



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

August 5, 2016

Charles Maguire, Division Director  
Radioactive Materials Division  
Texas Commission on Environmental Quality  
P.O. Box 13087, MC-233  
Austin, TX 78711-3087

Dear Mr. Maguire:

The U.S. Nuclear Regulatory Commission (NRC) uses the Integrated Materials Performance Evaluation Program (IMPEP) in the evaluation of Agreement State programs. On April 4 and 5, 2016, the NRC staff met with you and your staff. The purpose of the meeting was a "Special Review" conducted under IMPEP and focused on Low-Level Radioactive Waste Disposal performance assessment modeling and licensing documentation associated with the Texas Commission on Environmental Quality's licensing of depleted uranium disposal. The NRC was represented by David Esh and Stephen Poy.

In accordance with procedures for implementation of IMPEP, you were provided with a copy of the draft report for your review and comment prior to submitting the report to the MRB. Subsequently you met with NRC staff on June 24, 2016, to discuss your comments. The enclosed revised draft report has been updated with edits discussed during the June 24<sup>th</sup> meeting. A Management Review Board (MRB) meeting to discuss the outcome of the Special Review along with the periodic meeting that was held in February 2016, with the Texas Agreement State Program has been scheduled for September 6, 2016, at 10:30 a.m. (EDT). Call in information for the MRB meeting will be provided in a separate transmission.

If you have any questions regarding the enclosed report, please contact me at (301) 415-3340 or via e-mail at [Daniel.Collins@nrc.gov](mailto:Daniel.Collins@nrc.gov) to discuss your concerns.

Sincerely,

*/RA/*

Daniel S. Collins, Director  
Division of Material Safety, State, Tribal  
and Rulemaking Programs  
Office Nuclear Material Safety  
and Safeguards

Enclosure:  
Draft Special Review Report

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Enclosure:  
Draft Special Review Report

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SPECIAL REVIEW OF THE  
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
LOW LEVEL RADIOACTIVE WASTE DISPOSAL PROGRAM

APRIL 4–5, 2016

DRAFT REPORT

Enclosure

## **EXECUTIVE SUMMARY**

This report presents the results of the Special Review conducted with the Texas Commission on Environmental Quality (TCEQ) related to performance assessment modeling and a license amendment associated with the disposal of depleted uranium under TCEQ's Low Level Radioactive Waste Disposal Program. The Special Review focused on three areas: TCEQ's licensing process for reviewing depleted uranium disposal, the associated performance assessment model for such disposal, and the resulting basis for granting the license amendment. The review team identified some items of concern mostly with the lack of documentation needed to support this complex licensing decision. The U.S. Nuclear Regulatory Commission's (NRC) staff provided some suggestions for improvement for TCEQ's consideration (Section 5). The NRC staff will follow up on these suggestions and items of concern during the next Integrated Materials Performance Evaluation Program review of the Texas Agreement State Program in 2018.

## 1.0 INTRODUCTION

This report presents the results of a Special Review of the Texas Agreement State Program. The review was conducted April 4–5, 2016, by technical staff members from the U.S. Nuclear Regulatory Commission (NRC). The NRC staff visited the Office of Waste in the Texas Commission on Environmental Quality (TCEQ) in Austin, Texas to review performance assessment modeling and related TCEQ licensing documentation associated with the disposal of depleted uranium. The review was conducted in accordance with the “Implementation of the Integrated Materials Performance Evaluation Program and Rescission of Final General Statement of Policy,” published in the *Federal Register* on October 16, 1997, and the NRC Management Directive 5.6 (MD 5.6), “Integrated Materials Performance Evaluation Program (IMPEP),” dated February 26, 2004. Specifically, the Special Review focused on the Technical Quality of Licensing Actions sub-element under the Low-Level Radioactive Waste (LLRW) Disposal Program non-common performance indicator.

The NRC staff evaluated a sample of the performance assessment models and associated supporting documents for TCEQ’s actions related to the development of the license conditions for the Waste Control Specialist (WCS) license amendment to dispose depleted uranium. TCEQ staff provided NRC staff with the WCS performance assessment model and associated documents related to communications between TCEQ and WCS on the performance assessment model. In addition to reviewing documents related to the depleted uranium performance assessments, the NRC staff interviewed members of the TCEQ staff.

### a. Basis for the Special Review

In March 2015, TCEQ invited the NRC to perform a review of the performance assessment model for LLRW disposal. In the process of the peer review performed in June 2015, the NRC staff identified concerns with the model and its use in an August 2014 licensing action concerning the disposal of depleted uranium. In coordination with TCEQ, the NRC staff planned to review the depleted uranium disposal action as a “special review” during the periodic meeting with Texas (TCEQ and Department of State Health Services) planned for February 2016. In December 2015, the TCEQ staff requested a delay in the Special Review due to a competing priority. As a result, the Special Review was performed in April 2016.

### b. Purpose of the Review

To evaluate the licensing process, the performance assessment model and the basis for the licensing decision for the disposal of depleted uranium, and to resolve comments from the June 2015 peer review.

## 2.0 LLRW DISPOSAL PROGRAM: TECHNICAL QUALITY OF LICENSING ACTIONS

The objective of this Special Review was to evaluate TCEQ’s licensing process related to the August 2014 WCS license amendment to dispose depleted uranium. NRC staff determined that the circumstances related to TCEQ’s licensing process warranted a Special Review in accordance with Section V.A.4. of NMSS Procedure SA-100 “Implementation of the Integrated Materials Performance Evaluation Program (IMPEP)”.

The review was conducted under the Integrated Material Performance Evaluation Program LLRW Disposal Program, Technical Quality of Licensing sub-element and was performed to determine if the process is adequate to protect public health and safety.

a. Scope

The review team used the guidance in State Agreements procedure SA-109, "Reviewing the Non-Common Performance Indicator: Low Level Radioactive Waste Disposal Program," and evaluated the TCEQ's performance with respect to the following performance indicator objectives:

- Licensing action reviews are thorough, complete, consistent, and of acceptable technical quality with health, safety, and security issues properly addressed.
- Applicable LLRW guidance documents are available to reviewers and are followed (e.g., pre-licensing guidance, regulatory guides, etc.).
- Essential elements of license applications have been submitted and that these elements meet current NRC or Agreement State regulatory guidance for describing the isotopes and quantities used, qualifications of authorized users, facilities, equipment, locations of use, operating and emergency procedures and any other requirements necessary to ensure an adequate basis for the licensing action (e.g., financial assurance, increased controls/Part 37).
- The basis for major licensing decisions should be fully documented in a safety evaluation report. Evaluation of the technical quality of licensing actions should include a review of the safety evaluation reports pertaining to these actions. Evaluation of the quality of licensing actions should also include an assessment of ongoing requests and supporting documents for amendment, modifications, and/or renewal of the LLRW license.
- Deficiency letters clearly state regulatory positions and are used at the proper time.

b. Discussion

The Special Review focused on three areas: TCEQ's process (e.g. procedures and guidance) for reviewing WCS's depleted uranium disposal license amendment; the associated performance assessment model for such disposal, including the input parameters used in the performance assessment; and the resulting basis for the decision to amend the WCS license for the disposal of depleted uranium.

In response to NRC staff inquiries during the review, TCEQ staff indicated that there is no TCEQ generated guidance for the review of performance assessments and associated documentation; however, TCEQ staff asserted that NRC guidance is utilized (e.g., NUREG-1573, NUREG/CR-5542, and NUREG/CR-6070) as well as other external guidance. The NRC review team did determine, through available documentation of some interactions between the TCEQ and the licensee, that an adequate review of the performance assessment for the disposal of depleted uranium was performed. TCEQ staff indicated that questions concerning WCS's performance assessment model were being resolved primarily through email exchanges and meetings. The NRC staff observed that the volume of documentation capturing the review was considerably less than would typically be expected for review of a complex performance assessment (e.g.,

performance assessment performed for reviews of waste incidental to reprocessing under NUREG-1854). In addition, TCEQ staff indicated that WCS did not provide an adequate response to all of TCEQ's comments. In their discussions with the NRC staff, TCEQ staff specified that their analysis did not indicate that the unresolved comments were significant enough to result in a public health and safety issue. However, the lack of records indicating a resolution of some of TCEQ's comments is an apparent documentation weakness in TCEQ's regulatory process. TCEQ acknowledged this weakness and indicated that the performance assessment model would be updated as additional data and information became available (i.e., was provided or collected from the licensee).

During the April 2016 review, the NRC review team asked TCEQ staff if individual TCEQ staff members have the ability to exercise the performance assessment model and conduct studies to assess model sensitivities to input parameters. TCEQ management indicated that their staff has the ability to study the sensitivity of the performance assessment model. In addition, when a model file is received from WCS, it is distributed to the relevant technical staff for review and analysis. As part of TCEQ's evaluation, staff will run the performance assessment model to verify the licensee's results and may perform additional calculations to verify the ranges of parameters. TCEQ also indicated these independent evaluations of the performance assessment model are the technical basis for questions and issues that are provided to WCS for resolution. However, based on NRC staff's review, these independent evaluations of the performance assessment model do not appear to be documented by TCEQ.

As part of the April 2016 review, NRC staff examined the topic of input parameters for the performance assessment model. As indicated in the August 5, 2015, peer review letter (a copy may be found in the NRC Agencywide Documents Access and Management System using the Accession Number ML15209A311), NRC staff noted an earlier version of the performance assessment model (v 0.205) had a number of input parameters that were clearly identified within the model input file as "placeholder" inputs. TCEQ staff indicated that the licensee provides annual updates to its performance assessment modeling, and that the licensee was working to resolve the placeholder inputs as the model was being revised. However, this version of the performance assessment model appeared to be the one used in TCEQ's depleted uranium disposal licensing decision. At the April 2016 office visit, the NRC review team observed that there were two performance assessment models with the v 0.205 designation, one had the word "draft" in bold red text on the main menu as well as bold red text for the designating placeholders while the other version did not have the red text but still identified the model as preliminary and many of the inputs as placeholders. In addition, during the April 2016 office visit, TCEQ provided several newer versions of the performance assessment model (v. 0.3, 0.4, and 0.51) which contained some new input values, with none of the values designated as placeholders. Based on NRC staff review, it appears that the TCEQ regulatory process for making the August 2014 license amendment decision concerning the disposal of depleted uranium was potentially based, in part, on performance assessment model inputs that were not sufficiently documented (i.e., ambiguity in terms of the inputs designated as placeholders). TCEQ indicated that the issues surrounding the model inputs and their placeholder status were being resolved over time as additional information and documentation is included in the model by the licensee.

In terms of the basis for TCEQ's licensing decision for the disposal of depleted uranium at the WCS facility, NRC staff did not find sufficient documentation of TCEQ's decision making process. However, during the April 2016 office visit, NRC staff determined that two factors went into TCEQ's licensing decision. First, the WCS disposal site appears to have significant disposal margin, which is related to the quantities of depleted uranium that are expected to be disposed at the site, the site's physical features that are conducive to such disposal volumes, and the projected performance of the disposal site to meet regulatory objectives. Second, the performance assessment model for the disposal site is expected to be revised before significant quantities of depleted uranium will be disposed. The NRC review team noted that these factors should have been explicitly documented in TCEQ's licensing records and appropriate license conditions generated.

During the April 2016 review, TCEQ indicated that the WCS disposal license has a condition that requires the licensee to perform specific sensitivity analyses when requested by TCEQ. However, TCEQ staff do not appear to have a system or process in place to track the results of the sensitivity analyses including assessing the impact of input parameter errors or changes to the model. For example, with respect to placeholder values, TCEQ does not have a system in place to verify the basis for the removal of placeholder designations on the performance assessment model inputs.

c. Evaluation

During the April 2016 review, the NRC staff did not identify any concerns that would question whether health and safety is protected. The review team identified weaknesses associated with TCEQ's licensing process for depleted uranium disposal, associated performance assessment model for such disposal, and the resulting basis for the licensing decision. The weaknesses were related primarily to the lack of documentation needed to support this complex licensing decision. Therefore, the NRC staff concludes TCEQ's performance assessment and related licensing decision for the disposal of depleted uranium warrant some improvement and makes the following suggestions for TCEQ's consideration.

1. TCEQ should improve the documentation of its communications with the licensee. Specifically,
  - a) Questions about a licensee's submittal should be developed and provided to the licensee in a formal Request for Additional Information format. Upon resolution of the questions, the outcomes should be documented. During the evaluation process, issues raised by TCEQ, issues self-identified by WCS, and the resolution of these issues should be adequately documented.
  - b) TCEQ should improve the documentation of the assessment process when reviewing new versions of the performance assessment models that are provided annually by the licensee.
  - c) TCEQ should improve the documentation of the safety technical bases for the disposition of a licensing action. This should be completed in a Safety Evaluation Report (SER) or similar document. The SER would allow TCEQ to document how the licensee is addressing compliance with regulatory requirements and why TCEQ has determined that the information provided by the licensee is acceptable. If the licensing action is subject to a hearing or an

allegation, the regulatory process could be followed and supported by the contents of the SER.

2. TCEQ should improve the documentation of its process related to the resolution of placeholder inputs in the performance assessment models. TCEQ should document how placeholder inputs have been removed along with suitable justification.
3. TCEQ should have a documented process to track and identify both the technical analyses upon which a regulatory decision has been made and the significance of errors or changes that may be identified in the supporting performance assessment model. Resolution of significant errors or changes should be documented and in the case of errors, appropriate corrective actions taken.

### 3.0 SUMMARY

The NRC staff conducted a Special Review of TCEQ's performance assessments and associated licensing decisions related to the disposal of depleted uranium under the sub-element of Technical Quality of Licensing Actions of the non-common performance indicator Low-Level Radioactive Waste Disposal Program. The NRC staff provided some suggestions for improvement with regard to TCEQ's documentation of this complex licensing action and corresponding decision making process. The NRC staff will follow up on the improvements with documentation and items of concern at the next IMPEP review of the Texas Agreement State Program in 2018.