

Remarks of the Honorable Mr. Thomas A. Summers,
Vice Chair of the Defense Nuclear Facilities Safety Board
At the Session on US DOE EM Nuclear Safety Oversight
Of the Waste Management Symposia, 2023

Good afternoon, it is great to be here today! I am Thomas Summers, and I am the Vice Chair of the Defense Nuclear Facilities Safety Board. I would like to thank Ms. Anderson, Mr. Benda, Ms. Hawks, and Mr. Sosson for this invitation to speak with you.

I'd like to touch on three safety concerns that are very high on the Defense Nuclear Facilities Safety Board's list—aging infrastructure, risk management, and DOE safety oversight.

Let's start with aging infrastructure. The phrase "aging infrastructure" has a lot of meanings, but today we are talking about age-related degradation of real property assets and their installed equipment. Regardless of whether the asset is an office building, fire station, parking lot, or plutonium processing building, that asset contributes to, and sometimes is essential to, the safety and success of the mission it supports.

As assets and installed equipment age, their reliability, resiliency, and operability degrade. Surveillance and maintenance sustain them for a while, but ultimately age takes its toll. According to DOE, the average age of an asset in DOE's general-purpose infrastructure is about 40 years. You might think that EM has an extra challenge here since the infrastructure at its sites was already old and degraded before EM assumed responsibility for it. However, EM was created specifically to manage old and degraded infrastructure.

Certainly, the contributions from all assets are not equally important, but do not assume that an asset's importance aligns with its monetary value. We often get surprised when a failure in a low-value asset interferes with important work in our high-value main building. This is particularly troublesome when the failure affects the safety of the work. We need to understand the safety contribution from all parts of the site's infrastructure.

That brings us to my second topic, risk management. DOE performs a documented safety analysis for its major defense nuclear facilities. However, DOE does NOT require comprehensive site-wide or

enterprise-level risk assessments to understand the full suite of risks associated with its defense nuclear facilities and their supporting infrastructure.

Why should an infrastructure risk assessment be important to EM?

EM is a collection of closure projects, not a long-term enterprise, right?

Well, according to its budget guidance and strategic plans, EM intends to operate some sites and facilities for another 50 or more years. For examples, EM anticipates storing immobilized high-level waste and spent fuel at multiple sites for at least another 25 years before a disposition path becomes available. The Waste Treatment and Immobilization Plant at Hanford will be operating for at least 40 years—after it starts up—and the 46-year-old 242-A Evaporator is needed to support that operation. Nineteen facilities on EM’s list of “higher risk facilities” have estimated disposal dates between the years 2050 and 2075, and disposal dates haven’t even been estimated for 30 other facilities on that list. The Waste Isolation Pilot Plant is already beyond its original design life, but it is EM’s only disposal pathway for

transuranic waste from some of those buildings that haven't even been scheduled for disposal yet.

Clearly, a full refurbishment and replacement program for the infrastructure supporting these long-term EM missions is unrealistic, but so is allowing that infrastructure to run to failure without considering the possible impacts to worker, public, and environmental safety.

The bottom line is that EM will have to manage and sustain some of its aged infrastructure for another 50 or more years. So, the simple question becomes, how can EM improve its management of this aged infrastructure so that EM can continue its important cleanup operations safely and efficiently? The answer is complicated, but there are simple things that EM can do to get started.

First, EM headquarters needs a formal and consistent approach to assessing the condition of the infrastructure at its sites. I understand that EM has taken steps to develop an enterprise-level view of its infrastructure, and I encourage them to continue that effort as that is the first important step in understanding the condition of their infrastructure. Also, EM headquarters needs a method to rate and prioritize the safety

and mission significance of all its assets. These three steps will provide EM headquarters the high quality and consistent information it needs for a complex-wide view of its infrastructure. These steps will enable EM's senior leaders to improve the balancing of their resources between safety and mission to ultimately accomplish their missions safely.

Accomplishing missions safely, I think, is the goal that we'd all like to achieve.

Second, EM headquarters needs a strategic approach for guiding decisions on predictive, preventative, and reactive maintenance at its sites, and to determine when deferring maintenance or running-to-failure is acceptable. Applying a strategic and consistent approach to all its sites will help EM assure that its resources are used to best effect.

Third, EM needs a champion for infrastructure management within the senior level of EM headquarters. That champion needs the authority to influence EM-wide decisions on infrastructure-related asset procurement, refurbishment, recapitalization, and sustainment actions.

Finally, this brings us to my third topic, DOE safety oversight. I'm sure you've already noticed that I am explicitly calling out EM

headquarters in the solutions to these problems. Any effort to make long-term improvements, or even to maintain status quo, within a large organization requires constant leadership and vigilance at the highest levels and throughout the organization. To that end, EM's senior leaders need to have strong and effective safety oversight, performance monitoring, and corrective action programs, with sufficient dedicated resources, to support their efforts to improve and sustain EM's infrastructure.

In closing, we all know that there are no easy solutions to the challenges EM faces. However, we also know there are ample opportunities to combine good strategies, sufficient guidance, comprehensive plans, adequate implementation of those plans, and effective leadership and oversight to succeed in major efforts.

Thank you for listening, I will be happy to entertain questions during the open panel discussion.

[End of remarks]

Possible topics for Q&A (not in any order)

1. What are examples of consequences of run-to-failure approach?

In general, a run-to-failure approach may result in important safety systems not being able to perform their safety function when needed. The Board recently communicated concerns with the run-to-failure approach NNSA was using for their oxygen monitors at the Savannah River Tritium Enterprise.

Our staff is currently performing a complex-wide review on aging management, part of which will be looking at DOE's use of run-to-failure approaches at both EM and NNSA sites.

Note that the Board recognizes that there are situations where a run-to-failure approach may be acceptable. However, the Board believes that situations where such an approach is applied should be considered as part of a risk-based aging infrastructure management program.

2. Why worry about infrastructure failures, aren't the safety systems of the defense nuclear facilities designed to protect against them?

a. First, you never want to unnecessarily challenge your safety systems.

b. Second, if you haven't assessed the risk from failures in your infrastructure, you do not know how a failure can impact your facility.

3. What's the difference between management of aging infrastructure and aging management?

a. Aging management is a framework for assessing and managing the aging of individual components in a system. Management of aging infrastructure is the broader concept of

understanding the current state of an infrastructure and maintaining it as it ages to ensure that the infrastructure can continue to support the activities that depend on it. Aging management is one of the tools in the management of aging infrastructure toolbox.