Lessons Learned About Communicating with Regulators and Stakeholders from the U. S. Department of Energy's Performance Assessment Scoping Process - 10445

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ABSTRACT

In implementing its approach to complying with Section 3116 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005, the Department of Energy (DOE) implemented a new way of communicating with regulators, the public, and other stakeholders about radiological performance assessments. DOE and the Savannah River Site debuted a new process for talking to regulators and stakeholders about performance assessments before they were prepared, rather than after the analyses were completed. They also developed a training session called "performance assessment 101" for educating stakeholders about what performance assessments are, how they are used, and how to interpret them. Finally, DOE has taken this experience from the Savannah River Site and is transferring this approach to other sites. In particular the performance assessment scoping process is currently being applied at the Hanford Site for the closure of high-level waste tank farms. This paper outlines the lessons learned and the continuing evolution of DOE's processes and approaches for communicating with the public and communicating to stakeholders about what performance assessments are, how they are used, and how to interpret them.

INTRODUCTION

When DOE prepares a risk assessment or a performance assessment, it is ultimately expected that the analysis will be used to support informed decision making. In some cases, such analyses are the primary means of assuring the public that a cleanup project or a disposal operation will be protective of human health and the environment. In other cases, these analyses become the cornerstone of regulatory decisions about what course of action will be taken, including the amounts and types of source term that may be disposed in a given location. Only recently has DOE recognized that the importance placed on these analyses warrants a broader audience not just after the analyses have been completed, but before any calculations have been done and throughout the process of identifying the assumptions and parameters that will be used in the analyses. This paper describes the evolution of this thinking and the lessons that have been learned in this process that may be applicable to other situations where DOE's interests co-exist at the intersection of highly technical information and the involvement of regulators, the public, and other stakeholders.

When a radiological performance assessment is needed to support a disposal facility operation or high-level waste facility closure, DOE has typically sent its scientists and analysts off to the dark corners of their laboratories and offices to conduct the research, select the codes, build the models, and develop the justifications for the analytical results of those models. Then, when the scientists and analysts are done, any time from 12 months to 2 years later, the analyses and results are handed over to DOE. It is not unusual for the results of this effort to be 1,000 pages of charts and tables and calculations and graphs with sparsely distributed and sometimes mind-numbing accompanying text. It is also not unusual that these products would then be thrown over the transom to our regulators and/or public and stakeholder organizations in the name of involvement.

Not surprisingly, even the most technically competent party might find it difficult to process such products under such circumstances; largely because they have very little window into the thought processes and decisions that were made all along the journey of creating the analytical framework, and interpreting and compiling the results.

There is, however, an alternative. Since the early 1990s, DOE has made a concerted effort to be more transparent in its decision-making and to find more and better ways to incorporate public involvement into its decision-making processes. We have not always been successful, and some would argue with the sincerity of our intent. However, DOE has become more and more comfortable in its communications with regulators, the public, and other stakeholders through these venues. In particular, it is not unusual for a Site to communicate its planned work and solicit input from regulators and the public. Since 2005, DOE has found relative success in communicating with regulators, the public, and other stakeholders on how to prepare risk assessments and radiological performance assessments before they are prepared, including soliciting input about assumptions and approaches to be used. This paper outlines the lessons learned from and the continuing evolution of DOE's processes and approaches for communicating with the public and communicating to stakeholders about what performance assessments are, how they are used, and how to interpret them.

HISTORY: IN THE BEGINNING…, THERE WAS 3116

DOE published DOE Order 435.1, Radioactive Waste Management, on July 9, 1999. Chapter II of the Requirements Manual, DOE M 435.1-1, contains requirements for management of high-level waste (HLW), including a process for determining that a waste that originated during reprocessing of spent nuclear fuel is not HLW on the basis of satisfying the Waste Incidental to Reprocessing (WIR) provisions of DOE M 435.1-1. Waste meeting these requirements is allowed to be managed (disposed) to meet the low-level waste performance objectives of DOE M 435.1-1, or the transuranic waste disposal requirements of DOE M 435.1, as appropriate.

In February 2002, the Natural Resources Defense Council (NRDC) filed suit against DOE, arguing that the Nuclear Waste Policy Act did not allow DOE to reclassify HLW and dispose of it anywhere except in a geologic repository. In July 2003, the United States District Court for the District of Idaho granted summary judgment to NRDC and declared DOE's WIR process, as described in DOE M 435.1-1, invalid. The DOE appealed that decision, and in November 2004,

the U.S. Court of Appeals for the Ninth Circuit vacated the lower court's decision on ripeness grounds.

Congress passed the Ronald W. Reagan National Defense Authorization Act (NDAA) for Fiscal Year 2005 on October 9, 2004, and the President signed it into law on October 28, 2004. Section 3116 of the NDAA allows DOE to continue to use a process similar to its WIR process to determine that certain wastes are not HLW. Section 3116 of the NDAA is applicable only to wastes disposed in South Carolina and Idaho. At DOE sites in other states, the WIR process in DOE M 435.1-1 remains applicable.

The requirements of Section 3116 of the NDAA are technically similar to the WIR requirements of DOE M 435.1-1. Contractors at the DOE Idaho and Savannah River Sites, the two sites currently subject to the requirements of Section 3116 of the NDAA, began preparing waste determinations in accordance with the Section 3116 requirements.

Prior to the NRDC lawsuit and the Section 3116 legislation, DOE was not required to but was encouraged to consult with the Nuclear Regulatory Commission (NRC) on WIR determinations, and as a matter of policy intended to do so on each of the WIR determinations. Under that framework, DOE and NRC technical staff would routinely meet and discuss technical details of the determinations, including NRC staff questioning the basis of certain assumptions and DOE staff providing responses and additional supporting information to bolster the technical bases of the determinations. Overall, this was a fruitful and beneficial relationship for the department which in the end no doubt produced better and more defendable products. As part of that process, the department had committed to publish the WIR determinations for public comment and to address public comments before issuing a final determination. In most cases, this would have also entailed some form of public meeting and Q&A session, and documentation of changes to address the public comments.

The passage of Section 3116 brought changes to the WIR process as implemented under DOE M 435.1-1. Under DOE M 435.1, key documentation for WIR decisions is signed at the Deputy Assistant Secretary level. The documentation supporting such disposals is reviewed with the NRC for the purpose of providing technical assistance and advice and determining whether DOE's technical assumptions, analyses, and conclusions meet the applicable criteria. Then DOE is responsible for monitoring the disposal for compliance with performance objectives.

Under Section 3116(a), on the other hand, the ultimate decision maker is the Secretary of Energy, who signs the waste determinations, but is required to consult with the NRC in the process. After DOE makes its determination under Section 3116(a) and undertakes activities based on the waste determinations, the NRC, as charged by Congress in Section 3116(b), monitors the DOE activities and reports any non-compliance with performance objectives to DOE, the host state, and Congress.

Under DOE M 435.1, waste determined not to be HLW is managed as LLW and must *satisfy performance objectives comparable to* those required by10 CFR 61, Subpart C, or as transuranic (TRU) waste must *satisfy* the requirements of Chapter III (essentially 40 CFR 191). On the other hand, under Section 3116, waste determined not to be HLW by a Section 3116 waste

determination must be disposed of *in compliance with* the performance objectives set out in 10 CFR 61, Subpart C.

HISTORY: THEN…, THERE WAS SALTSTONE

The federal and contractor staff at SRS began developing the technical, regulatory, and programmatic content that would eventually be required for the Salt Waste Determination as soon as the legislation was passed by Congress. A draft waste determination was prepared and reviewed internal to SRS in November and December of 2004 and it was transmitted to DOE-Headquarters (DOE-HQ) for review in late December. With no specific guidance on the structure or content of a waste determination, the site utilized its best efforts to prepare a document that demonstrated compliance with the requirements of Section 3116 for the salt waste stream being considered.

After transmittal to DOE-HQ, DOE undertook a comprehensive review of the draft Salt Waste Determination and its supporting documentation. A team of subject matter experts from across the DOE complex spent approximately six weeks reviewing, discussing, commenting on, and revising the draft Salt Waste Determination. Because of the urgency and priority given this waste determination, the document was edited, revised, and reformatted in real time. Language and technical approaches to demonstrate compliance with the Section 3116 requirements were developed and documented during this process. Consultants with prior NRC experience also offered their expert advice on content and approach. DOE's legal staff conducted exhaustive reviews of the document for legal sufficiency and defensibility. The Principle Deputy Assistant Secretary for Environmental Management transmitted a DOE-endorsed draft Salt Waste Determination to the NRC for consultation on February 28, 2005.

Following a 30-day initial review by the NRC, DOE made the draft Salt Waste Determination available for public review and comment through a Federal Register notice. To assist the NRC in their review, DOE briefed the NRC on the content and approach taken in the document. On May 25, 2005 the NRC sent DOE a request for additional information (RAI) that included 68 specific technical and programmatic questions. The RAIs ranged from simple clarifications to requests for additional analyses and questions regarding the bases for assumptions used in the analyses. SRS worked with DOE-HQ over the next 30 days to prepare detailed responses that went through similar review and comments cycles as the original draft Salt Waste Determination. By mid-July, all 68 of the RAI's had been responded to and DOE had briefed the NRC on its responses. DOE hosted two public meetings with the NRC in July and August of 2005 to discuss DOE's responses to the RAI's and to further clarify certain technical input. These meetings resulted in two sets of action items for which DOE prepared written responses and submitted to the NRC in September 2006.

Through the Federal Register Notice process, DOE received comments on the draft Salt Waste Determination from approximately a half dozen individuals and organizations. A comment response document was prepared to demonstrate how DOE had considered and addressed the comments provided. The National Environmental Policy Act (NEPA) documentation for the salt waste treatment and disposal program was also updated at that same time.

The NRC completed their consultation on the Salt Waste Determination and issued their Technical Evaluation Report (TER) on December 25, 2005. The TER concluded that there was "reasonable assurance that actions proposed by DOE will meet requirements of Section 3116". DOE finalized the Salt Waste Determination in early January 2006 with updates, corrections and revisions to reflect the contents of the TER and other internally-generated changes to be consistent with NEPA documentation, and incorporated the responses to the RAI's and the action items by reference. On January 17, 2006 the Secretary of Energy issued the Department's first Section 3116 Determination, concluding that salt waste at SRS, treated as described in the waste determination, did not require geologic disposal and could be disposed of on site.

THE AFTERMATH

As DOE and NRC started to implement their respective authorities under the NDAA, both parties experienced the frustration that the dialogues and technical exchanges were not as efficient or productive as they had been when the Department was consulting with the NRC staff on WIR determinations under DOE Order 435.1. During the preparation and review of the Section 3116 Determination for Salt Waste Disposal at the Savannah River Site, all meetings between the DOE and NRC staff were conducted as public meetings. This tended to stifle the free exchange of ideas and information that had been the hallmark of previous consultations. The NRC staff review of the Section 3116 Determination for Salt Waste Disposal also resulted in numerous requests for additional information which required over 12 months to disposition.

Additionally, issues began to be raised with both DOE and NRC staff concerning how to implement public involvement, what level of public involvement was required, and what requirements should apply. The stakeholder involvement constraints and potential legal pitfalls with which NRC and DOE were grappling resulted in a temporary impasse. A series of trade newsletter articles reports of the divergent positions of the DOE and the NRC regarding public involvement in their consultations. The articles inflamed the debate and resulted in an environment that severely constrained meaningful dialogue between the working level staff at the agencies.

On November 16, 2006, DOE and NRC held a joint public meeting to state their joint position on how public involvement would be addressed in the implementation of their respective Section 3116 authorities. Following that meeting, DOE and NRC re-engaged their efforts to implement their respective 3116 authorities, including commitments for substantive and integral public involvement.

As a result of the experience with the Section 3116 Determination for Salt Waste Disposal, DOE and NRC managers met to share lessons learned and devise ways to work more effectively and efficiently on the next Section 3116 Determinations. One of the most significant realizations was that over 95 percent of the requests for additional information were related to the radiological performance assessment that supported the waste determination. It was also noted that up front discussion of the inputs into the performance assessment, the alternatives considered, and the basis for assumptions used could reduce the number and severity of future requests for additional information.

As a result, DOE and NRC mutually agreed for the next Section 3116 Determination to use a facilitated process of technical exchanges to allow the DOE's scientists and analysts to communicate directly with the NRC's scientists and analysts about the input assumptions and parameters that would be used in the analyses supporting the determination. Several important ground rules were imposed on the process. First, the technical exchanges would only be used to discuss input parameters and assumptions and the technical basis thereof. No interpretation of results or conclusionary analyses would be included. Second, in order to maintain a transparency with the public, summaries of each meeting would be prepared and posted on a DOE or NRC web site following each meeting. DOE and NRC also committed to give periodic presentations to stakeholder and public groups to apprise them of the progress of the process.

SECTION 3116 DETERMINATION FOR F-TANK FARM CLOSURE

Beginning in January 2007, DOE, NRC, the U. S. Environmental Protection Agency, Region IV (EPA-IV), and the South Carolina Department of Health and Environmental Control (SC DHEC) began using this new scoping process. Over the span of 18 months, 11 scoping meetings were conducted. Topics addressed during the scoping meetings included exposure pathways, screening approaches, bioaccumulation factors and consumption rates, risk assessment approaches, hydrogeologic assumptions, made-made features, vadose zone parameters, waste release mechanisms, dose conversion factors, waste inventory, conceptual model development, sensitivity and uncertainty analysis, tank liner failure assumptions.

As the scoping meetings were conducted, scientists and analysts from the Savannah River Site were able to essentially build the performance assessment real time. The scoping meetings allowed the experts and scientists from each of the agencies to conduct efficient dialogue about the technical assumptions that would go into the performance assessment, including identifying the references and technical basis for those assumptions. The final scoping meeting was held in June 2008. After internal review and approval, DOE formally transmitted the performance assment to the NRC for review in September 2008. Additionally, on the day that the performance assessment was submitted to the NRC, DOE held a public workshop called "Performance Assessment 101". The workshop was noticed in local papers and held at a community college. The workshop provided a layperson level overview of what a performance is, what it does, and how it is used. The workshop also included presentations from DOE Headquarters and the NRC describing their roles in the process. Finally, the workshop provided an overview of the F-Tank Farm performance assessment and answered questions from the audience. Approximately 50 people participated in the workshop.

In June 2009, DOE received approximately 80 requests for additional information (RAIs) from the NRC on the F-Tank Farm performance assessment. This was a notable and unmitigated sign of the success of the scoping process for three reasons. First, the number of RAIs was much smaller than had been received on the Saltstone performance assessment. Second, a large proportion of the RAIs where administrative in nature, or seeking to document more information from the technical exchanges in the scoping process. None of the RAIs received questioned the overall approach, conceptual model, or results. Third, many people had felt at the beginning that the scoping process was going to extend the time period required to prepare, review, approve, and submit the performance assessment. In fact, from the beginning to the end, the performance

assessment for the F-Tank Farm at the Savannah River Site turned out to transit the system from beginning to end fastest that any other performance assessment ever prepared by DOE. It is believed that the inclusion of all the necessary stakeholders in the formulation of the performance assessment resulted in a streamlined review and approval process and contributed to the shorter completion time.

LESSONS LEARNED FROM SAVANNAH RIVER EXPERIENCE

Following the completion of the scoping process for the performance assessment for the F-Tank Farm at the Savannah River Site, a formal lessons-learned was prepared. Some of the key lessons learned include the following:

1. Successful inter-agency working relationships through project level collaboration. The need for better project-level collaboration among DOE, NRC, EPA, and State staffs had been identified during the post-Saltstone Waste Determination lessons learned meeting. The scoping process provided the perfect venue for such collaborations and allowed staff to build trust and familiarity with each other. The scoping meetings were a much better venue for the technical exchanges that the previous hearing-style meetings. As noted, DOE is now touting the scoping process as a "best practice" to be implemented for future performance assessments involving complex technical issues and multiple regulators and stakeholders.

2. Running good meetings produces good results. The scoping meetings reinforced the value of: 1) every meeting having a clear agenda; 2) meetings should not end without a clear understanding of what decisions were made, what issues were unresolved, what additional information is needed and what the next steps are; and 3) meeting notes and a summary of actions being clearly documented.

3. Meeting summaries are important and need to be timely. The complexity of technical issues being discussed during the scoping meetings made it necessary to have as a note-taker someone who was technically familiar with the project. This is not a job for an administrative assistant, and it cannot be someone who is trying to participate in the conversation either. Having someone take notes real time during the meeting allows participants to provide a brief review of the notes before closing the meeting to ensure that no misunderstandings have been documented. Time set aside at the end of the meeting was used to do real-time initial review of the notes to identify any major disconnects immediately. Notes were therefore able to be finalized and posted for public availability more quickly. It is especially important to be timely with the notes and meeting summaries if this is the primary means of staying connected with the public and other stakeholders.

4. Don't be afraid of using facilitators, but don't be afraid of throwing them out of the room either. Initial inter-agency tension or previous rancor may warrant facilitation. Facilitation is good. Because the subject matter of the scoping meetings, the issues were often too technical and involved for one of the meeting participants to try to also be the facilitator. However, as trust and familiarity grows among staff through increased meetings and repetitive interactions, a time may be reached when formal facilitation is not longer necessary, and in fact, can become a burden. It is wise for meeting participants to look for signs as to whether

formal facilitation is still necessary as the meetings progress, or whether the group will be better off on their own.

5. State regulators are good hosts. If multiple regulatory agencies are involved in the review of the performance assessment, including a State regulator, it is often very beneficial to work with the State regulator to be the host of the scoping meetings. Often, State regulatory agencies are more cash-strapped when it comes to travel than federal regulators are. Additionally, by holding the meeting at the State regulator's offices it allows them to increase the number of staff that they can bring to the meetings. Because one of the goals of the scoping meeting process is to transfer knowledge, this is a perfect venue to increase the understanding of the State regulator's staff. It should also be noted that there is a very beneficial intangible benefit to having the State regulators feel that they are providing a service by being the host of the meetings.

6. It is easier to write one document than three. As noted previously, one of the goals of the scoping process was to bring all regulators to the table to discuss one document, a risk assessment or performance assessment, which would ultimately be the basis for separate regulatory decision documents that each regulator was going to need to approve under their own authority. Through the scoping process, it has been proven that even different approaches or preferred methods by regulators can be accommodated through provision of alternative conceptual models, alternative cases, and ranges of sensitivity analyses. There is also no reason why both chemical constituents and radiological constituents cannot be addressed in the same documents, as long as each regulator continues to respect and recognize what they do and do not have authority over in the decision making process.

7. Let the analysis stand on your own – make your conclusions elsewhere. Traditionally, DOE prepared performance assessments that included interpretative and conclusionary statements about how the results of the performance assessment comported with performance objectives and regulatory requirements. Through this scoping process, it was determined that it was better to let the performance assessment simply present the results of the analysis and let the conclusions and interpretations occur elsewhere, in the regulator-driven decision documents. As noted, each regulator is going to approve a separate decision document under their own authority which is supported by the performance assessment. By letting the conclusions and interpretations occur in those decision documents, two things happen. First, the analysis is the analysis, without concern for the decisions that will follow. The primary concern of the participants then becomes whether the performance assessment documentation and analyses are complete, whether they are thorough and technically supported, and not whether the conclusions are valid or not. That, in turn, results in each regulator seeing the decisions and conclusion about their own issues in their own decision documents, further helping ensure that each regulator continues to focus on what they have authority over and not what they do not.

THE NEXT EVOLUTION: HANFORD WASTE MANAGEMENT AREA C

Hanford recently had a similarly bad experience with discussing performance assessments with their regulators and public as the Savannah River Site had on the Saltstone performance

assessment back in 2006. Hanford had prepared a performance assessment on all of the single-shell tank farms at the site and delivered in to the regulator, hoping to satisfy one of their Tri-Party Agreement milestones. This performance assessment had be prepared by sending the scientists and analysts off to the dark corners of their laboratories and offices to conduct the research, select the codes, build the models, and develop the justifications for the analytical results of those models. Not surprisingly, when the product was delivered to the regulators, the reception was not good. In the aftermath of that effort, DOE has worked with the Hanford Site and the Office of River Protection (DOE-ORP) to transfer the knowledge, experiences, and lessons-learned from the Savannah River experience to Hanford. In doing so, several key evolutions have occurred, the most significant of which may be that at the Hanford Site the scoping meetings do not include only regulators, but also include other State representatives (Oregon), tribal representatives, and even general members of the public.

So far, only 5 scoping meetings have been held at the Hanford Site, but there is no indication that the scoping process will not be successful there. In fact, the regulators and other stakeholders that have participated in the meetings have indicated that they are very encouraged by the process and the progress to date. Undoubtedly, there will be new lessons-learned from this application of the scoping process, and new issues to consider as this process evolves. There are, however, some early lessons learned that can be shared.

LESSONS LEARNED FROM HANFORD (SO FAR)

Even though the application of the scoping process at the Hanford Site is in its early stages, there are several brief lessons-learned that have emerged.

1. The process works elsewhere, not just at the Savannah River Site.

2. The process can be implemented with the public in the room.

3. Seeking communal understanding of complex technical issues still seems to be a good thing to attempt.

CONCLUSION

We may be slow, but when we finally get it, we get it. The scoping process as applied at the Savannah River Site may not include anything terribly revolutionary, but in order to have a champion to support such a process, it sometimes takes finding the person who has unsuccessfully tried everything else. DOE will continue to champion the scoping process and other similar participatory approaches to decision making throughout the complex, especially where performance assessment or risk assessments and multiple stakeholders are involved.

1. *"Ronald W. Reagan National Defense Authorization Act for FY 2005,"* Section 3116, 2004.
2. U.S. Department of Energy, "Section 3116 Determination for Salt Waste Disposal" and "Basis for Section 3116 Determination for Salt Waste Disposal at the Savannah River Site" (DOE-WD-2005-001), January 2006.

3. U.S. Department of Energy, "Draft Section 3116 for Closure of Tank 19 and Tank 18 at the Savannah River Site, September 30, 2005.
4. Nuclear Regulatory Commission, Technical Evaluation Report for Draft Waste Determination for Salt Waste Disposal, December 2005.
5. Performance Assessment for the F-Tank Farm at the Savannah River Site (SRS), September 2008.