



U.S. NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

NOTE TO FILE: Regarding Attachments Document Date

DATE: October 16, 2009

Name : Priya Yadav, Project Manager /RA/
Department: Materials Decommissions Branch
Division: DWMEP

Summary: Following documents should be added to ADAMS with a date of October 16, 2009.

ADAMS Package No.: ML092890284
License No.:

Mail Control:
Docket No.:

Walker-Smith, Antoinette

From: Pinkston, Karen
Sent: Thursday, August 27, 2009 10:41 AM
To: Yadav, Priya
Cc: Esh, David; Bubar, Patrice; McKenney, Christopher; Grossman, Christopher
Subject: call from IEER re DU GoldSim model

Priya,

I wanted to let you know that I called Arun Makhijani's office back in response to their voicemail from yesterday and they were interested in getting a copy of our model and running it themselves. I explained what the GoldSim software was and I told them that in order for them to be able to run our model with their own parameters they would have to both buy the GoldSim software and have a copy of our model. I said that our model hadn't been documented for public release and that they would not be able to understand or use the model without this documentation. I said that doing this documentation would require a large amount of effort and that in light of the fact that we are now in the process of doing a more rigorous rulemaking than the screening analysis previously done, it was not clear if this effort was the best use of resources. They also asked if any other people or companies were involved in development of the model and whether we have given it out to anyone else. I said that the model was developed and used internally only and that we have not given the file out to anyone. They may be calling back with more questions.

Karen

Walker-Smith, Antoinette

From: Bubar, Patrice
Sent: Thursday, June 11, 2009 6:06 PM
To: Cameron, Francis; Yadav, Priya; Suber, Gregory; Grossman, Christopher; McKenney, Christopher
Subject: Call with HEAL Utah

Christopher Thomas from HEAL called Larry Camper today to talk about the DU workshops. Larry called me into the office to be on the call with Christopher.

Christopher had heard from Beatrice Brailsford that we were thinking of having a workshop in the Salt Lake City area (Chip and I met with Beatrice last week in Idaho Falls and we did let her know that is what we were thinking).

He had a few questions that we answered but I wanted to provide you the "thread" of where he was going:

would there be an opportunity for technical papers or other background information to be presented to the NRC by someone that is not at the roundtable

can the NRC make the model that was used in the technical analysis available for others to run calculations

were there other calculations run - with other assumptions - that were not made publicly available.

I told him that Chip would be following up with him shortly to discuss in more detail the attendance and participation at the roundtable.

Patrice M. Bubar, PE, Deputy Director
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Walker-Smith, Antoinette

From: Esh, David
Sent: Tuesday, June 30, 2009 4:19 PM
To: Grossman, Christopher; Yadav, Priya
Cc: Pinkston, Karen; McKenney, Christopher
Subject: Summary of 6/30 phone conversation with Chris Thomas (HEAL)
Attachments: Summary of phone conversation Chris Thomas HEAL 063009.doc

Is attached. Please put into the docket.

Dave

David W. Esh, PhD
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1 On June 30, 2009 at approximately 3:30 PM, I (David Esh) had a phone conversation with Chris
2 Thomas (HEAL Utah) to respond to email questions he sent on 6/16/09. The responses to his
3 questions that I provided are found below.

4 To start, I emphasized that the recently issued FRN provides direction on how to provide
5 comments in order for them to be considered in the rule-making process. I noted that response
6 to comments outside of the formal process would be made as resources allow but could not be
7 guaranteed.

8

9 Hello Dr. Esh:

10 Thanks for getting back to me. I have re-read the analysis the NRC put together several times
11 and couldn't answer the following questions:

12 -When you modeled 1 meter vs. 3 meters vs. 5 meters disposal depth, was the depleted uranium
13 buried under the ground (ie, "below grade") or above grade in an earthen mound? I ask because
14 the EnergySolutions site is a primarily above-grade facility and could behaved differently than a
15 below-grade facility

16 *The depleted uranium was modeled as being below grade. In order for the results to apply to an*
17 *above grade facility, the above grade cover would need to have similar stability to a below grade*
18 *facility and the cover would need to have similar porosity, saturation, and other physical*
19 *properties that mitigate the risk.*

20

21 -In Table 1 on page 18, percent of probabilistic realizations are shown for the various scenarios.
22 I'm curious what the realizations consist of ... in other words, what parameters are being varied
23 from one realization to the next to create different outcomes (ie, meeting the performance
24 objective or failing it)

25 *Page 19 indicates the variables that were identified as being more significant (using uncertainty*
26 *analysis). There were roughly 50 uncertain parameters in the non-biosphere portion of the*
27 *modeling, although the total number is much larger. Some parameters would not be active in a*
28 *particular calculation, for example if the user was not looking at a grouted wasteform then the*
29 *uncertain grout parameters were not being used. By a rough scan the biosphere portion of the*
30 *model had a few hundred uncertain parameters.*

31 *Chris followed up by asking whether erosion was considered as part of the uncertain*
32 *parameters? I explained that it was not because we assumed that a low-level waste facility*
33 *would be sited to meet the site stability performance objective. In addition, the screening*
34 *analysis looked at the impact of different cover thicknesses, which was a simple way to look at*
35 *the impact of exposure of the material over time without modeling more complex processes.*

1 -Does the performance objective of 500 mrem/year for the inadvertent intruder scenario have a
2 basis in statute or rule?

3 *No, not directly in rule. This value was used to develop the concentration tables found in Part
4 61 and therefore if we were analyzing radionuclides that are not in the tables we believed it was
5 appropriate to use a similar value.*

6 -In Table 1 on page 18, the resident performance objective is 25 mrem per year but the chronic
7 intruder dose is 500 mrem per year; since both of these individuals would be located on-site, why
8 is the performance objective different for the two scenarios?

9 *In the development of Part 61 and in this analysis, the chronic intruder is assumed to
10 potentially live directly over the waste. Because of government land ownership, it is believed
11 that this scenario is unlikely but not impossible. The chronic intruder is assigned a higher dose
12 limit than a future resident who may live near, but not directly on top of the waste. Simply based
13 on total site area compared to the area used for waste disposal, the probability of someone living
14 on the waste compared to near the waste should be lower. The differences in the performance
15 objectives reflects in part the perceived the likelihood of the scenarios.*

16 -The narrative on page 18 says that "the mean is strongly affected by a few extreme results which
17 would represent an unfavorable site or disposal system." I'm wondering what these extreme dose
18 values were for each of the scenarios modeled and if that information is available.

19
20 *We calculated those values but we made the decision the information could be misinterpreted for
21 the purpose of this analysis, therefore we chose an alternative presentation. When we were
22 doing a screening to look at the need for a regulatory change and if necessary what degree
23 (guidance, regulation, etc.), we wanted to identify how likely conditions would be favorable or
24 unfavorable and of course if they were unfavorable, to what magnitude. For unfavorable radon
25 emission conditions (no or little cover, very long performance period, low house air exchange
26 rates, arid conditions (high diffusivity)) projected radon doses can be very high, more than
27 100,000 mrem/yr. For unfavorable solubility and transport conditions, doses from uranium and
28 the daughters at these concentrations exceeded tens of thousands of mrem/yr. The problem was
29 if say 5% of the 'sites' or conditions gave these results but 95% gave results of <0.1 mrem/yr, by
30 only presenting the mean value one may conclude near surface disposal is not reasonable.
31 Whereas the correct conclusion is it is reasonable given proper disposal methods and conditions,
32 but caution is needed to avoid unfavorable conditions. The summary of our analysis highlights
33 those unfavorable conditions based on the screening analysis.*

34
35 *Chris inquired whether the data and analysis was available. I explained that what is currently
36 publically available was provided in the attachment to the SECY paper. The model was created
37 in a commercial proprietary software program. We felt the level of detail provided was
38 sufficient to justify the decision for the need for a change in the regulations, and that additional
39 documentation for the analysis supporting the SECY was not warranted because it would have
40 been a very big effort. Chris expressed the concern that the analysis may not justify disposal of
41 depleted uranium at a particular site, for example if it did not include erosion. I explained that
42 our analysis was a screening analysis, that the analysis at a particular site would need to be*

1 *supported by a site-specific analysis. The rulemaking process would determine the necessary*
2 *changes to the regulation, and any analysis supporting the rulemaking would be fully-*
3 *documented and publically-available. We envision producing a technical guidance document to*
4 *support future site-specific analysis.*

Walker-Smith, Antoinette

From: Yadav, Priya
Sent: Monday, July 06, 2009 11:08 AM
To: Yadav, Priya; Grossman, Christopher; Traynham, Brooke
Subject: Unique Waste FRN: Conversation Log with DOE

Note to File re: Conversation Record

On July 1, 2009, staff from DWMEP (Patty Bubar, Greg Suber, Priya Yadav, Chris Grossman, Brooke Traynham) had a conference call with staff from DOE (Christine Gelles, Mark Senderling, Doug Tonkay, et al) about the NRC DU workshops and about DOE's plans for conversion facilities. NRC staff discussed the format and content of the workshops. DOE discussed their interest to participate in the workshops and the progress of their NEPA documentation for DU conversion facilities. NRC staff also summarized the meetings that have been held by the Utah Radiation Control Board in response to DOE questions about the status of a potential moratorium on DU disposal. -

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Walker-Smith, Antoinette

From: Yadav, Priya
Sent: Monday, July 06, 2009 11:13 AM
To: Yadav, Priya; Grossman, Christopher; Traynham, Brooke
Subject: Unique Waste FRN: Conversation Log with HEAL-UT

Note to File re: Conversation Record

On June 15, 2009, I returned a call from Christopher Thomas of HEAL-Utah. He had left a message for me while I was on vacation on June 9 asking about the timeline for the rulemaking and details about the workshop to be held in Salt Lake City, Utah. When I returned his call he indicated all his questions had been answered in a conversation with Larry Camper and Patty Bubar, but that he had some technical questions on staff's analysis for DU. I directed him to call/email David Esh with those questions.

Priya Yadav, PE
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Walker-Smith, Antoinette

From: Grossman, Christopher
Sent: Tuesday, June 30, 2009 4:37 PM
To: Grossman, Christopher
Cc: Traynham, Brooke; Yadav, Priya
Subject: Unique Waste FRN: Conversation Log

Note to File re: Conversation Record:

FROM: John Greeves

TO: Christopher Grossman

SUBJECT: EnergySolutions' Site-Specific Performance Modeling

On June 29, 2009, John Greeves contacted me with a question about a statement in SECY-08-0147 regarding the analysis performed by EnergySolutions that evaluated disposal of natural uranium at their Clive, Utah site. Mr. Greeves inquired whether NRC staff had reviewed the analysis and approved of its findings. I indicated that NRC staff was aware of the analysis and merely informing the Commission of its existence, however, NRC staff had not initiated a formal review since the State of Utah, as an Agreement State, regulates the facility.

Christopher J. Grossman
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