q7. In fall 2018, DOE put forth a proposal to reconsider its interpretation of high-level radioactive waste under the Atomic Energy Act, as amended, and the Nuclear Waste Policy Act of 1982, as amended. Under this interpretation, reprocessing waste would be non-HLW if, among other things, the waste does not exceed certain concentration limits or does not require disposal in a deep repository.
- Q7a. What is the status of DOE’s consideration of this new interpretation?
- A7a. On June 10, 2019, DOE published a Supplemental Federal Register Notice (FRN) describing the high-level radioactive waste interpretation and providing DOE’s response to public comments. On June 10, DOE also published its intent to prepare National Environmental Policy Act (NEPA) documents to analyze the potential treatment and commercial disposal of up to 10,000 gallons of Defense Waste Processing Facility recycle wastewater at the Savannah River Site. Further decisions about how this interpretation will apply to other existing wastes will require subsequent NEPA analysis.
- Q7b. How would DOE’s proposed reinterpretation of HLW address DOE’s growing environmental liability?
- A7b. DOE expects that some benefits of the HLW interpretation will include:
- Reducing the length of time that radioactive waste is stored on-site at DOE facilities, increasing safety for workers, the public, and the environment;
 - Removing reprocessing waste from the states where it has been stored for decades and providing for the disposal of these wastes in facilities constructed and regulated for such purposes;
 - Enhancing safety at DOE sites by using lower-complexity waste treatment and immobilization approaches; and
 - Utilizing mature and available commercial facilities and capabilities to shorten mission completion schedules and reduce taxpayer financial liability.
- Q8. Section 3139 of National Defense Authorization Act for Fiscal Year 2018 requires DOE to “conduct an evaluation of the feasibility, costs, and cost savings of classifying covered defense nuclear waste as other than high-level radioactive waste, without decreasing

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environmental, health, or public safety requirements.” This report was due over a year ago.

Q8a. Why is this report delayed, and when will DOE issue the required report?

A8a. The report is undergoing review and will be issued when it’s complete.

Q9. In 2019, the National Academies found that EM projections of nuclear weapons complex cleanup costs are “highly uncertain and probably low” due to uncertainties in lifecycle, costs, schedules, and risks.

Q9a. What steps does EM plan to take on implementing the National Academies’ recommendation to obtain an independent assessment of the cleanup program’s lifecycle costs and schedules from a government engineering organization?

A9a. EM greatly appreciates the National Academy of Sciences (NAS) findings and recommendations provided in their final report, issued in March 2019. NAS recommended an independent assessment of the cleanup program’s lifecycle costs and schedules, and EM has tasked the Environmental Management Advisory Board (EMAB) to provide its thoughts and recommendations on what government engineering organization would be best to use. The NAS recommended the Army Corps of Engineers. In the interim, the Office of Technology Development is working with the sites to conduct an assessment of all currently sponsored technology development projects to confirm they are addressing a site’s high priority needs and are scheduled to be implemented in the next two to three years.

Q9b. In 2019, the National Academies identified seven technologies and alternative approaches that could substantially reduce long-term cleanup costs; accelerate cleanup schedules; and mitigate uncertainties, vulnerabilities, or risks, or otherwise significantly improve the cleanup program. How, if at all, does EM plan to incorporate these technologies and approaches into its plans?

A9b. EM is currently evaluating the changes necessary to accommodate the seven technologies and alternative cleanup approaches that could substantially reduce long-term cleanup costs; accelerate cleanup schedules; and mitigate uncertainties, vulnerabilities, or risks. Although EM had been working on the technologies/approaches recommended,

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the NAS is challenging the organization to emphasize accelerated cleanup. EMAB will evaluate these seven technologies and approaches for its recommendations to achieve significant cost/schedule savings.

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QUESTIONS FROM REPRESENTATIVE BRETT GUTHRIE (R-KY)

Q1. How many gallons of waste has EM cleaned up to date and how many gallons of waste are remaining?

A1. The Department interprets this question as applying to tank waste from the reprocessing of DOE spent nuclear fuel generated from atomic energy defense activities. To date, EM has treated approximately 23 million gallons of waste from reprocessing activities, primarily from the Savannah River Site. Approximately 92 million gallons remain (56 million gallons at Hanford; 35 million gallons at Savannah River Site; and 850,000 gallons at Idaho).

Q1a. Of the waste that’s remaining, what percentage of that is high-level waste and what percentage is low-level waste?

A1a. It is premature to speculate how much reprocessing waste could be classified as low-level radioactive waste and how much would remain high-level radioactive waste (HLW), as detailed technical assessments of waste stream characteristics and appropriate sampling have not been conducted. At this time, there are no proposals for actions involving the disposal of other reprocessing waste streams under DOE’s HLW interpretation, except for the June 9, 2019, Federal Register notice on the NEPA analysis of the proposed use of commercial low-level radioactive waste disposal facilities for up to 10,000 gallons of Defense Waste Processing Facility recycle wastewater from the Savannah River Site to provide treatment and disposal options for completion of the tank closure program. Decisions about whether, and how, this interpretation of HLW will apply to existing wastes and whether such wastes may be managed as non-HLW will be the subject of subsequent actions. DOE will continue its current practice of managing reprocessing wastes as HLW.

Q2. Can you briefly describe the ways in which the low-level waste and high-level waste are cleaned up/treated?

A2. The ongoing liquid waste mission at the Savannah River Site (SRS) includes treatment of both low-level radioactive waste (LLW) and high-level radioactive waste (HLW). HLW

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is treated in the Defense Waste Processing Facility (DWPF), where liquid tank waste is converted into a solid glass form suitable for long-term storage and disposal, in a process called “vitrification.” The LLW portion of liquid waste at SRS is solidified in saltstone grout and disposed of on-site in Saltstone Disposal Units (SDU). Hanford is constructing a facility, the Waste Treatment and Immobilization Plant, to treat varying level of tank waste. Similar to SRS, the waste will be divided into high-level and low-level waste. The LLW will be vitrified at the low activity waste vitrification facility and the HLW will be vitrified at the HLW vitrification facility.

Individual waste stream treatment decisions are made on a case-by-case basis, and there is no one-size-fits-all treatment method for either LLW or HLW. Most of the Department’s LLW from non-reprocessing activities is solid debris or soil and can be disposed without treatment; other LLW streams, such as liquid wastes or those containing hazardous chemicals, require stabilization/solidification or macroencapsulation. Treatment requirements depend on waste characteristics and disposal facility waste acceptance requirements.

- Q2a. Is there a difference in cost and time between the two types of cleanup treatments? If so, what is the difference?
- A2a. In general, LLW treatments are less complex and therefore, less costly than the more complex and very expensive treatments that may be required for HLW (e.g., the Waste Treatment and Immobilization Plant noted above). Some LLW does not require any treatment. HLW has been stored for decades at sites with no near-term path for disposal.
- Q3. How, and for how long, do the different types of waste need to be stored once they are treated?
- A3. HLW will be stored until a disposal path is available. LLW generally does not require extended storage as there are LLW disposal facilities available. DOE also has the responsibility for disposition of greater than Class-C (GTCC) LLW (commercial-owned) and GTCC-like waste (Federal-owned waste). There is currently no disposal path for

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GTCC waste. DOE continues to work with congressional staff on completing *the Energy Policy Act of 2005* (Public Law 109-58) requirement in Section 631 to “await action by Congress.”

Q3a. How many locations do we have across the United States to store both low-level waste and high-level waste? Please provide the total capacity of each location.

A3a. HLW is currently stored at the sites where it was generated.

LLW is disposed of as soon as practical, either on-site or off-site. Off-site commercial disposal facilities operated by EnergySolutions of Utah and Waste Control Specialists, LLC in Texas dispose of LLW from the Department. The Waste Control Specialists (WCS) Federal Waste Facility accepts DOE Class A, B or C LLW. EnergySolutions in Utah receives commercial and DOE Class A LLW. These facilities have several million cubic meters of disposal capacity, with the possibility of increased capacity if license amendments are approved, that can be used for DOE’s eligible radioactive wastes. The Department has on-site disposal facilities at the following sites:

- Two LLW disposal sites at the Hanford Site, the Integrated Disposal Facility (1 million cubic meters) and Environmental Restoration Disposal Facility (20 million tons);
- Idaho National Laboratory, the Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility (390,000 cubic meters);
- Los Alamos National Laboratory, the Material Disposal Area G (closing-- 36 pits, 200 shafts, and four trenches with depths ranging from 10 to 65 feet below the original ground surface, estimated to be 400,000 cubic meters);
- Oak Ridge Reservation, the EM Waste Management Facility (1.7 million cubic meters);
- Savannah River Site (each new Saltstone Disposal Unit (SDU) 110,000 cubic meters capacity, SDU #6 under construction, SDUs 7, 8, 9 planned);

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- Nevada National Security Site (815,000 cubic meters);
- A new disposal facility is under construction at the Portsmouth Gaseous Diffusion Plant; and
- DOE facilities not planned for closure may be expanded if the need arises, pending regulator approval.

Q4. Were the costs associated with the PUREX tunnel collapse at the Hanford site reflected in the environmental liability estimate? If not, why not?

A4. Yes, the costs of the work needed to stabilize the PUREX tunnels were reflected in the Department’s environmental liability.

Q5. When there is a scheduling delay, who bears the cost of continued delay at a contaminated site?

A5. Scheduling delays can occur for many reasons. EM’s cleanup work is very challenging, with many one-of-a-kind activities. Even decontamination and decommissioning of facilities is never the same since each facility has a unique history. Delays occur because of unexpected or changing conditions, a determination that technical solutions don’t work as well as expected, or because of changing conditions that could impact safety and health. The cost impacts in these situations are usually borne by EM unless it is due to a contractor performance failure.

Q6. Please describe the efforts that EM has undertaken to improve its data collection so that it has complete visibility into the costs and timetables at all cleanup sites.

Q6a. Is there an expected timeframe in which this data collection and assembly will be complete?

A6a. Last summer, EM conducted an independent cost analysis of the remaining cleanup of the Hanford Site to ensure that the cost estimates for the cleanup were bounded. This information was provided in a software package that allows for more visibility into the basis of the costs and schedule dependencies. EM is currently evaluating that software along with an enterprise scheduling system to track site baselines and milestones. When

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EM completes the evaluation, it will proceed with development of the new system, which would likely be available next year for use at all EM Sites.

- Q7. Approximately 40 percent of the money that EM spends on cleanup goes to “minsafes” or minimum safety costs. These costs go towards maintaining these sites to keep them running, safe, and secure until cleanup is complete. Can you provide examples of what types of expenses are included in minsafe costs at the cleanup sites?
- A7. The types of activities are recurring activities necessary to maintain facilities, infrastructure, and nuclear materials in a safe and secure condition. These recurring activities include, safeguards and security, health and radiation protection, facility and infrastructure surveillance and maintenance, and roads and utilities upkeep.
- Q7a. Is it correct that when the timetable for completing cleanup is delayed the liability increases? If so, to what extent is this due to the amount of money spent in minsafe costs?
- A7a. Yes, as cleanup scope is delayed, the liability increases. The extent of the increase varies by site and activity depending on the age, type, and condition of facilities or the type and quantity of nuclear material being managed. For example, delaying demolition of a non-nuclear facility results in a much lower cost increase than a nuclear facility.
- Q7b. What is EM doing to address the high minsafe cost at these facilities?
- A7b. EM evaluates recurring activities to determine if the costs associated can be further optimized. The implementation of the end-state contracting approach incentivizes contractors to minimize costs.
- Q8. Should nuclear waste sites be managed the same way as the U.S. Environmental Protection Agency’s (EPA) Superfund sites?
- Q8a. Are the cleanup situations comparable? If not, how are they different?
- A8a. For abandoned industrial sites on which there is not current managed industrial activity, some DOE sites, that are currently managed by DOE, also have remediation obligations under CERCLA because of previous industrial activities at those locations and are

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therefore, remediated under the same regulatory scheme that EPA uses for Superfund sites. DOE sites on the national priorities list (NPL) being remediated under CERCLA may have many of the industrial contaminants typical of other Superfund sites managed by EPA, the ones managed by DOE frequently also contain contamination from nuclear materials regulated by DOE under the *Atomic Energy Act* (AEA), a task that invokes DOE’s special expertise in the handling of nuclear materials pursuant to the AEA.

- Q9. GAO reported that EM is not implementing program management leading practices. Is EM implementing program management leading practices?
- Q9a. Who is responsible for implementing program management leading practices?
- A9a. All EM sites and project offices are responsible for implementing program management practices, as delineated in the July 2017 cleanup program policy. In order to address GAO’s findings and recommendations, EM is revising the EM Cleanup Program management policy to include leading industry program management best practices. All of the GAO recommendations will be incorporated into the revised policy which is expected to be implemented in early FY20.
- Q9b. When will these practices be fully implemented?
- A9b. The revised EM Cleanup Program Management policy is expected to be implemented in FY 2020.
- Q10. GAO reported that EM has not largely implemented project management best practices. Is EM implementing project management best practices?
- Q10a. Who is responsible for implementing project management best practices?
- A10a. Every EM site has a responsibility to implement project management best practices.
- Q10b. When will these best practices be fully implemented?
- A10b. The revised EM Cleanup Program Management policy incorporating best practices is expected to be implemented in FY 2020.

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Q11. What is EM’s working relationship with the DOE Office of Project Management, and how is EM overseen by this office?

A11. EM has a very good working relationship with the Office of Project Management. EM’s Office of Project Management meets monthly with the DOE Office of Project Management Oversight and Assessment (PM) to review the status of EM projects, issues, and accomplishments, and plans for advancing projects to the next DOE Order 413.3B Critical Decision (CD) are discussed. The PM office is a member of the Project Management Risk Committee (PMRC) and participates in the review and approval of EM project actions and debriefs of Project Peer Review (PPR) results. The PM office participates in EM PPRs as team members.

Q12. Your written testimony noted how the EM cleanup mission is being modernized, and you believe this is the key to addressing liabilities. You mentioned using current cleanup technologies for waste composition and risk. What are these technologies, and will their use help reduce EM environmental liabilities?

A12. At Savannah River, tank waste is processed to separate long-lived radionuclides from low-activity waste and then vitrified using modern joule-heated melter technology developed by the Department. The glass waste form is protective of the environment and addresses the risk. Glass compositions are developed for optimal processing conditions for the particular waste constituents to achieve, among other things, throughput and waste loading targets. Improved glass formulation allows for safe disposal of more high-level waste in each glass canister. This is expected to save about \$1.5B in lifecycle costs. The low activity waste is processed into saltstone, a grout or cement-based waste form whose composition is also developed to prevent release of radionuclides and other constituents into the environment.

The solvent extraction technology was selected for Savannah River as one of these operations, segregating radioactive cesium from low activity waste. EM improved this process with a next-generation solvent system that has been deployed for the processing of tank waste at SRS. The improvements in the process could save over \$2B in lifecycle costs.

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Another example of a new technology at EM sites is the robotic Pipe Crawling Activity Measurement System (PCAMS). Carnegie Mellon University designed and manufactured this system. The system was successfully tested at the Portsmouth site within the actual gaseous diffusion system piping, and will improve the quality of the measurements of uranium within the system and improve worker safety as well. Two production units have been delivered to the site and are scheduled for deployment in the summer of 2019. The first generation/current system will improve the measurement approaches for both the Portsmouth and Paducah gaseous diffusion plants, and the technique could be modified and replicated at other sites throughout the DOE complex.

Q13. Your testimony mentioned that EM’s multifaceted approach includes lessons learned over decades of cleanup. What are those lessons, and how are they being applied?

A13. As previously noted, much of EM’s cleanup work is unique, with every aspect representing new challenges. EM continuously evaluates new technical approaches and technologies to putting waste into glass and concrete forms, new tools and techniques for assessing facilities and characterizing contamination; new contracting approaches; and new methods of training workers, planning jobs, fixing contamination, and managing contaminated debris.

Q14. Your testimony mentioned establishing end states to reduce costs.

Q14a. What is end-state contracting and how will this help reduce EM’s liabilities?

A14a. In the summer of 2018, EM shifted to the End State Contracting Model (ESCM) with the objective of reinvigorating the completion mindset and reforming the way EM does business in the management of environmental cleanup. The ESCM utilizes a single award Indefinite Delivery Indefinite Quantity (IDIQ) contract structure, which provides the needed flexibility to task contractors using a risk-based approach to better define discrete scopes of work for site closure or end states for more realistic, reliable pricing and appropriate incentive structures to yield significant reductions in EM’s environmental financial liability. The ESCM employs a two-step process using a competitive

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qualifications-based Request for Proposal (RFP) to select the offeror representing the best value and subsequent single source Task Order(s) negotiations through effective partnering. The selection process utilizes a streamlined evaluation of representative sample scopes of work typically consisting of a year or less in duration instead of previously used detailed proposal evaluation of up to 10 years of scope. Additionally, EM is moving back towards Cost Plus Incentive Fee (CPIF) contracts with greater fee earning potential than that of recently awarded Cost Plus Award Fee (CPAF) contracts. While the fee potential is higher, the contractor assumes more risk under the CPIF contract. The ESCM IDIQ approach also provides EM with an off-ramp earlier in the Period of Performance without contract termination liability if contractor performance is subpar. Currently, EM has seven (7) active end state acquisitions: Hanford Central Plateau Cleanup Contract (CPCC), Hanford Tank Closure Contract (TCC), Oak Ridge Reservation Cleanup Contract (ORRCC), Nevada Environmental Program Services Contract (NEPSC), Idaho Cleanup Project Contract (ICPC), Savannah River Integrated Mission Completion Contract (SRIMCC), and Portsmouth Decontamination and Decommissioning (Ports D&D).

Q14b. What is the status of this contracting reform?

A14b. The first two End State Contracting (ESC) RFPs for the CPCC and TCC were released in February 2019 and the acquisition teams are currently evaluating proposals with contract awards scheduled for later this year. While this number is subject to change, the remaining five ESC RFP’s are in various stages of development with releases scheduled throughout the next 12 to 18 months.

Q15. Your testimony mentioned updating key project lifecycle estimates and provide a new level of transparency when it comes to liability data. Please describe the current status of this initiative and how this will reduce costs.

A15. Last summer, EM conducted an independent cost analysis of the remaining cleanup of the Hanford Site to ensure that the cost estimates for the cleanup were bounded. This information was provided in a software package that allows for more visibility into the

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basis of the costs and schedule dependencies. EM is currently evaluating that software along with an enterprise scheduling system to track site baselines and milestones. When EM completes the evaluation we will proceed with development of the new system, which would likely be available next year. Having more visibility in the cost and schedule drivers for the program will allow EM to better structure its contracting efforts to incentivize lifecycle cost reductions. In addition, it will allow EM to better understand the cost impacts of compliance agreements that are being negotiated.

Q16. Your testimony mentioned that EM is implementing a 10-year strategic planning options analysis. What is the goal of this analysis?

A16. The goal of the analysis is to identify opportunities for accelerating site closures and potential means for reducing the EM environmental liability. Results of the analysis will be used to inform EM’s strategic planning for FY2021 and beyond.

Q16a. Who is in charge of this analysis?

A16a. The Associate Principal Deputy Assistant Secretary for Field Operations has the overall responsibility for the analysis.

Q16b. Has this been contracted out?

A16b. No, the analysis is conducted by Federal staff with support of some EM headquarters support contractors.

Q16c. What is the expected end date of this analysis?

A16c. The analysis is expected to be completed in time to inform the development of the FY2021 Budget Request. EM also plans to continue to refine the analysis with updated environmental liability and additional alternatives to inform strategic planning for the out years.

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- Q17. EM began an Independent Cost Review of the remaining cleanup of the entire Hanford Site in late 2018. Which entity is responsible for the review, and when will this cost review be completed?
- A17. The Richland Operations Office was responsible for completing the review, which was supported by the U.S. Army Corps of Engineer’s contractor. The review was completed in January 2019.
- Q18. DOE is currently evaluating the interpretation of the statutory definition of high-level radioactive waste. What is the issue with the definition?
- A18. Historically, DOE has managed nearly all waste generated from the reprocessing of spent nuclear fuel as High-Level Waste (HLW), despite the fact that much of it is less radioactive. HLW requires a complex and costly process called vitrification, where the material is mixed with molten glass and then buried deep underground. This one-size-fits-all approach has led to decades of delay and billions of dollars in maintenance costs, and left the waste trapped at DOE facilities in Washington, South Carolina, and Idaho without a permanent disposal solution.
- Q18a. How could it be reinterpreted?
- A18a. On June 10, 2019, DOE published a Supplemental Federal Register Notice describing the HLW interpretation and providing DOE’s response to public comments. DOE may determine that waste is not HLW if the waste:
- I. Does not exceed concentration limits for Class C low-level radioactive waste as set out in Section 61.55 of Title 10, Code of Federal Regulations, and meets the performance objectives of a disposal facility; or
 - II. Does not require disposal in a deep geologic repository and meets the performance objectives of a disposal facility, as demonstrated through a performance assessment conducted in accordance with applicable requirements.

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Waste meeting either of these tests could be classified based on its radiological content and disposed of in accordance with disposal facility waste acceptance criteria, allowable radionuclide content, waste form and packaging requirements, and waste generator certifications and approvals.

Q18b. If the definition were reinterpreted this way, would this lead to a reduction in EM environmental liabilities? Why or why not?

A18b. DOE expects that benefits of the HLW interpretation could include:

- Reducing the length of time that radioactive waste is stored on-site at DOE facilities, increasing safety for workers, the public, and the environment.
- Removing reprocessing waste from the States where it has been stored for decades and providing for the disposal of these wastes in facilities constructed and regulated for such purposes.
- Enhancing safety at DOE sites by using lower-complexity waste treatment and immobilization approaches.
- Utilizing mature and available commercial facilities and capabilities to shorten mission completion schedules and reduce taxpayer financial liability.

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QUESTIONS FROM REPRESENTATIVE MICHAEL C. BURGESS (R-TX)

- Q1. In 1983, the Nuclear Waste Policy Act was signed into law. Under this law Congress directed the Department of Energy to establish a permanent radioactive waste disposal program. Later, Congress designated Yucca Mountain as the site where this disposal program was to take place. Nearly four decades later, the Yucca Mountain facility is closed for political reasons. In today’s hearing, we are considering the cost associated with storing high level radioactive materials in sites throughout the country.
- Q1a. What impact does the lack of a permanent deep geological repository have on DOE’s Office of Environmental Management environmental liabilities?
- A1a. Due to the lack of a repository, DOE continues to manage and store high-level waste (HLW) and spent nuclear fuel at DOE sites. Reprocessing waste continues to be stored at DOE sites in Idaho, Washington, and South Carolina without a permanent disposal solution. The delay in opening a permanent geologic repository for spent fuel and HLW has significantly increased EM’s environmental liability.
- Q1b. What costs are incurred by storing high-level radioactive waste in temporary conditions?
- A1b. Costs associated with safe and secure storage of waste include facility operations, infrastructure, maintenance, inspections and monitoring.
- Q1c. When the Yucca facility closed in 2008, was there any change to the DOE’s cleanup liability? If so, why?
- A1c. The termination of the Yucca Mountain project has increased EM’s cleanup liability. Further uncertainty regarding a permanent repository will extend cleanup schedules and prolong the costs associated with managing and storing HLW and spent nuclear fuel at DOE sites.
- Q2. It’s my understanding that contracts and contractors account for 90 percent of the Department of Energy’s budget. Given the large number of dollars being paid to contractors, what type of oversight does EM conduct over the contractors who are operating the cleanup sites?
- Q2a. Are there audit requirements? If so, please describe what they are.

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- A2a. Pre-award audits are required based on the contract type, level of competition, and value of the contract, etc. required by the Federal Acquisition Regulation (FAR)/Department of Energy Acquisition Regulation (DEAR). These audits are usually obtained from the Defense Contracting Audit Agency (DCAA) or the Department’s external audit contractor. For FAR based contractors, certified final indirect cost rate proposals are required and post-award audits are performed by the cognizant Government auditor or the contractor participates in the Cooperative Audit Strategy. Contract Change Proposals are audited as deemed necessary based on dollar amount and timing of most recent audit.
- Q2b. Is there a statute of limitations regarding how long DOE has to reclaim or claw back funds that were given to a contractor if DOE finds that there was waste, fraud, or abuse of those funds? If so, what is that statute of limitations?
- A2b. The statute of limitations to reclaim or claw back funds given to a contractor is six years. The Contract Disputes Act [41 USCA Section 7103(a)(4)(A)] states “Each claim by a contractor against the Federal Government relating to a contract and each claim by the Federal Government against a contractor relating to a contract shall be submitted within 6 years after the accrual of the claim.” (However, there is an exception in cases involving fraud.)
- FAR 33.201 states that an “Accrual of claim means the date when all events, that fix the alleged liability of either the Government or the contractor and permit assertion of the claim, were known or should have been known.”
- Q2c. Does Office of Environmental Management independently verify the financial numbers submitted by the contractors? If not, why not?
- A2c. For those under the cooperative audit strategy, the contractor maintains an internal audit department, the OIG performs annual SCIC audits, and the cognizant field office does financial management systems reviews. For pre-award, either desk reviews are performed by cost/price analysts, or audits are requested to verify financial numbers submitted by contractors.

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- Q2d. If the numbers are not verified, why should we trust the financial numbers reported by contractors?
- A2d. Prior audit/review history would obviate the need for further verification.
- Q2e. Does Office of Environmental Management believe that the cost numbers submitted by the contractors are accurate and reliable?
- A2e. Yes, the Office of Environmental Management believes that the cost numbers submitted by contractors are accurate and reliable due to audit, evaluation, and negotiation of the final proposals.
- Q2f. How does Office of Environmental Management measure the value of a contractor’s cleanup work?
- A2f. The value of a contractor’s cleanup work is measured by the amount of remediation that is achieved and the amount of risk that is reduced. Each project is specifically tracked for cost, scope and schedule using EVMS.